



White paper

Sub-investment grade opportunities for insurers: Senior secured loans

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Executive summary

With the introduction of Solvency II at the start of 2016, and with interest rates continuing to remain at historically low levels, insurers are increasingly looking for ways to deliver attractive risk-adjusted returns that are efficient from a capital perspective.

Many of the most commonly used fixed-income investments, such as high-quality government bonds, now generate low to negative real returns. Consequently, insurers are looking beyond traditional asset classes, be that investing in illiquid forms of private credit, diversifying exposures globally or moving down the credit spectrum in order to find more attractive risk-adjusted opportunities.

One asset class that has seen growing interest from insurers is Senior Secured Loans (SSLs).

SSLs are floating rate, sub-investment grade rated, USD/EUR-denominated loans to corporates. They sit senior in the capital structure and are secured on assets, hence loss on default should be lower than on comparable, unsecured investments.

Combined with the higher spreads currently on offer, this results in potentially higher risk-adjusted returns compared with high yield bonds. Given that there is no difference in the capital treatment under the Solvency II Standard Formula (for an equivalent rating and duration), it also means the potential for a higher return on capital for the insurer.

From a historic performance perspective, SSLs have recorded positive returns in the vast majority of years, and annual volatility has been relatively low. They have exhibited a moderate (post crisis) correlation to investment grade corporate bonds, and at the same time correlations to government bonds have been close to zero - this may provide insurers with potential diversification benefits.

This paper takes a closer look at SSLs and considers how the asset class may fit within an insurance company's investment strategy.

1. Introduction

It is not uncommon for insurers to allocate a portion of their fixed income portfolio to sub-investment grade or unrated securities. Sub-investment grade investments are defined as assets with a credit rating below investment grade (Baa3 or BBB-, as rated by Moody's and Standard & Poor's respectively), whilst unrated assets do not have an external rating. These assets usually provide the investor with higher yields as they are typically higher risk, higher volatility, more complex and/or less liquid.

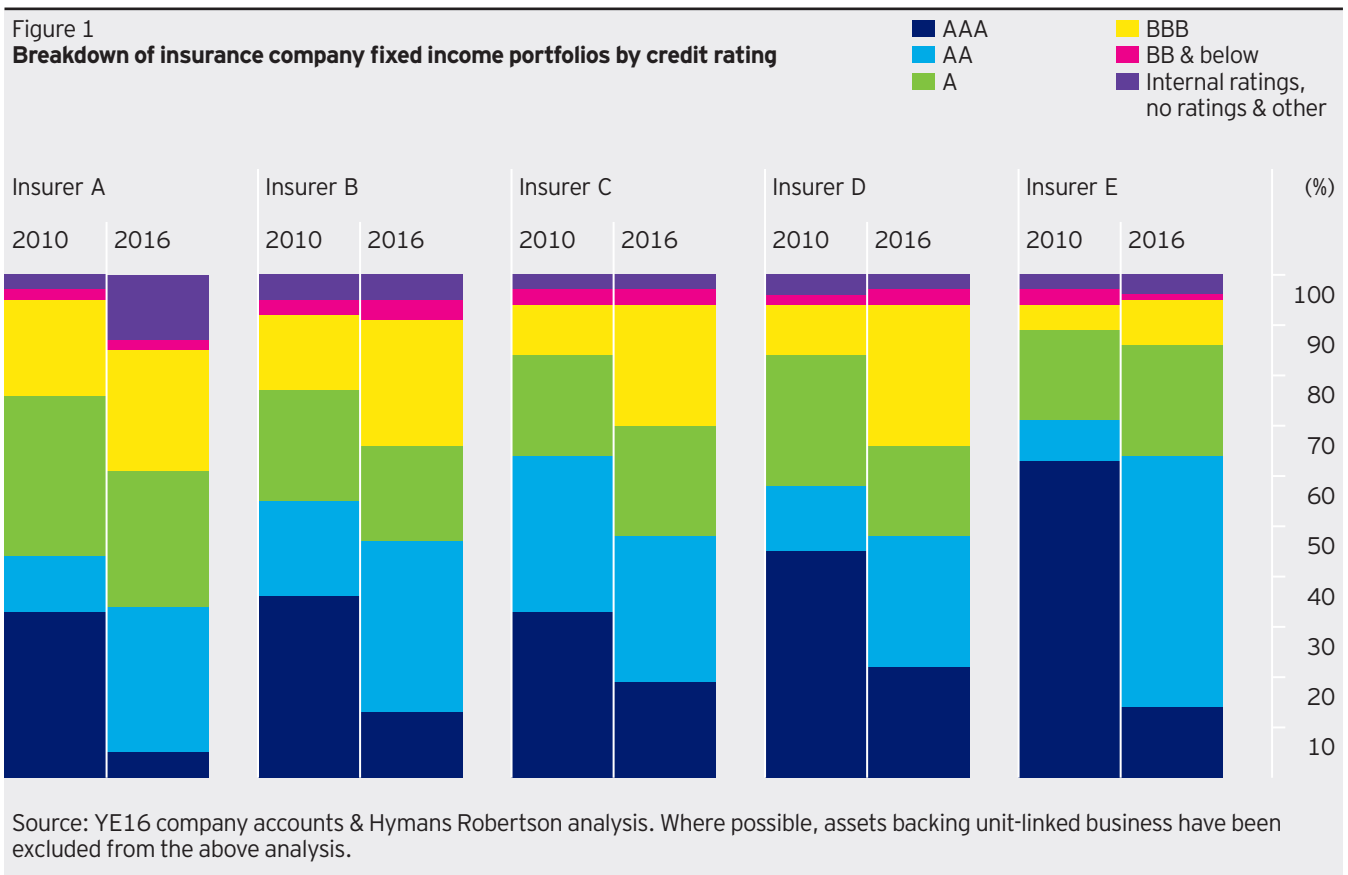
Figure 1 below shows the breakdown of the total fixed income portfolio by credit rating for a selected group of large European insurers at the end of 2016.

