REDINGTON

PORTFOLIO SECURITY ANALYSIS

Consolidator and Insurer Investment Portfolio Study

August 2019

QAS Institute and Faculty of Actuaries ®
Quality Assurance Scheme

bsi. ISO/IEC 27001 Information Security Management

TABLE OF CONTENTS

BACKGROUND 3

OVERVIEW OF RESULTS 4

DETAILED ANALYSIS 5

- Funding Ratio-at-Risk 95% 5
- Stress Tests 6
- Value-at-Risk 99.5% 7
- Solvency Capital Requirement Calculation 8

HIGH YIELD VS. INVESTMENT GRADE CREDIT 9

- Can higher-yielding assets improve security? 9

ADDITIONAL NOTES 10

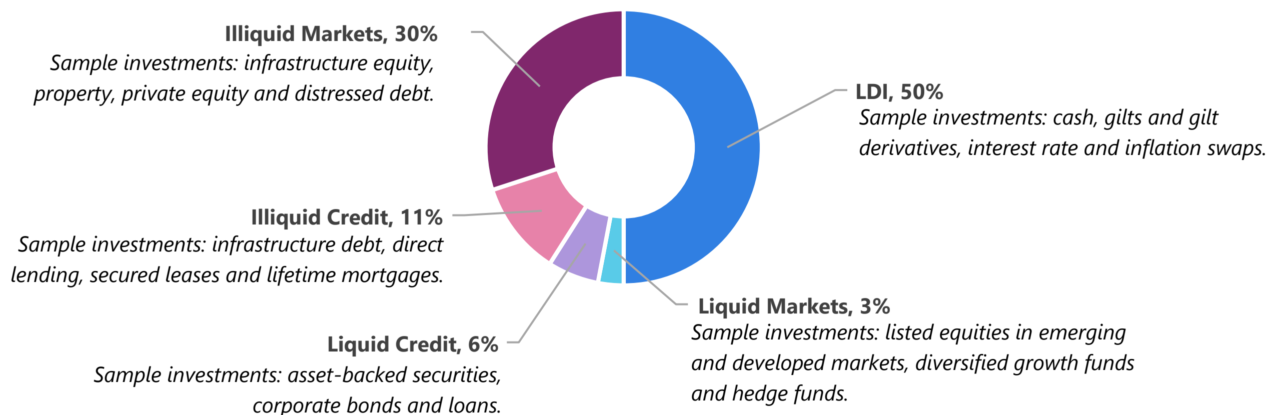
- Solvency Capital Requirement 10
- Other points to note 10

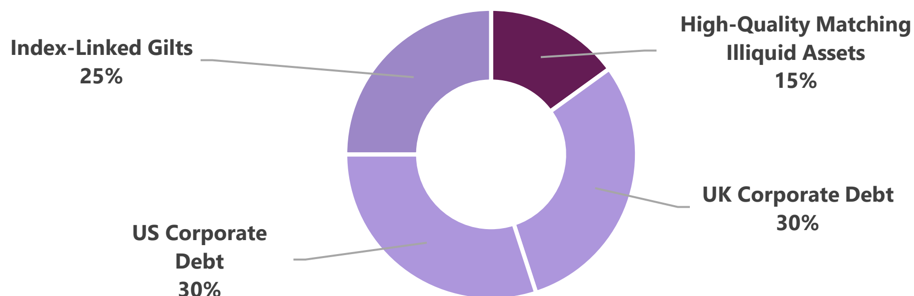
CONTACTS 11

BACKGROUND

- We have undertaken this research to compare the investment risk of a non-Solvency II constrained asset allocation that a consolidator might employ, with that of a typical insurer, analysing each using risk/return metrics, solvency capital requirement tests and credit security provisions.
- Unlike insurers, consolidators are not subject to Solvency II regulations and can therefore invest in a portfolio which takes advantage of **diversification** & **higher-yielding assets**. Our analysis shows that in a non-Solvency II world (i.e. no matching adjustment for liabilities), this results in a more efficient asset allocation, with greater expected return and reduced risk.
- The scope of our analysis is limited to comparing investment portfolios, for which we have had to make a number of assumptions and simplifications in the modelling (the key of which are set out on page 10). There are many other factors – such as actual reserves held to back liabilities, costs, regulatory regimes – which affect the relative security of consolidators vs. insurers that should be considered in assessing these solutions.

