

Solvency II Set to Reshape Asset Allocation and Capital Markets

European Insurers' EUR7trn Assets Face Reallocation

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Related Research

Other Research

- *Omnibus II*
- *QIS5 - Insurers Capital Solid*
- *The European Debt Investor Landscape*

Visit Fitch's Solvency II focus page at www.fitchratings.com/solveneyii to access all research, presentation slides and recordings of teleconferences

Summary

Fitch Ratings believes that Solvency II, the new regulatory regime for European insurers from 1 January 2013, is set to transform how insurers allocate their investments. European insurers are the largest investors in Europe's financial markets, holding EUR6.7trn of assets, including more than EUR3trn of government and corporate debt. Any reallocation of insurers' asset portfolios could therefore lead to fundamental shifts in demand and pricing for several asset classes.

The new rules will force insurers to value assets and liabilities at market value when determining their solvency position, and to hold explicit capital to reflect short-term volatility in the market value of assets. This means that insurers' asset allocations will be heavily influenced by Solvency II capital charges reflecting the price volatility of each asset class – a fundamental change from current asset allocations, which are driven by expected long-term investment returns.

If the current Solvency II proposals were fully implemented on 1 January 2013, Fitch believes that insurers would make significant changes to asset portfolios to optimise their capital positions. This would have ramifications for certain segments of the European debt markets. The main impacts would be a shift from long-term to shorter-term debt, an increase in the attractiveness of higher-rated corporate debt and government bonds, diversification of large asset holdings, an increase in the attractiveness of covered bonds, a preference for assets based on the long-term swap rate and a shift from short-dated paper to deposits.

Fitch expects to see better duration-matching with derivatives such as swaps and floors and an increase in downside protection to mitigate the impact of the new capital charges. Fitch also anticipates an increase in financial engineering to create Solvency II-friendly assets, such as reverse repos and structured notes, to optimise return on capital.

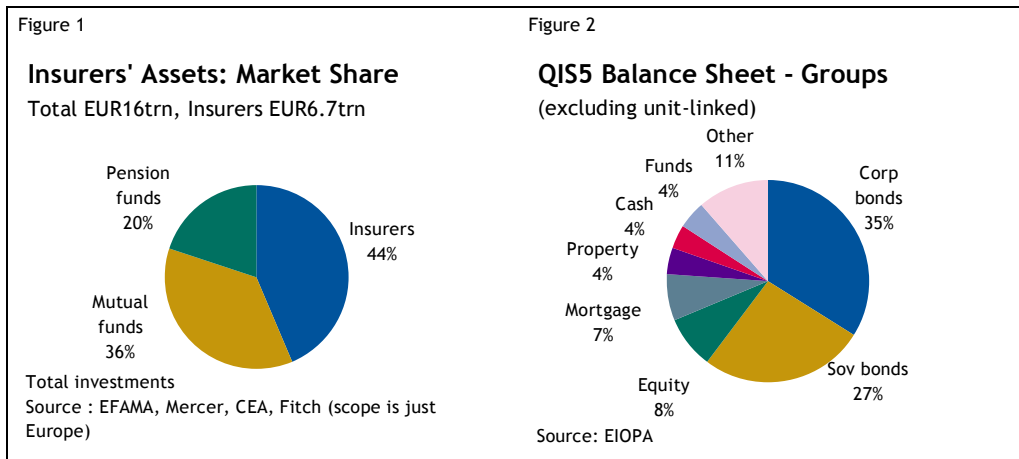
However, Fitch considers it unlikely that large-scale reallocations will happen in the short term, as transitional arrangements are likely to phase in the implementation of Solvency II over several years. Transitional arrangements may give insurers up to ten years to adapt their business and investment strategies to the new regime. The calibration of Solvency II is still under discussion, so the capital charges for asset risk and price volatility may not be as onerous as the current draft, mitigating the impact on investment markets. Nevertheless, many insurers are already anticipating the proposed changes and have started aligning investment strategies accordingly.

Insurers will also have the option of calculating their capital position using an internal model rather than the proposed standard formula. This could negate the impact of any capital requirements in the standard formula that do not accurately reflect the risk in insurers' portfolios.

European insurers are the largest investors in Europe, with EUR7trn of assets

The Importance of European Insurers to Financial Markets

The importance of European insurers to the financial markets is clear from the scale of their investments. With assets totalling some EUR7trn, European insurers are the largest investors in Europe (see Figure 1). Any significant reallocation of these investments could lead to shifts in demand and pricing for certain asset classes and the availability of funding for investment projects.



For more information on other investors in the European financial and debt markets, see Fitch's report *The European Debt Investor Landscape*, published 11 May 2011.

Historically, insurers have been large investors in the long-term debt markets (see Figure 2) as they view long-dated debt as a good match for their long-term liabilities. They currently hold EUR3.7trn of debt, and are the largest investors in the European debt markets, providing funding for businesses ranging from banking to infrastructure. However, this could be set to change under Solvency II.

Annex A contains more information on insurers' assets split by country, and debt holdings by rating level.

Solvency II Heralds New Investment Philosophy for Insurers

Solvency II will fundamentally change how insurers consider asset risk. Under the current regime, Solvency I, insurers have to hold a fixed margin in addition to their reserves to cover all risks. Solvency II changes this to a risk-sensitive measure, with asset-side risk being captured explicitly for the first time in many countries.