- It shows the reduction in average credit quality of a selection of insurance company fixed income portfolios between 2010 and 2016.
- The allocation to sub-investment grade assets was between 1% and 5% at the end of 2016.
- At the end of 2016, between 3% - 12% of assets were not rated externally, and some of these assets may be equivalent to sub-investment grade from a risk perspective.

The observed reduction in average credit quality will, in part, have occurred organically through downgrades. However we have also seen firms actively moving down the credit spectrum in order to boost risk-adjusted returns against a backdrop of low rates.

Figure 2 looks at some of the current opportunities for insurers in the sub-investment grade space. We have included investment grade corporate bonds in the table for comparative purposes.

Many firms already hold high yield bonds within their allocation to sub-investment grade assets. These are bonds issued by large companies with ratings of BB+ and below, some of which are fallen angels (i.e. bonds which have downgraded from investment grade to below investment grade).



More recently we have seen growing interest from insurers in SSLs. These are loans to medium and large size companies, where those loans are typically syndicated by banks. Unlike high yield bonds, SSLs are secured on assets and sit higher in the capital structure. Combined with the higher spreads currently on offer, this results in potentially higher risk-adjusted returns compared with high yield bonds. Given that there is no difference in the capital treatment under the Solvency II Standard Formula (for an equivalent rating and duration), it also means the potential for a higher return on capital for the insurer.

Insurers can also access the loans market by investing in CLOs. These are asset backed securities which are tranching, with the coupons and principal repayments being serviced by the cash flows generated by the underlying pool of SSLs. However many insurers have shied away from securitised credit due to the potentially penal capital charges under Solvency II.

Another investment in the sub-investment grade space is private corporate lending. These are privately arranged bilateral loans and can potentially provide higher returns than SSLs and high yield bonds. There is no secondary market which means insurers will need to be prepared to hold the loans to maturity, however this may also mean less mark-to-market volatility. The bilateral nature of private corporate loans means that the lender can influence the covenants which can provide it with greater security. However the private nature of these transactions typically requires employing specialist debt funds with expertise in sourcing and structuring, which can result in longer investment periods.

Figure 2
Summary information for sub-investment grade opportunities

Asset class/strategy	Investment Grade Corporate Bonds (UK) - BBB rated	High Yield (Europe)	High Yield (US)	Senior Secured Loans (Europe)	Senior Secured Loans (US)	Collateralised Loan Obligations (CLOs) - BB tranche	Private Corporate Lending
Indicative spread (bps p.a.)¹	150	255	300	435	400	US: 780 EU: 650	Libor +400-600
Fixed or floating	Fixed	Fixed	Fixed	Floating	Floating	Floating	Floating
Security	Typically unsecured	Typically unsecured	Typically unsecured	Senior and secured on assets	Senior and secured on assets	Secured on assets	Secured on assets
Liquidity	Liquid	Liquid	Liquid	Reasonably Liquid	Reasonably Liquid	Liquid but decreases with quality	No secondary market
Typical rating	BBB	BB-CCC	BB-CCC	BB-CCC & Non-rated	BB-CCC & Non-rated	BB	Unrated but equivalent to BB/B and below
Term/Duration	Duration c.8.5 years	Duration c.4 years	Duration c.5 years	Weighted average life c.5.5 years	Weighted average life c.5 years	c.9 years	Terms c.5-7 years WAL c.3-4 years
Option for borrower to prepay?	Yes, but subject to make-whole language	Yes, stated call date and price	Yes, stated call date and price	Yes, at par	Yes, at par	Yes, at par	Yes, but may include early prepayment penalties
Approximate market size²	c.£370bn	c.€480bn	c.\$1,550bn	c.€170bn	c.\$970bn	<\$460bn ³	c.\$600bn
Historic default rates⁴	0.27%	2.5%	4%	3.32%	3.3%	1.66%	-
Historic recovery rates⁴	43%	38.8%	40%	81%	80%	-	-

Source: Hymans Robertson & Invesco, May 2017

¹ Bloomberg, 31 May 2017, spreads reflect BB/B ratings and have been referenced to above GBP/USD LIBOR or EURIBOR

² iBoxx All Corps UK (IG corporate), Credit Suisse, Preqin

³ Source: Wells Fargo as of 1Q 2017 (figure is representative of total US CLO Market, not just BB tranches)

⁴ Various sources, including Moody's Annual Default Study (1983-2016), Credit Suisse (2003-2017) and S&P (1994-2013)

2. Introduction to senior secured loans

SSLs are privately arranged loans, issued to a consortium of banks and institutional creditors, that provide companies with access to debt capital. They typically pay the investor a spread over the reference rate (LIBOR or EURIBOR), making them floating-rate instruments.

Generally, the borrowers are corporates and the loans are normally for capital expenditures, M&A-related transactions or refinancing debt. Large loan issuers include Hertz, Dell and Burger King as well as European corporations such as Alstom, Celanese, E.ON and Siemens.