The assumed asset allocations can be found below:





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OVERVIEW OF RESULTS

- A summary of the results from our analysis can be found below:

Investigation	Consolidator		Insurer	
Key Risk/Return Metrics	Expected Return (over gilts)	1.9%	Expected Return (over gilts)	1.4%
	Funding Ratio-at-Risk 95% (assuming 100% funded starting point)	7.5%	Funding Ratio-at-Risk 95% (assuming 100% funded starting point)	8.5%
2008 Stress Test	Funding level Shock (assuming 100% funded starting point)	-12.8%	Funding level Shock (assuming 100% funded starting point)	-25.3%
Strength of Funding Position (Gilts +0.5%)	**Initial Funding Position** (Gilts +0.5% funding basis)	115.0%	**Initial Funding Position** (Gilts +0.5% funding basis)	116.0%
	VaR 99.5% Market Shock Funding Position	100.5% (98.7% including longevity)	**VaR 99.5% Market Shock Funding Position**	98.4%
Solvency Capital Requirement (% of assets)	**Base Case**	17.8%	**All Scenarios [no longevity risk or potential investments into non-qualifying infrastructure assets with an insurer]**	16.9%
	Base Case + Longevity Included	19.3%		
Efficient Deployment of High Yield Credit	Consolidators are not constrained by Solvency II regulation, allowing for the efficient deployment of high yield credit, which historically has improved a portfolio's ability to recover from market downturns.		Insurers are constrained by the Solvency II regulation so typically invest predominantly in investment grade corporate debt.	

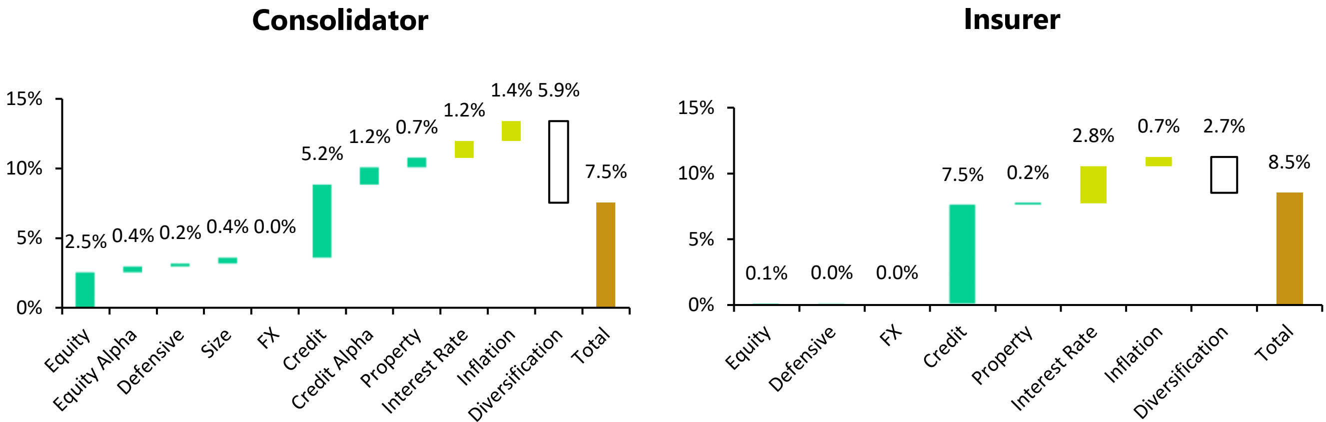
<u>Points to note</u>

- Insurance companies' investment portfolios are not publicly disclosed, but based on our research of buy-out providers' portfolios and pricing, we have modelled a simple portfolio as set out above.
- The initial funding position of the insurer is computed by taking our estimates of buy-out costs (Gilts - 0.3%), based on recent pricing we have observed in the market, and converting this to an equivalent Gilts + 0.5% funding level. Note buy-out pricing can change rapidly and will depend on the membership and maturity of each scheme.
- The Base Case Solvency Capital Requirement for the consolidator does not allow for longevity risk, whereas the Base Case + Longevity Included case does.