Solvency II risk charges are driven by the risk of asset-value fluctuations over one year, rather than by the likely recovery value at the end of the liability horizon. Assets and liabilities will also move from a fixed book-value style valuation to a market-consistent valuation. These two changes will force insurers to:

- Consider the risk to their reported solvency position of short-term mark-to-market fluctuations in asset values;
- Hold regulatory capital to cover the impact of a once-in-200-year event in the asset markets.

As a result, insurers will need to reassess their asset allocations and expected investment returns in light of the extra capital they will now have to hold under Solvency II.

Asset Charges

Under Solvency II, capital charges on assets are based on the impact on the insurer's net asset value of a specified set of asset stresses. For non-life insurers

Insurers with assets held at book value for solvency purposes will move to market value

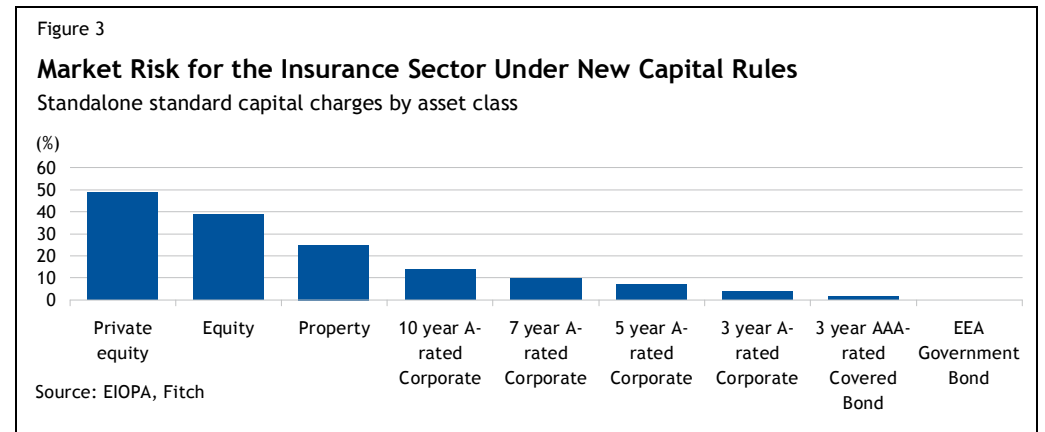
Insurers will change the way they consider risk from a long-term horizon to a one-year horizon

and reinsurers this is fairly simple, and typically close to the tax-adjusted change in the asset value. However, for life insurers the relationship is more complex because of profit-sharing mechanisms under which insurers share investment profits and losses with their policyholders.

There are eight asset-stress categories in the Solvency II standard formula: equity, property, currency, concentration, (credit) spread, counterparty, interest rate and illiquidity. Most asset classes will be covered by just one stress and the concentration charge. However, corporate bonds will be stressed in the interest rate and (credit) spread module. Annex B has more detail on the level of the stresses and how they are calculated.

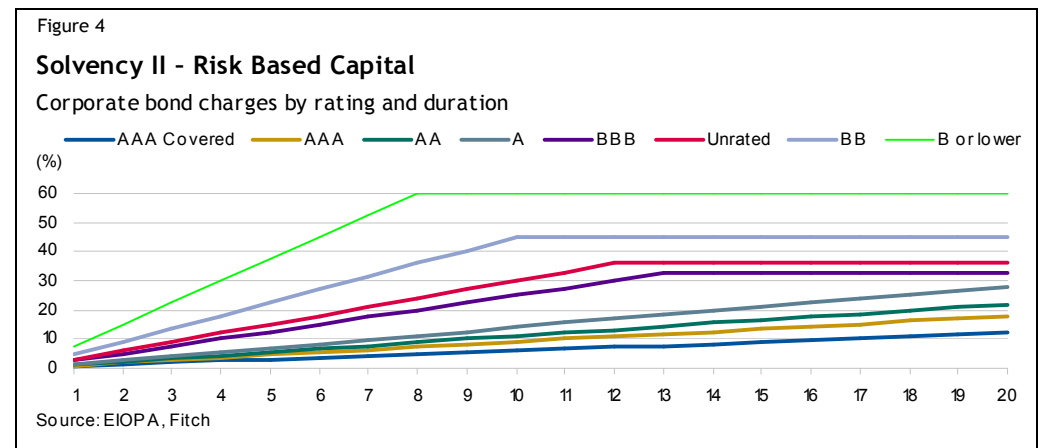
Equity and long-tailed bonds have the highest capital charges under Solvency II

Figure 3 shows typical capital charges under the standard formula. What can be seen at a glance is that capital requirements are higher on equity, property and long-dated bonds. The reason is that prices of these instruments are more volatile, so insurers have to hold more capital to cover the risk of changes in price.



Capital charges on bonds increase with duration

Figure 4 shows how the Solvency II charges on corporate bonds increase with longer durations and lower rating levels. The charges are set based on the historical volatility of appropriate indices. Annex C has details on how the charges compare to indices.



For example, insurers will face a charge in excess of 30% on 15-year 'BBB'-rated bonds, and 60% on eight-year 'B'-rated bonds. This gives an indication of the considerable impact of Solvency II on insurers' holdings of longer-duration or lower-rated corporate debt. For insurers to invest in long-duration or low-rated bonds, the returns must be high enough to offset the significant cost of capital that will be required by Solvency II. Fitch believes that insurers will fundamentally rethink their allocation strategies to optimise returns taking into account these new capital requirements.