SSLs typically have a credit rating below investment grade. However, there are various credit risk mitigation mechanisms in place that rank SSLs at the top of a company's capital structure:

- Collateral packages
- Seniority in the company's capital structure
- Financial covenants

Seniority in the company's capital structure effectively means that the SSL investor is ranked first for any repayment in the event of a default of the issuer, resulting in higher recovery rates than would otherwise be the case, see Figure 3 below.

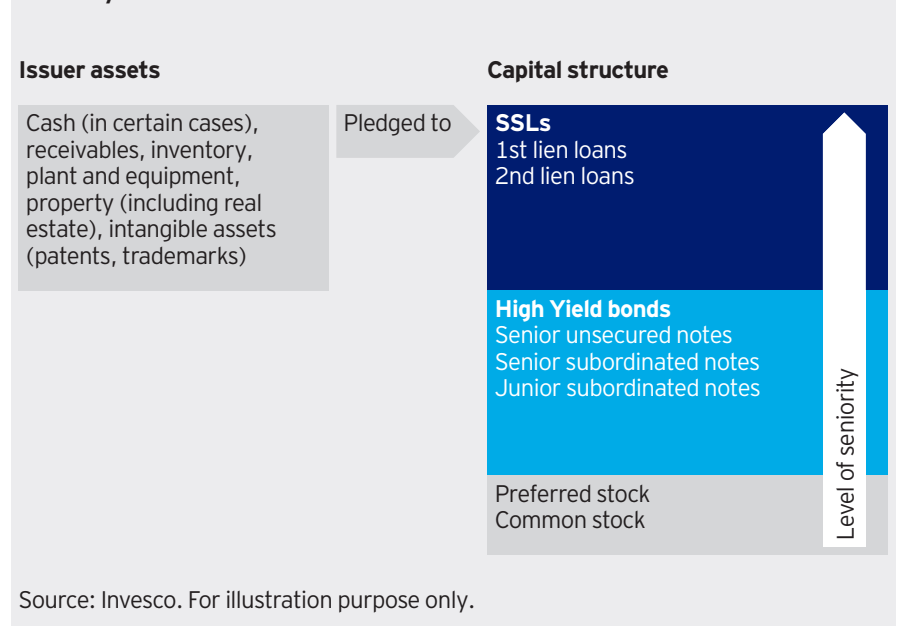
As with many other forms of fixed income investment, there is the option for the borrower to redeem the loan early, i.e. prior to the maturity date. SSLs typically do not have a non-call period and no spens clause (i.e. the loan can be prepaid at par). The illiquid nature of these loans may also mean that investors are not able to sell them quickly at a fair price.

Typically, three parties are involved in the structuring of a SSL:

1. the borrower;
2. the mandated lead arranger (commercial or investment bank); and
3. a consortium of creditors and investors.

The key task of the mandated lead arranger is to structure, arrange and syndicate the loan on behalf of the borrower as well as to administer payments through the life of the loan.

Figure 3
Seniority of SSLs



Loan market development over years

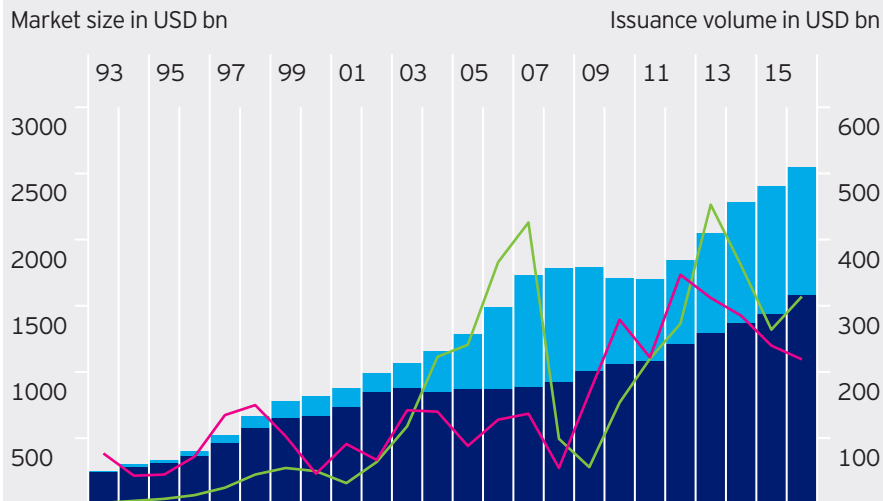
The institutional loan market has grown quickly in recent years. Secondary-market volumes in the US and Europe alone have increased five-fold over the last decade. As at the end of December 2016, the total outstanding institutional market volume for US loans stood at about USD 964bn, while the total outstanding market volume for European institutional loans stood at EUR 168bn.

In the primary market for SSLs, the main participants include banks, finance companies, insurance companies, securities firms and fund managers for CLO, institutional loan funds, separate managed accounts, retail loan funds, hedge and high-yield funds.

Figure 4

Comparison of US institutional leveraged loans vs. high yield

■ US HY market size
■ US institutional LL market size
— US HY issuance volume (RHS)
— US institutional LL issuance volume (RHS)



Source: Credit Suisse Research and Analytics. Data as at 31 December 2016.

Loan market trading and liquidity

Liquidity and market transparency have improved as daily trading volumes have increased. We have seen more participants entering the market, leading to tighter bid/offer spreads over time, and we have also seen growth in the depth and breadth of the market - as demonstrated in Figures 5 and 6.