DETAILED ANALYSIS

Funding Ratio-at-Risk 95%

- Funding Ratio-at-Risk 95% measures the least increase in the funding level that would be experienced in a 1-year, 1-in-20 downside scenario, broken into the component risk factors:

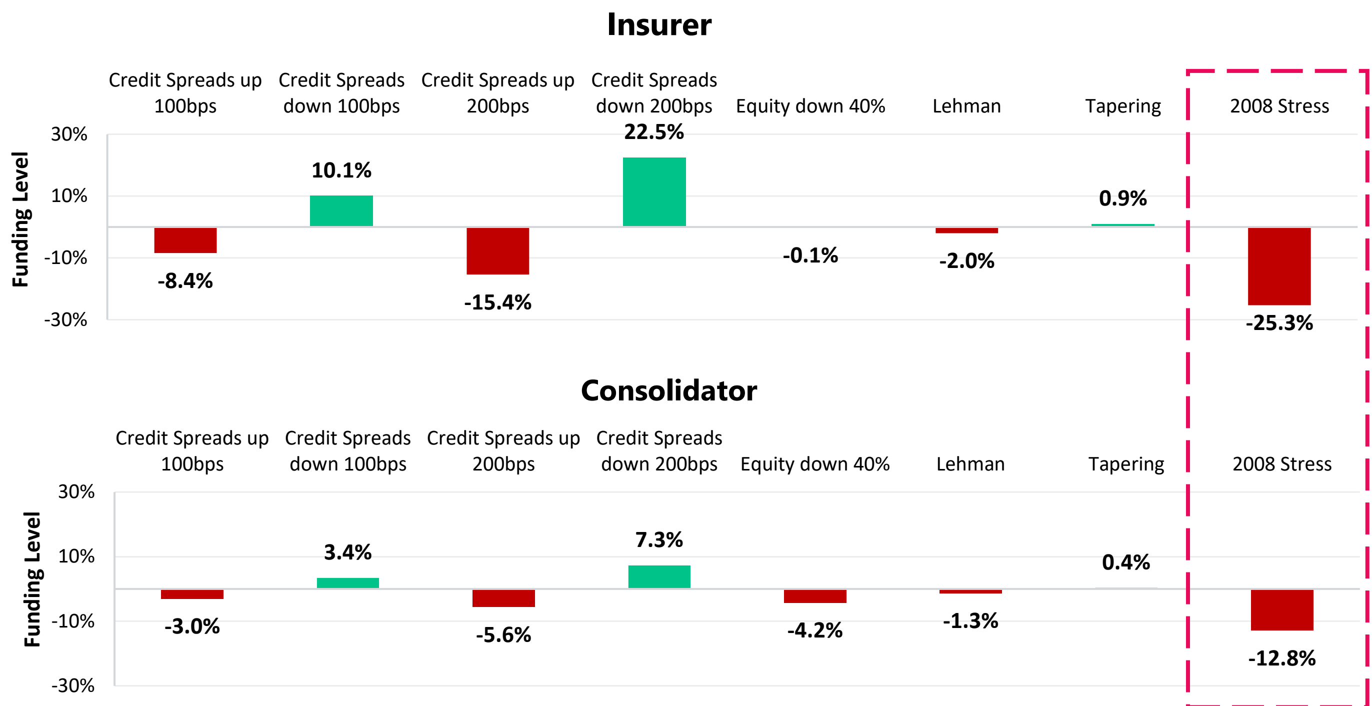


<u>Points to note</u>

- The analysis assumes a starting funding position of 100% on a Gilts + 0.5% basis (no allowance is made for the matching adjustment that would be available under Solvency II).
- As different funding levels can skew Funding Ratio-at-Risk analysis, assuming the same funding position ensures that differences in risk profile are driven purely by the different investment strategies.
- Credit risk captures both default risk and credit spread mark-to-market risk, with the latter comprising the majority of the risk figure.

Stress Tests

- Each portfolio has been stressed by simulating a range of extreme market environments to better evaluate the relative portfolio resilience.
- As can be seen below, the funding level of the insurer is expected to be significantly more impacted by, for example, a 2008 (financial crisis) market shock than that of indicative consolidator portfolio:

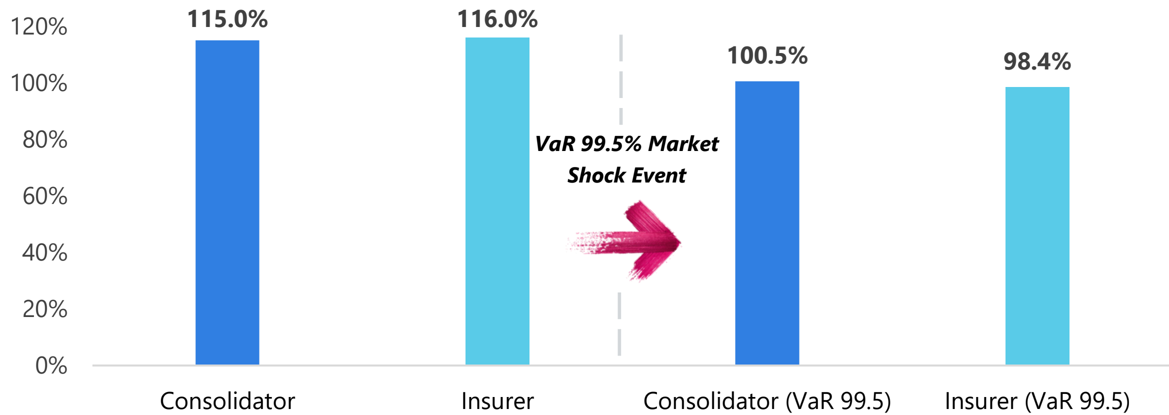


<u>Points to note</u>

- As above, the analysis assumes a starting funding position of 100% on a Gilts + 0.5% basis. We have also assumed both portfolios are 100% hedged against interest rate and inflation risk to isolate the differences in stress impact to differences in investment strategy.
- Historical stress tests applied to the portfolios use market data from the dates they happened: Lehman (12/09/2008-18/09/2008), Tapering (29/03/2013-28/06/2013) and 2008 Stress (31/12/2007-31/12/2008).

Value-at-Risk 99.5%

- Here we assess the impact on funding ratio of a 1-year, 1-in-200 market shock on each portfolio where, even with a slightly lower starting funding level, the consolidator is more resilient:



Points to note

- The analysis assumes a Gilts + 0.5% funding basis, but different starting funding positions.
  - The consolidator starts at 115% – 100% in the consolidator pension fund itself, with another 15% held as reserve capital to back the consolidator.
  - The insurer starts at 116%, which is based on converting an assumed buy-out price funding level of 100% on a Gilts - 0.3% basis to a Gilts + 0.5% basis.
- This analysis only considers the investment portfolio impact of the stress, and does not take into account the additional reserves insurers would typically have available, nor the mechanism by which the reserve capital backing the consolidator might be released into the consolidator pension fund itself in a shock scenario.
- The analysis does not include a shock to longevity. Were this to be included, the consolidator funding level would fall to 98.7% in the VaR 99.5% scenario – still marginally above the insurer.

Solvency Capital Requirement Calculation

- Under the Solvency II directive, Insurers and Reinsurers are required to meet certain solvency capital requirements ("SCR") to ensure that they are able to meet their obligations to policyholders and beneficiaries over the following 12 months with a 99.5% probability. SCR is therefore the amount of capital that insurance and reinsurance companies are required to hold against £100 of liabilities. This requirement is dependent upon the investment portfolio's holdings and is calculated using standard prescribed stress tests.
- Below we have conducted a stress test for the indicative consolidator and insurer portfolios, then calculated the SCR by applying a correlation matrix provided by the Prudential Regulation Authority. SCR is expressed as a % of total assets.

Portfolio Shock in a 1/200 Downside Scenario (% of assets)		
	Consolidator	Insurer
Interest Rates	N/A	N/A
Equity	-9.7%	N/A
Property	-1.0%	-
Currency	-0.8%	-
Credit Spreads	-6.2%	-16.9%
Concentration	N/A	N/A
Illiquidity Premium	N/A	N/A
Solvency Capital Requirement Estimate (% of Assets)		
Consolidator (Base Case)	17.8%	
Consolidator (Longevity Included)	19.3%	
Insurer	16.9%	