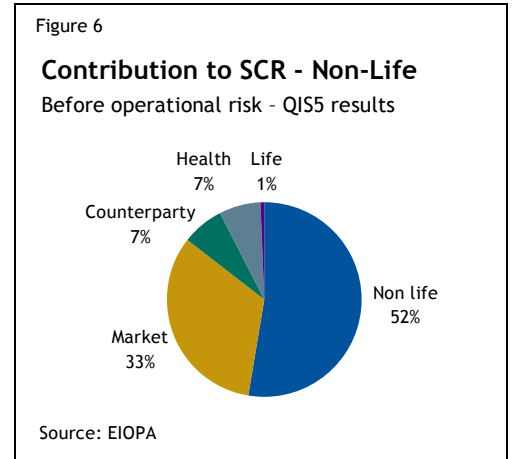
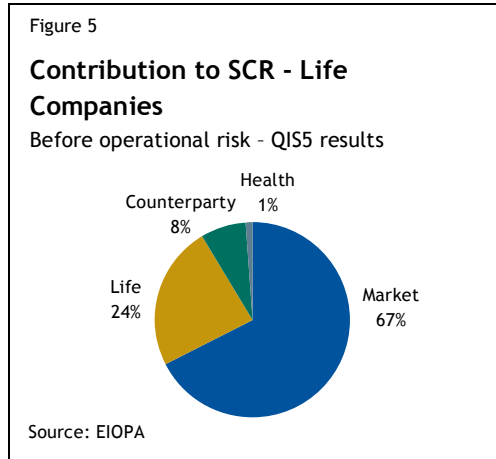
Market risk accounts for 67% of life companies' diversified SCR

Insurers to Cut Market Risk Under Solvency II

When Solvency II takes effect, insurers will look to optimise their capital positions under the new rules. Fitch expects insurers to consider restructuring, changing product design, implementing reinsurance and changing asset strategies.

So how important a lever will cutting asset risk be?

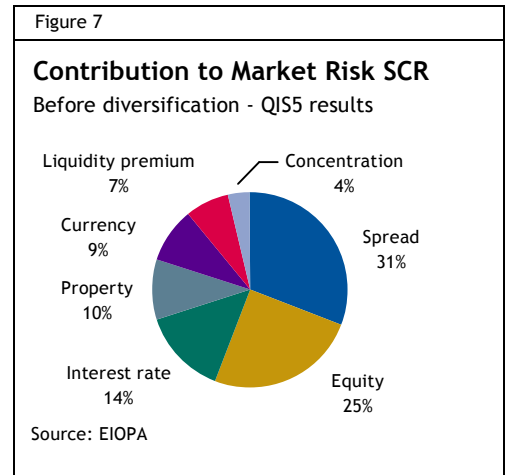
Figures 5 and 6 illustrate that market risk dominates the solvency capital requirement (SCR) for life insurers, who hold 80% of the European insurance industry's assets, and is also important for non-life insurers.



Once insurers focus on market risk, the question is which asset types consume the most capital. Figure 7 shows the results on the latest quantitative impact study (QIS5) based on the Solvency II draft regulations.

Asset allocation is a major lever to optimise capital consumption

Under QIS5, equity and spread risk accounted for more than half of European insurers' aggregate SCR before allowance for diversification. The equity contribution reflects the high charge on this asset class whereas the high capital for spread is down to the large debt holdings on insurers' balance sheets. Capital requirements for interest-rate risk were moderate, reflecting generally adequate matching of assets and liabilities by insurers and the limited scope of the standard formula stress test for interest rate.



Asset Allocation has Striking Impact on Solvency II Capital Requirements

The examples in Figure 8 show that even small changes in asset allocation can have a significant impact on an insurer's Solvency II capital requirements.

An insurer with a fairly typical asset allocation for a traditional (non-linked) European life insurance portfolio of 45% government bonds, 45% 'A'-rated bonds (duration four years), 7% equity and 3% property would be required to hold capital in respect of asset risk amounting to 6.3% of the market value of the assets (ignoring the mitigating effects of profit-sharing and diversification). However, switching 8% extra into equities and increasing the mismatch of assets and liabilities from one year to two years leads to capital requirements about 50% higher. Alternatively, switching the 'A'-rated bonds into 'BBB'-rated bonds and increasing

Market risk capital is highly sensitive to changes in asset allocation

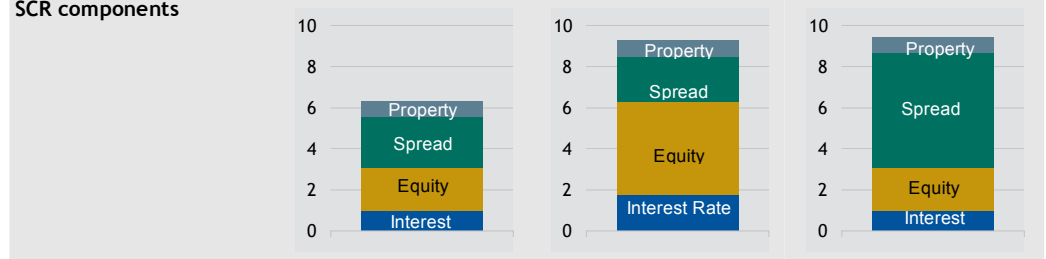
the corporate bond duration by just one year would also require about 50% more capital.