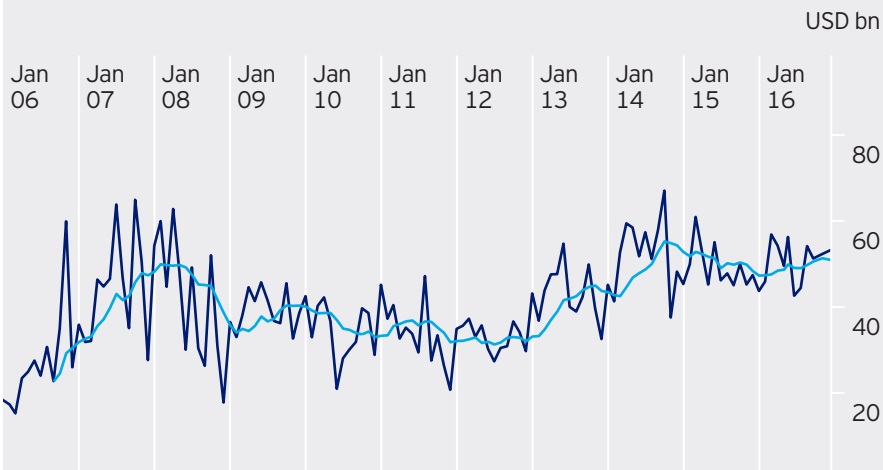
- Trading turnover in the US secondary market stands at about USD 550bn for 2016.
- Bid quotes for loans were being received even during the worst liquidity squeeze at the time of the financial crash in 2008.
- During the financial crisis period, changes in bid-offer spreads showed a strong correlation with changes in daily price volatility.

Today, there is a diverse investor base in SSLs, ranging from daily liquid mutual funds, to insurers, institutional pension funds and credit arbitrage hedge funds.

Figure 5

Evolution of US loan monthly trading volumes

— Loan trading volume
— 9-month moving average



Source: LSTA. Data as at 31 December 2016.

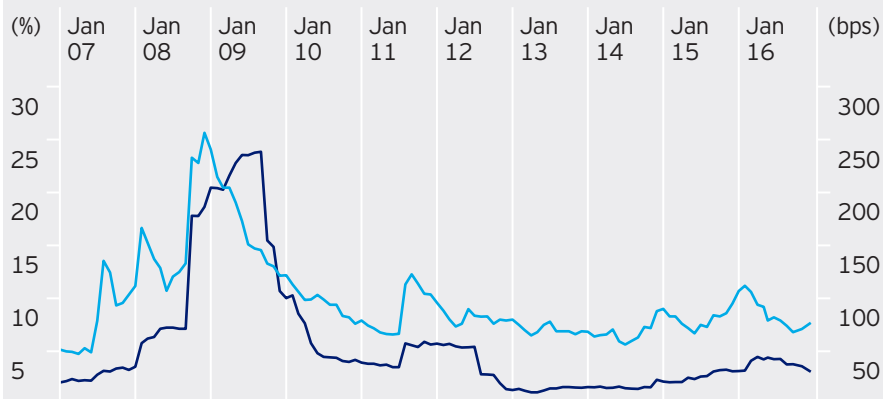
Loan pricing and portfolio valuation

In the US and Europe, electronic loan pricing platforms have been established over the last decade, most notably those administrated by Markit and Thomson Reuters. Amongst other data, the information available includes daily pricing for thousands of loan facilities. By delivering data and documents via secure channels, these platforms help custodians and trustees reduce settlement risk and increase operational efficiency.

Figure 6

Evolution of US loan average trading price and median bid-offer spread

— Annualised price volatility
— Average MTM bid-ask spread (RHS)



Source: LSTA. Data as at 31 December 2016.

3. Insurance considerations and Solvency II treatment

Where do SSLs most naturally sit on the insurance balance sheet?

As SSLs are short-dated, floating rate and sub-investment grade assets, they are unlikely to feature heavily within annuity portfolios. However, firms may wish to consider them for participating business, surplus capital as well as Property & Casualty portfolios.



Participating business

Depending upon the specific situation of each firm, SSLs could be used:

- to de-risk from equities - lower volatility profile and capital requirements; or
- to improve the expected risk-adjusted return of the portfolio



Surplus capital, Property & Casualty portfolios

Within these portfolios, insurers will have a number of objectives. Typically, firms will not be looking to take interest rate risk exposure, they will need access to liquidity, they will want to deliver attractive risk-adjusted returns and they may also have an overall capital budget. SSLs may therefore tick a number of boxes.



Annuities

Firms are generally looking for investment grade quality, fixed rate, long-dated and illiquid assets to back their annuities, so SSLs are unlikely to feature heavily.

Furthermore, SSLs would need to be paired with some form of interest rate swap and hedged back to the currency of the liabilities to make them eligible for the Matching Adjustment (MA) under Solvency II.

Case studies

UK insurance company

With-profits fund of a UK insurer with a large allocation to equities. The fund is closed to new business and is in run-off. The insurer felt that equities were relatively expensive at then current levels.

A portion of the equities were switched into SSLs. The lower volatility compared to equities was desirable for a portfolio in runoff, and the switch led to improved risk-adjusted returns for the portfolio as a whole.

SSLs required less Solvency II capital than the equities, boosting the free surplus position of the fund.

German insurance company

For a German insurer, their typical allocation to sub-investment grade assets was c.5% of the portfolio.

Firms have been allocating increasing amounts to USD credit, emerging market debt and SSLs (instead of assets such as equities and investment grade bonds) to generate additional yield to help them to achieve their underlying forward looking investment guarantees.