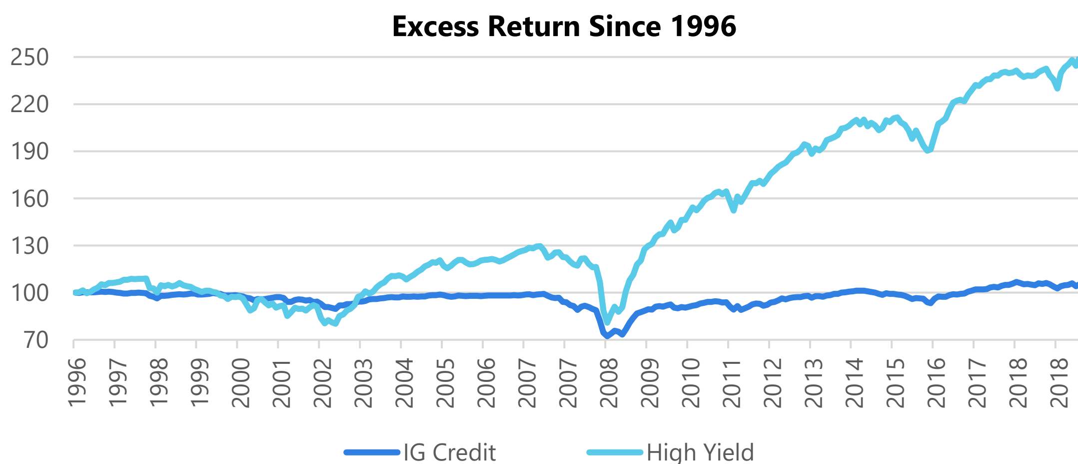
Points to note

- The SCR analysis assumes that the consolidator's holdings in infrastructure equity do not qualify for the lower 30% shock that is available under Solvency II. If they did, the SCR requirement for the consolidator would be c.2% lower as a % of assets.

HIGH YIELD VS. INVESTMENT GRADE CREDIT

Can higher-yielding assets improve security?

- Solvency II limits UK insurers to investing predominantly in investment grade ("IG") corporate debt. A consolidator, on the other hand, is able to take advantage of a diversified higher yielding debt portfolio due to greater regulatory freedoms.
- The data suggests that, despite higher default rates in high yield bonds, investors are well compensated for these defaults via the higher 'credit spread' or additional yield an investor earns from taking incremental credit risk (usually quoted relative to the yield on government bonds). As a result, investing in high yield credit can allow for more rapid portfolio recovery following a downturn than IG credit. This impact is further enhanced when the ability to invest in private higher-yielding credit asset classes is incorporated (via illiquidity premia and improved covenants).
- When the interest rate component of the two asset classes is stripped out, it becomes clear that IG credit has a limited ability to recover from drawdowns, particularly from tight spread levels.
- In our analysis of the risk metrics of the two portfolios, we have included data from Moody's to compare the relative risk and return of Investment Grade and High Yield credit:



Source – ICE BofAML (IG Credit = C0A0, High Yield = H0A0)

Recovery Times after Drawdown

Drawdown		Investment Grade Credit	High Yield Credit
Longest time in drawdown		16 years 7 months [Sept 1997 – May 2014]	8 years 4 months [July 1998 – Dec 2006]
Average time to recover after a drawdown of …	*5%*	6 years 0 months	2 years 11 months
	10%	5 years 3 months	3 years 5 months
	15%	5 years 4 months	3 years 7 months

Source – ICE BofAML (IG Credit = C0A0, High Yield = H0A0)

ADDITIONAL NOTES

Solvency Capital Requirement

- The SCR analysis was conducted assuming 100% of infrastructure assets held by the consolidator do not qualify for the lower 30% shock in the SCR calculation. Non-qualifying infrastructure assets instead face a 39% shock; hence the SCR will be greater. In practice, the infrastructure equity investments would be examined on a case-by-case basis – and it may be that a subset of the assets held by the consolidator are eligible for the lower SCR.
- We would not expect a consolidator to hedge longevity risk unless it is in the best interest of members relative to the cost of doing so. Insurance companies are incentivised to hedge longevity risk in order to reduce their SCR under Solvency II. As such, we have shown analysis with "Longevity Included" and without the Life Underwriting Risk module to support comparison of the two solutions.

Other points to note

- We have not considered any complexity in accessing the reserve capital of a consolidator should a market shock scenario lead to a drop below a 100% funding ratio.
- It is important to note that insurers will usually operate with higher levels of capital than those required by regulation, and that the insurance backstop is the Financial Services Compensation Scheme (FSCS), which does not reduce benefits to members when determining compensation. In comparison, under the current regulatory regime, members' benefits within a consolidator are protected by the Pension Protection Fund, which does impose benefit reductions.

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