Figure 8

Asset-Side Solvency Capital Requirement for a Traditional Life Insurer
(based on a typical asset mix)

	Typical asset mix (1)	More equity, increased mismatch (2)	Lower-rated longer corps (3)
Government bonds (%)	45	42	45
Corporate bonds (%)	45	40	45
Corp. rating	'A'-rated	'A'-rated	'BBB'-rated
Corp. duration (yrs)	4	4	5
Equity (%)	7	15	7
Property (%)	3	3	3
Duration mismatch	1	2	1
SCR^a (%)	6.34	9.26	9.45
Increase in SCR on (1) (%)		46	49

SCR components



^a Before sharing and diversification
Source: Fitch

Asset allocations therefore look set to make a huge difference to the amount of capital required under Solvency II. Fitch expects asset reallocation to be used as a fairly simple lever to reduce capital requirements and improve or optimise return on capital. The questions are:

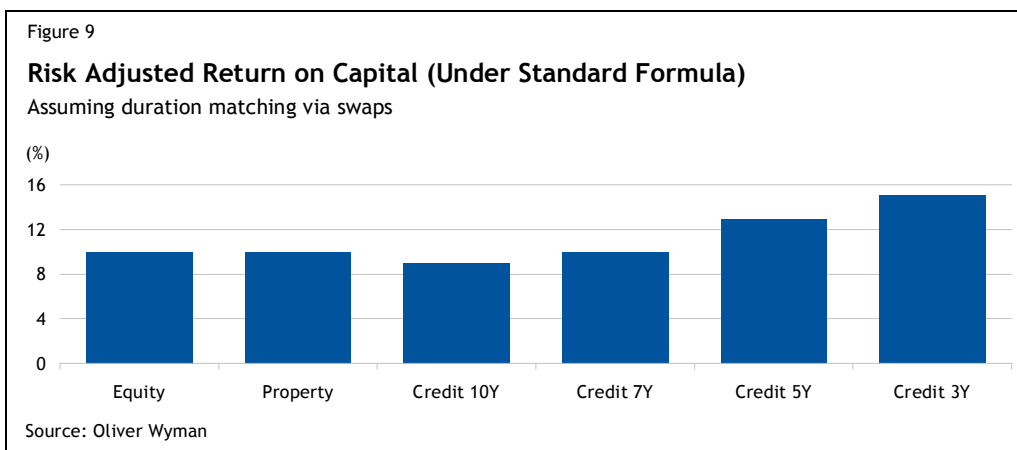
- What changes will insurers make?
- Of what magnitude will the changes be?
- Over what time period will changes occur?

Impact on asset allocation

Risk/Return Optimisation

As mentioned above, it is necessary to consider the expected returns on capital, not just the pure level of the capital charges. Figure 9 shows some examples of risk-adjusted returns on capital based on the Solvency II requirements that applied in QIS5.

Based on these risk-adjusted returns, it is possible to analyse the likely shifts that insurers will make under the new regime.



Corporate Bonds

As illustrated by Figure 9, the capital charges on long-dated corporates are extremely onerous. This means that the yields available, after the cost of holding Solvency II capital requirements, are no longer likely to be attractive to insurers at current prices. This makes it likely that insurers will switch out of long-dated bonds into shorter-dated bonds for better risk-adjusted returns after the cost of holding Solvency II capital requirements, and that yields on long-dated corporates will rise as demand drops.

Shorter dated corporate bonds may be more favoured under Solvency II

As shorter asset durations will require less capital, Fitch expects a steepening of the corporate yield curve for each rating level. This equates to an increase in the cost of issuing longer-dated debt.

This is likely to happen over time, with insurers allowing their bond portfolios to mature to limit trading costs and losses on redemption. However, it could make economic sense for insurers to redeem bonds with unrealised credit gains immediately.

Lower-rated bonds, especially those below investment grade, also carry heavy capital charges under Solvency II. However, as around 70% of insurers' bonds are rated above 'A', Fitch does not expect large-scale moves up the rating scale.

Rather than the negative impacts of Solvency II being felt across the bond market, Fitch expects some segments to be harder hit, while others benefit. In the UK, non-profit annuities are typically backed by long-dated lower-rated bonds. The combined pressure to shorten duration and move up the credit curve could therefore lead to a fundamental shift in the asset portfolios backing UK annuities. These portfolios account for a material proportion of the long-dated lower-rated sterling corporate bond market.

Figure 10

Comparison of Bond Returns under Solvency II

(Taking into account cost of capital)

Issuer (Dated)	Duration	Rating Category	Standalone capital charge ^a - standard formula (%)	Spread over swap (bps)	Return on equity (%)
Tesco (2014)	2.5	'A'	3.5% (2 ^a , 1.4%)	50	14.0
BAA (2041)	14	'A'	19.6% (14 ^a , 1.4%)	200	10.2
Deutsche Bank covered bond (2018)	6	'AAA'	3.6% (6 ^a , 0.6%)	10	7.8

^a assuming duration matching using swaps
Source: Bloomberg, Fitch

Demand for long-dated, higher-rated debt issued by infrastructure companies and utilities has typically been supported by insurance companies. However, the returns on these assets compared to others when taking account of the capital that will have to be held under Solvency II means that they are no longer likely to be attractive to insurers. Figure 10 shows a comparison of bond returns after the cost of meeting Solvency II capital requirements for an infrastructure bond (BAA), a shorter-dated corporate bond (Tesco) and a covered bond. While its spread looks attractive on a relative basis, it is clear that the infrastructure bond would not return as much to insurers as the retailer bond when taking into account the Solvency II capital charge. However, this may be less of an issue for insurers using internal models for Solvency II (see later).