SSLs provided a relatively capital efficient means of accessing the additional yield.

Solvency II treatment

Solvency II requires insurers to set aside capital to cover the risk of balance sheet losses under 1 in 200 stress scenarios. In order to determine the required level of capital in respect of market risk, firms have to revalue the balance sheet under stresses to interest rates, exchange rates and spreads on bonds and loans.

SSLs have little interest rate risk as they pay floating rate coupons. This contrasts with some of the alternative sub-investment grade asset classes, such as high yield bonds, which mainly pay fixed coupons. Insurers can use interest rate swap overlays to separately manage any interest rate mismatches between their assets and liabilities at a portfolio level.

SSLs are predominately issued in US Dollars or Euros, which means direct holdings for UK insurers will incur currency risk capital. This capital is typically determined by applying a 25% stress to the relevant exchange rate (e.g. EUR/GBP or USD/GBP for a UK investor). Alternatively, insurers can choose to invest in SSLs through open ended pooled funds, some of which may hedge out any currency risk.

The most significant element of the capital requirement for SSLs will be spread risk. Under the Solvency II Standard Formula, the capital requirement for spread risk is a function of the rating and duration of the loan (floating rate assets are treated like fixed rate assets for the purpose of calculating a duration). In this way, the spread risk capital requirement for SSLs is the same as that for

corporate bonds with the same rating and duration. For example, a SSL with a 5-year duration and BB rating would have a spread risk capital charge of 22.5%.

Figure 7 below gives an indication of the standalone capital charge for SSLs compared to other asset classes. Diversification impacts have been excluded from this analysis – the overall level of diversification achieved will depend on the make-up of the rest of the insurer’s assets and liabilities. The chart also assumes that any currency risk exposures have been hedged out.

We have also included in the chart the capital-adjusted spreads, which are based on current market spreads and the calculated standalone market SCR.

Insurers who calculate spread capital risk through a (full or partial) Internal Model may end up with a different capital charge from that illustrated above, which uses the Standard Formula. These calibrations will make an allowance for expected recovery rates on the underlying bonds and loans.

As shown in Figure 8 below (an extract from Figure 2), SSLs typically have had a significantly higher recovery rate than equivalent high yield bonds because they are secured and sit senior in the capital structure of the company. Therefore if the insurer’s credit calibration is sufficiently granular so that it reflects the security and seniority of the underlying bonds and loans, it should be possible to end up with a lower overall capital requirement than would otherwise be the case.

Operational considerations

The Prudent Person Principle (PPP) set out in Article 132 of the Solvency II Directive governs how insurers go about their investment activities under Solvency II. The PPP requires that insurers only invest in assets where the risks can be properly identified, measured, monitored, managed, controlled and reported.

Where using an external manager, the insurer must satisfy itself that the manager has the necessary skills and expertise to independently review and evaluate the borrower’s creditworthiness, as well as its future capacity to meet interest and principal payments. Crucially the insurer is unable to delegate responsibility for complying with the PPP to the external manager, so it will need to make sure that it has the necessary resource and expertise to monitor and challenge the manager.

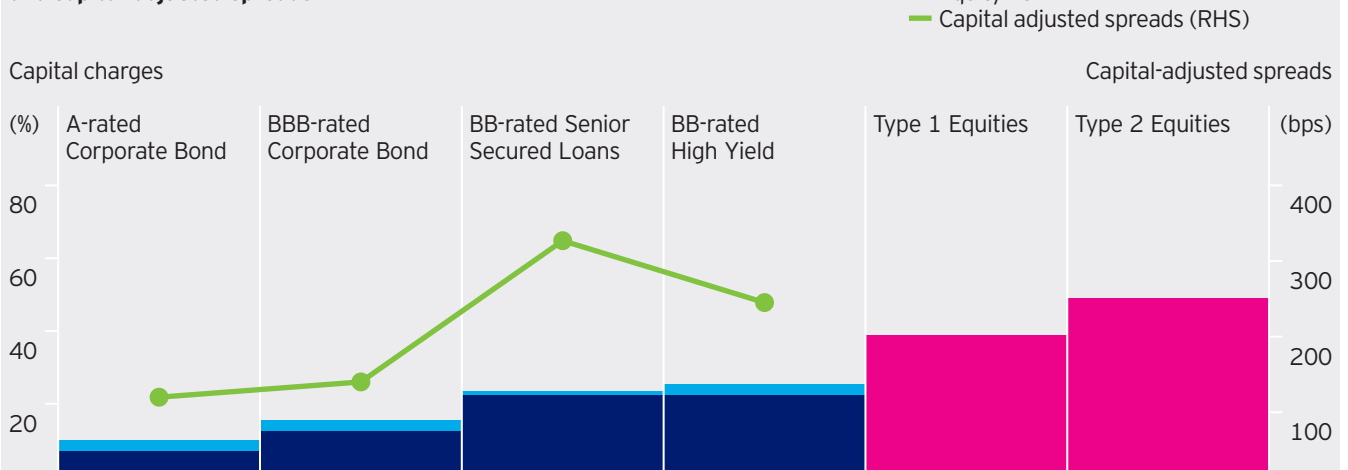
Materiality should be borne in mind, however. Given the likely modest allocations to SSLs in the context of the overall asset portfolio, firms may wish to apply a proportionate approach to governance.

It is unlikely that SSLs will incur high setup costs as they are by nature a form of debt, which means existing accounting processes can be leveraged with relatively little modification required.

Investments can be on a segregated basis for mandates of c£100 million and higher, or through an open ended pooled fund with monthly to quarterly liquidity.

Figure 7

Solvency II Standard Formula standalone market risk capital charges and capital-adjusted spreads



Source: Hymans Robertson illustrative analysis.

Figure 8

	Historic default rate	Historic recovery rate	Loss given default
Senior secured loans (US)	3.3%	80%	0.7%
Unsecured High Yield (US)	4%	40%	2.4%

Sources: Hymans Robertson & Invesco, May 2017. Various sources, including Moody’s Annual Default Study (1983-2016), Credit Suisse (2003-2017) and S&P (1994-2013)

4. Analysing the historic performance of SSLs

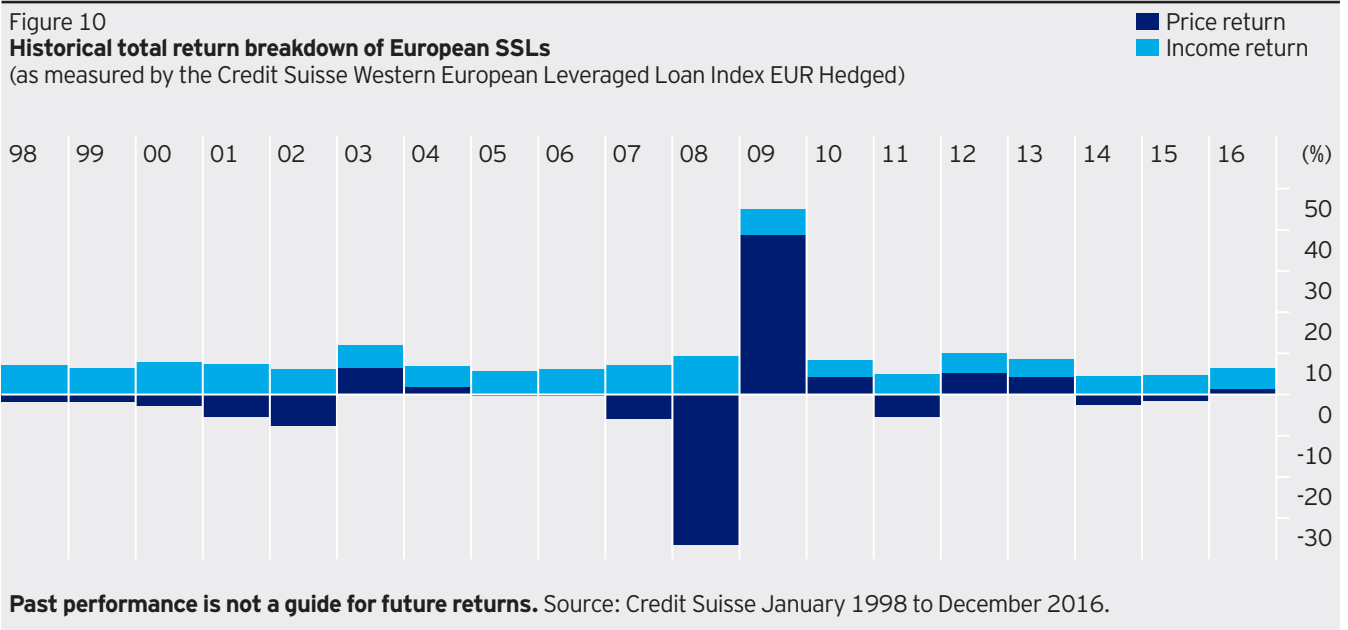
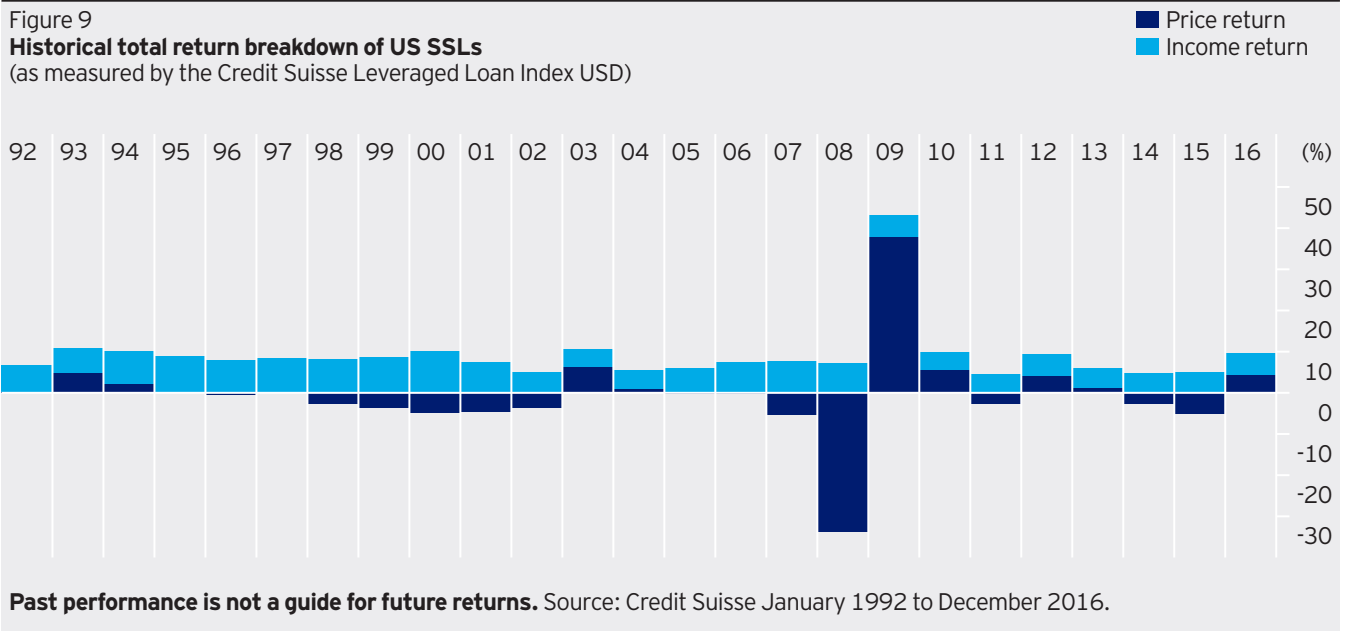
A wealth of historic data is available for SSLs, which can be used by insurance companies to help them better understand the return characteristics of this asset class, or to assist in calibrating internal models.