Banks

There has been considerable focus on the impact of Solvency II on bank debt issues. Most bank debt has a duration of three to five years. If priced right, this could be relatively attractive for insurers under Solvency II. However, shorter-dated paper is likely to be less attractive for insurers compared to deposits, which could put pressure on short-dated funding. This is because the capital charge on deposits would be calculated under the Solvency II counterparty default module. The counterparty default module charge is based on the rating of the counterparty (usually high if it is a bank) and the expected loss on default. The key difference between the spread module and the counterparty default module is that the counterparty default module does not have to take into account market price volatility.

Covered Bonds

AAA covered bonds have a lower capital charge than other corporates, as they have collateral backing them. Covered bonds can also be long-dated and with yields based on the swap rate, which can make them attractive for matching purposes. However, the charge is relatively punitive compared with the risk and returns currently available, making them less attractive than other bonds on a pure return-on-capital basis under the (credit) spread module. This can be seen from Figure 10.

Securitised loans to banks, which are in effect like non-traded covered bonds, may be treated under the counterparty default module. As with deposits, this is likely to be favourable. For covered bonds, credit would be given to the collateral backing the loan under the counterparty default module, which would reduce the charge.

As banks are currently under pressure to increase funding, covered-bond pricing could become a little higher, reflecting the reduction in demand. However, these assets are still likely to remain attractive to insurers, who hold a significant proportion of them, despite the lower capital-adjusted return due to their very safe nature. Over the past 18 months, Fitch has seen an uptick in demand by insurers in some regions for covered bonds, with more investments being made as insurers seek out instruments with higher security.

Longer dated infrastructure bonds may no longer be attractive

Covered bonds capital adjusted return may be low

EEA government bonds do not carry a capital charge

The counterparty default module may give comparatively favourable treatment compared to the spread module

Risk/return optimisations such as debt-financed SPVs or repo transactions with banks seeking liquidity are likely

Regardless of Solvency II, insurers are not likely to make large investments in contingent convertible securities (CoCos) as they did in hybrids, because CoCos' uncertain pay-off makes them unsuitable for matching insurance liabilities.

Government Bonds

European Economic Area (EEA) government bonds escape a charge under the Solvency II standard formula, regardless of rating level. This means the returns, especially on lower-rated sovereign bonds, could be very attractive to insurers under the new regime. Sovereign assets are often available at longer durations, which makes them possible matching assets for long-dated liabilities. Insurers could also lock into the spread by using derivatives. Fitch expects demand for long-dated sovereigns to increase.

Non-EEA government bonds rated below 'AA' do not escape a charge. They bear the same capital requirements as corporates, with similar trends likely as a consequence. However, European insurers' holdings are likely to be negligible.

Loans and Deposits

Loans and deposits for which a reliable market price cannot be determined are not charged under the spread module, as corporates are, but under the counterparty risk module. This may well lead to arbitrage between buying traded debt and making loans, with the loans likely to get favourable treatment under Solvency II. This is because loan charges are based on a probability of default, and loss given default, rather than on market-price volatility.

Non-tradable loans are likely to require less capital to be held for the same perceived risk and return. This module more closely mirrors the buy-and-hold book-value strategy that insurers pursue today. Insurers that already have established portfolios of this type could have a competitive advantage under Solvency II. Fitch sees it as likely that other insurers will begin to develop portfolios of this type.

Property

Property is a long-term investment which is attractive to insurers as an inflation-hedged asset that delivers frequent and relatively reliable rental payments. Under Solvency II, the capital charge of 25% is likely to reduce the attractiveness of this asset, and Fitch would expect insurers to reduce any large holdings of property. One way to retain property exposure in a Solvency II-friendly way is to make loans to property companies.

Equity

Following derisking over the past seven years, accelerated by the financial crisis, European insurers' equity holdings are low, totalling only 6% of investment portfolios. As the Solvency II equity charge is high, it is likely that any insurers with significant holdings will likely reallocate. However, Fitch views large moves across the sector out of equity as unlikely.

Equity is the only submodule that had a counter-cyclical adjustment in QIS5, with a possible reduction in the charge of up to 10% following falls in stock markets. However, in extreme scenarios, this is not likely to mitigate pro-cyclical moves out of equity. When markets fall, solvency ratios typically decline and insurers take action to stabilise their solvency positions.

Some types of business may get special treatment under the equity module. Equity backing long-term pensions business gets a lower charge of 22%. This could lead to arbitrage with an insurer allocating equity to types of business where the charge is lower.

Alternatives

Alternative investments get a fixed 49% capital charge under the standard formula if it is not possible to "look through" to the underlying assets and apply the relevant charges. Given that the capital charge is independent of the actual risk

level, insurers will be incentivised to hold higher-risk alternative assets. For example, an alternative asset like a hedge fund earning a return over swap 25% higher than the typical equity premium would generate enough return on equity for it to be attractive to insurers in place of equity.