Below we look at how SSLs have performed over different market phases, the volatility of returns and their correlations with other asset classes.

Historical return profile

Figures 9 and 10 below show the historical performance of US and European SSLs - as represented by the Credit Suisse Leveraged Loan Index and Credit Suisse Western European Leveraged Loan Index respectively.

Since its launch in January 1992, the Credit Suisse Leveraged Loan index has recorded a positive total return in each calendar year coupled with consistent income and moderate price fluctuation, with the exception of the crisis year 2008. The charts show that the drawdown in 2008 was offset in the following 12 months.



The sharp drawdown in 2008 was caused by a large sell-off of loans, primarily driven by two effects:

1. Deleveraging pressure forced upon some market participants; and
2. An 'overhang' stemming from already signed loans that were still on bank balance sheets and which had not yet been syndicated.

Looking at the different market phases and interest rate scenarios over the past decade shows that SSLs recorded positive returns through the majority of the phases of the business cycle - see Figure 11 below.

Figure 11

SSL performance in different market phases

Thesis: SSL work in most interest rates scenarios

	Europe business cycle stage	Changes in ECB deposit facility rate (bps)	CS WstEur LL Eur Hdg Total Return (%)	US business cycle stage	Changes in Fed fund rate (bps)	CS LL Index Total Return (%)
2001	Recession	-150	1.5	Recession	-475	2.6
2002	Recovery	-50	-1.9	Recovery	-50	1.1
2003	Recovery	-25	12.2	Recovery	-25	11.0
2004	Expansion	-	6.9	Expansion	+175	5.6
2005	Expansion	+25	5.5	Expansion	+200	5.7
2006	Expansion	+125	6.0	Expansion	+100	7.3
2007	Expansion	+50	1.0	Expansion	-100	1.9
2008	Recession	-100	-30.2	Recession	-400 to -425	-28.8
2009	Recession	155	47.2	Recession/ Recovery	-	44.9
2010	Recovery	-	8.5	Recovery	-	10.0
2011	Recession	-	-0.6	Recovery	-	1.8
2012	Recession	-25	10.4	Recovery	-	9.4
2013	Recession	-	8.7	Recovery	-	6.2
2014	Recovery	-20	2.0	Recovery	-	2.1
2015	Recovery	-10	3.1	Recovery	-	-0.4
2016	Recovery	-10	6.5	Recovery/ Expansion	+50	9.9

Past performance is not a guide for future returns.

The recurring and fluctuating levels of economic activity that an economy experiences over a long period of time. The five stages of the business cycle are growth (expansion), peak, recession (contraction), trough and recovery. At one time, business cycles were thought to be extremely regular, with predictable durations, but today they are widely believed to be irregular, varying in frequency, magnitude and duration. Source: US Federal Reserve, Morningstar as at 31 December 2016, index performance based on Credit Suisse Leveraged Loan Index (in USD) and Credit Suisse Western European Leveraged Loan EUR Hedged Index (in EUR).

Historical volatility

Since the launch of the Credit Suisse loan indices, their annual volatility has averaged between 2% and 3% with the exception of the subprime crisis years (October 2008 to March 2010).

Historic volatility also compares favourably to selected European and US bond indices (investment grade) - see Figure 12 below. This can be partly explained by the floating rate nature of SSLs.

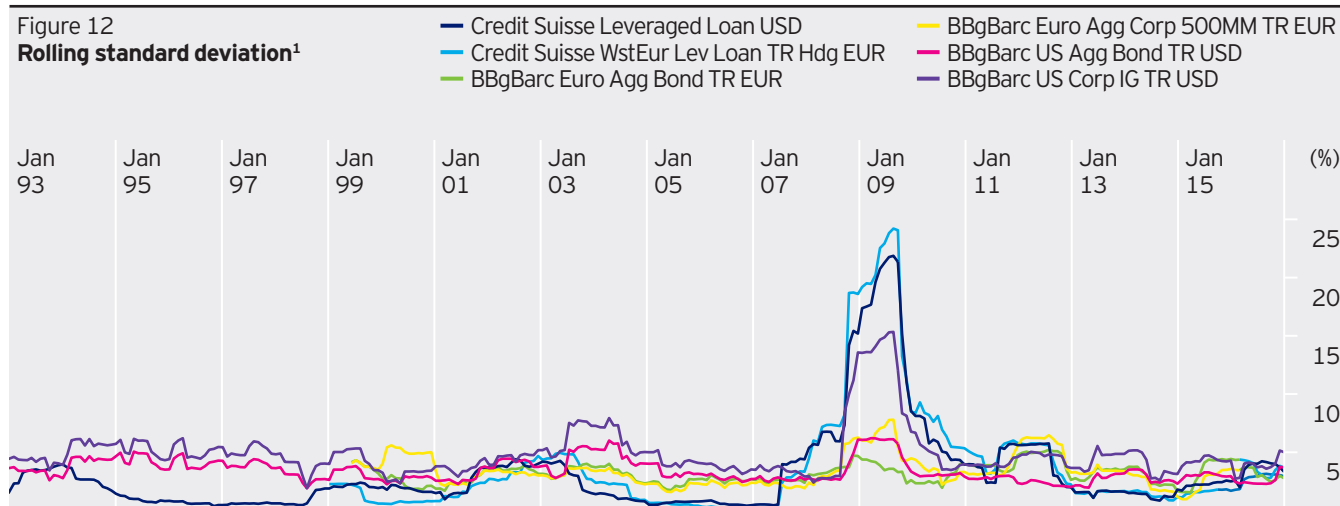
Potentially attractive diversification benefits within overall asset allocation