To remain attractive, lower-risk alternative investments (e.g., market neutral strategies) will need to provide full transparency on the underlying positions. However, the treatment of dynamic hedging is still unclear under the standard formula, and the cost of reporting might exceed the economic benefits.

It is worth noting that structured finance cannot be used for regulatory arbitrage, as Solvency II imposes a look-through such that the charge can never be lower than on the underlying asset (see Annex B). Since the risk, and consequently return, on structured products is often lower, these investments may not be attractive under Solvency II.

Reverse Repos

Another possible option open to insurers to generate extra return is to set up reverse repos. The insurer buys government bonds and then lends them to a bank, fully collateralised with higher-return assets. The insurer then benefits from the higher return, while the bank is able to use the government bonds to generate liquidity. The capital charge is minimal for the insurer, since it carries only the market risk on the government bonds and only a counterparty risk charge, which will be low due to the full collateralisation.

Large Holdings

Large holdings are subject to charges under Solvency II under the concentration risk module. Many insurers hold large investments, which they may dilute to avoid this charge. The Solvency II treatment of participations may also prove onerous.

Other Financial Engineering

Less obvious optimisations are also expected, but may not be accepted by regulators. An example is debt-financed special purpose vehicles (SPVs). An SPV can have the same economic risk as the underlying assets, such as equity, but be charged under the (credit) spread or counterparty default module, as it is structured to issue debt instruments.

Fitch expects that there will be many solutions designed to arbitrage the charges under the standard formula.

Time Frame

The first draft of Omnibus II, the latest changes to the high-level principles published at the start of 2011, made provision for transitional arrangements of up to ten years for most parts of Solvency II. Fitch expects that there will be a significant period of transition allowed for, and so expects any changes in asset allocation to materialise slowly, over at least five years.

In June 2011, a further amendment to Omnibus II was released proposing a five-year transitional arrangement for the determination of the concentration, equity and spread modules and a seven-year period for the risk-free yield curve used to value some illiquid products. The allowance starts at 100% and tapers to 0% over the transitional period. Fitch views this as supporting its opinion that there will be a significant transitional period following the initial implementation of Solvency II in January 2013.

Other Factors That Will Affect Insurers' Decisions

The Solvency II capital requirements for asset risk are calculated as the change in the value of the assets less the change in the liabilities under the stress, i.e., the change in net asset value. This takes into account some risk-mitigation measures. Diversification credit is then given as a reduction to capital requirements based on the assumption that it is unlikely that all the risks will materialise at the same time.

Solvency II will come into force in 2013 but there will be up to ten years of transitional arrangements

- SCR is not just the sum of individual contributions
- Diversification, hedging, matching and loss sharing typically have material impacts on the

So asset risks cannot be assessed in isolation.

To factor in the liability-side balance sheet derisking and diversification, there are four significant points for insurers to consider to optimise their capital positions under Solvency II:

- Derisking using hedging;
- Better duration-matching;
- Changing product design – sharing investment risks with policyholders; and
- Increasing diversification.

Derisking by Hedging

Solvency II is designed to reflect asset risk in capital requirements, and to reflect the impact on the capital position when asset values actually fall. Hedges giving downside protection can be used both to mitigate capital charges, and to reduce balance sheet volatility. Fitch expects increased use of option hedging strategies (e.g., out-of-the-money put options or call spreads), convertibles, collars, guaranteed structures, guarantee matching and other option-replicating strategies.

An advantage of hedging is that the insurer can retain some upside potential. However, there is a cost to hedging. A mass move by insurers to hedge could raise hedging prices and increase implied volatility in the market.

Rolling hedges – under which the insurer renews the same hedge when it expires – get credit in the standard formula. However, more complicated dynamic strategies may not. Dynamic strategies have not been completely successful in the past, and can add to the pro-cyclicality of a regime during a downturn.

Duration Matching

The Solvency II interest-rate module reflects potential changes in both assets and liabilities. Duration-matching of assets to liabilities can therefore mitigate Solvency II capital requirements.

When interest rates rise (or fall), bond prices typically fall (or rise). There is a similar effect on the liability side of the balance sheet, as cashflows are discounted with the swap curve (plus a margin). If the insurer has closely matched durations, then the move in the assets and liabilities will be very close, and the insurer will not incur a high capital charge. However, if the duration mismatch is large, then the insurer will incur a larger capital charge. To mitigate this, Fitch believes that insurers will try to more closely match assets and liability durations as a consequence of Solvency II.

Duration-matching is likely to be done with long-dated government bonds or swaps combined with short-dated higher-rated corporates. This avoids the high charges on long-dated corporates. Insurers can also use swaptions, caps and floors and hedge non-parallel shifts in the yield curve (convexity), provided they have the expertise.

In certain markets, government bond yields exceed swap rates, which makes investing in such assets a profitable strategy. The increased use of interest-rate derivatives and swaps by European insurers could maintain pressure on long-term swap rates and increase the cost of hedging due to higher interest-rate implied volatility.

Product Design

For many life-insurance policies, the asset risk can be shared with the policyholder. Fitch considers it likely that insurers will move towards products with lower investment guarantees and more flexibility to share losses with policyholders, and apply higher charges for guarantees on traditional risk products. Fitch sees a distinction between products that are essential, like motor and life insurance, and products that are discretionary, such as savings, with the providers of the latter less able to pass on cost increases to policyholders.

Hedging downside risk can reduce SCR

Duration matching and diversification will be encouraged under Solvency II

Diversification

Diversification is rewarded under Solvency II on the asset and liability side. In the QIS5 results, diversification and sharing reduced the total unadjusted risk capital requirement under the standard formula by 56% and, within the market component of the SCR, diversification alone brought a 40% reduction. Fitch expects insurers to move to increase diversification that is recognised for capital purposes.

Annex D shows how the impact of diversification is calculated.

What Could Alter These Conclusions?

Solvency II is a moving feast, and nothing is yet set in stone. The final Level II draft is not expected until later in 2011. Bearing that in mind, Fitch sees the following three considerations as most likely to change its conclusions:

- Changes to the structure or calibration (i.e., risk charges) of Solvency II;
- Length and scope of transitional arrangements; and
- The impact of internal models.

Changes to the Structure or Calibration of Solvency II

The draft Level II text is due out during the second half of 2011, and should be adopted in early 2012. Any changes to the relative levels of the charges, correlations, the structure of the modules or the allowance for risk mitigation would change the conclusions drawn in this report. For example, reductions could be made to the spread risk charges for longer-dated bonds.

Fitch anticipates some changes to the standard formula with the overall impact most likely to be beneficial for a typical insurer.

Length and Scope of Transitional Arrangements

The longer and wider the scope of the transitional arrangements, the longer insurers will have to adapt to Solvency II, and the less the immediate impact on asset markets. Insurers will be able to change strategies, redesign products and adapt pricing to the new Solvency II world, while asset markets, banks and asset managers can adapt their offerings.

The Impact of Internal Models

Solvency II offers two ways to calculate solvency capital requirements:

- The standard formula;
- Insurers' own internal models.

The information used in this report is based on the standard formula. Under QIS5, using internal models provided on average 20% capital relief to groups and large insurers, but very little to smaller companies.

Fitch sees it as likely that internal models will offer capital relief on the asset side stresses in only a few areas. For example:

- Continental European property, for which the standard formula is typically higher than a stress implied by the volatility of indices; and
- Certain structured products, for which the pool of underlying instruments is diversified, data is available and granular and the transaction credit risk is lower than for the underlying assets.

Fitch sees equity and spread as calibrated in line with the market average volatility. An insurer's internal model could still provide relief if the insurer were holding assets that were not in line with the index used to set the charge. See Annex C for more details.

The final specifications for Solvency II are still uncertain

Where internal models are likely to give most capital reduction is where there are complicated risk mitigation strategies or group structures, complex risk-sharing with policyholders or above-average geographical diversification.

Internal models can also increase capital requirements in some cases. Instances that Fitch sees as likely are incorporating an equity volatility stress in the case of life insurers writing unhedged guaranteed products backed by equities, and interest-rate risk stresses that take into account changes in the shape of the yield curve.

Capital Surplus Under Final Solvency II Calibrations

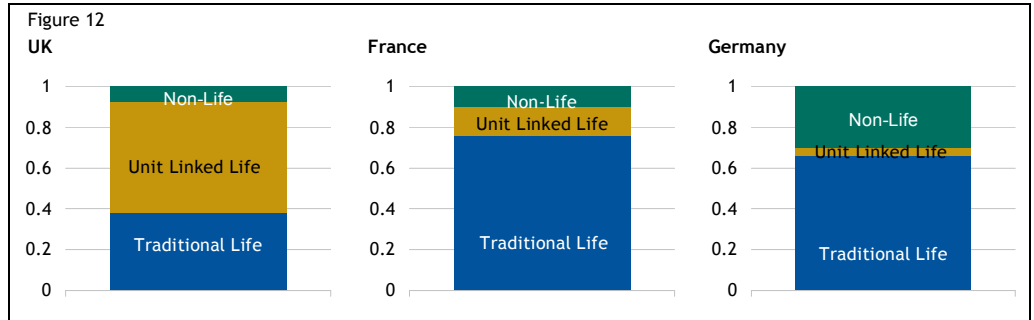
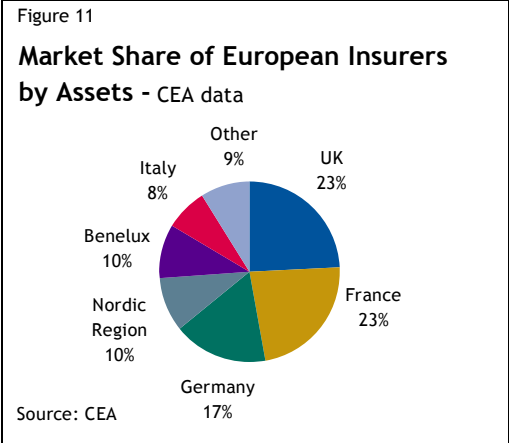
Insurers' regulatory capital positions will depend on how Solvency II is ultimately calibrated. If regulatory capital headroom is tight, insurers may manage their business and their balance sheets very much driven by Solvency II. However, for any companies with large surplus capital relative to the ultimate Solvency II requirements, other factors may have more influence over capital management e.g., rating agency metrics.