The diversification benefits of SSLs observed over the past years cover all traditional asset classes such as fixed income, equities and commodities.

As an example, as shown in Figure 13 below, SSLs have exhibited a moderate (post crisis) correlation to corporate bonds. At the same time, correlations to government bonds have been close to zero.

Figure 12

Rolling standard deviation¹



¹ Rolling window: 1 year, 1 month shift.

Source: Morningstar. Data as at 31 December 2016. In base currency.

Figure 13

Correlations with US and European loans post financial crisis

Post subprime crisis	1	2	3	4	5	6	7	8	9	10
1 Credit Suisse Leveraged Loan USD	1.00									
2 Credit Suisse WstEur Lev Loan TR Hdg EUR	0.90	1.00								
3 S&P 500 NR USD	0.59	0.56	1.00							
4 MSCI World NR USD	0.66	0.64	0.97	1.00						
5 MSCI Europe NR EUR	0.66	0.59	0.79	0.84	1.00					
6 BBgBarc Euro Agg Bond TR EUR	0.03	0.07	0.00	0.02	0.16	1.00				
7 BBgBarc Euro Agg Corp 500MM TR EUR	0.55	0.57	0.39	0.46	0.53	0.73	1.00			
8 BBgBarc US Agg Bond TR USD	0.04	0.08	-0.15	-0.09	-0.04	0.66	0.52	1.00		
9 BBgBarc US Corp IG TR USD	0.50	0.50	0.21	0.31	0.34	0.62	0.80	0.82	1.00	
10 Bloomberg Commodity TR USD	0.39	0.40	0.52	0.59	0.34	-0.20	0.14	-0.04	0.22	1.00

Post subprime crisis: April 2009 to December 2016.

US loans represented by Credit Suisse Leveraged Loan Index in USD, European Loans represented by Credit Suisse Leveraged Loan Index EUR Hedged in EUR Source: Morningstar. Monthly returns in base currency.

Conclusions

Senior secured loans offer attractive risk-adjusted and capital-adjusted returns potential, alongside a record of low volatility of investment returns (compared to traditional asset classes) and a potential source of diversification within an insurer's investment portfolio.

With the continuing challenges posed by the low yield environment and the new regulatory regime of Solvency II, SSLs remain an area worthy of further exploration by European Insurers.

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Alexandre Mincier is Global Head of Insurance Client Solutions Development with Invesco Global Investment Solutions. Prior to joining Invesco, Alexandre was Global CIO for HSBC Insurance overseeing a multi-asset portfolio of US\$120bn worldwide covering ALM and investments and was a member of the insurance Executive Committee. Between 2010 and 2015 Alexandre served as Global Head of Investment Solutions for AXA, covering Solvency II preparation from an asset perspective, portfolio and ALM optimisation, and market opportunities. In addition, he was responsible for the derivatives book and accounting of complex investment strategies. In addition to insurance investments, Alexandre has experience of investment banking front office, managing the Long Term ALM desk and responsibility for credit quantitative structuring for Dexia, and cross-asset derivatives as head of variable annuities hedging desk for AXA. Alexandre is an actuary and an associated member of the French Actuarial Institute. Alexandre holds a master's degree in Finance and Actuarial Science from ENSAE Paris, a master's degree in Telecommunications from ENST Paris, and a degree in engineering from the University of Bucharest.



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Kevin is responsible for the ongoing product development, structuring and marketing of investment funds for senior loans, high yield and alternative credit products within Invesco Fixed Income. Kevin joined Invesco's senior loan business in 1999 to establish its product management initiative and launch Invesco's first collateralized loan obligation. Since then, Kevin has been responsible for raising over \$40 billion in client solutions for retail and institutional clients globally. Prior to joining Invesco, Kevin was with Loan Pricing Corporation (Thomson Reuters LPC) as director of LPC's public data group. Kevin earned an M.B.A. in finance and business policy from the University of Chicago's Booth School of Business and a B.S. in accounting and economics from New York University's Stern School of Business.



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Ross leads the Insurance Investment & ALM services within Hymans Robertson's Life and Financial Services practice. He is a Life Actuary with over 14 years' experience across consulting, industry and investment banking. Ross has significant experience helping insurers implement aspects of Solvency II such as the Matching Adjustment, designing the outsourcing of insurance assets, and advising on hedging and capital management strategies. Ross was previously a Director in the Insurance ALM Advisory team at Royal Bank of Scotland.



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