The final specifications for Solvency II are still uncertain

Annex A: Asset Split by Country and Bond Rating Split

Figure 11 shows a breakdown of the European insurance industry by country (based on the amounts of assets they hold). The UK, France and Germany account for about 75% of the total. However, there is a marked difference in the products offered and assets invested in.

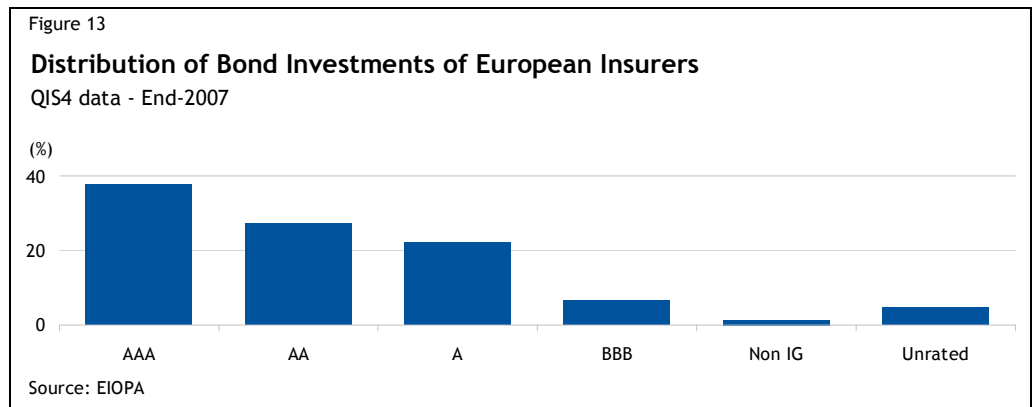
Germany and France have large portfolios of traditional life insurance products (see Figure 12). These are typically backed by high-grade corporates or sovereigns and so will see some shortening of duration but not large shifts in asset allocations when Solvency II is fully in force. They may also start to employ more downside hedging which has not traditionally been used extensively in these markets.



The UK stands out as having large amounts of unit-linked products, which are unlikely to be directly affected by Solvency II. With-profits products are likely to be less affected in the UK due to the realistic balance-sheet regime already in place, which has market values as its basis. This drove companies in the UK to significantly derisk and to hedge guarantees, over the last five to seven years. Non-profit business in the UK tends to be backed by bonds rated 'A' to 'BBB' on average, with higher exposure to mortgage-backed securities (MBS) and residential mortgage-backed securities (RMBS). These portfolios could be reallocated into government bonds and higher-rated shorter corporates, with durations matched by swaps.

Non-life companies hold over EUR1trn of assets. These tend to be in shorter-dated more liquid asset classes. Likely impacts on non-life insurers would be derisking across the board, bar small strategic holdings, and a move from short dated bonds to deposits.

Figure 13 shows the already high quality of European insurers' bonds, meaning that duration is, on average, a bigger potential capital lever than credit quality.



Annex B:

Figure 14

Asset Stresses under Standard Formula

Asset class	Stress	Standard formula
EEA government bonds	None	0% for European state, multilateral bank or international organisation or ECB, some capital charge for non-EEA governments
Corporate debt	Fall in market value of bonds due to increase in credit spreads	Capital charge equates modified duration time a factor function of rating Ex : 5Y 'BBB' gets 12.5%, 15Y 'AA' gets 16.5%
Covered bonds	Covered bonds	33% haircut from 'AAA' corporate capital charge Ex: 6% for 10Y 'AAA' covered bonds
Credit derivatives (TRS, CDS, CLN)	Fall in market value due to increase in credit spreads	If not used for hedging - absolute spread shocks on upside from 130 to 1620bps and 75% tightening on downside
Non security credit exposure (e.g. deposits, loans)	A charge based on expected loss	For type 1 counterparty exposure (concentrated and rated): function of rating and loss given default For type 2 counterparty exposure (diversified and unrated): 15% (90% if due for more than 3 months) - applied to unsecured part (ie. exposure minus risk adjusted value of collateral) - simplification =unsecured exposure=15 or 25% of exposure
Structured finance	Fall in market value due to increase in credit spreads	Highest of either shock on structured product (similar to corporate bond level in IG segment and higher for non IG tranches) or underlying assets taking attachment/detachment points into account Arbitrage is not possible any longer for CDOs Non rated pools such as MBS are heavily penalised under look-through approach Ex : 25-100 'AAA' CLO - 8Y maturities - invested in 'B' assets = $(57.8\% * (1 - \text{recovery}) - 25) / (100 - 25) = 25\%$
Equity	A fall in market value of equity-type exposures	39% for OECD and 49% otherwise with symmetric adjustment (9% currently, bringing charge to 30 and 40%) 0.75 correlation assumed between global and other equity 22% shock if backs occupational/retirement provision with above 12Y duration Participation may have a favourable treatment
Property	A fall in market value of real-estate exposures	25% if direct investment in property or in company that invest in property - unclear re leverage Investment in companies engaged in RE management or project development are treated under equity module No reduction for long term pension like equity
Alternative investments		Treated as other equity (49% charge) for emerging market equity, non-listed equity, HF, investments in SPV
Currency Concentration	Change in currency rates Charge for relatively large holdings	Reduction in relative value of 25% Depends on asset
Interest rate Illiquidity	Shift in the yield curve	Up to 70bps up or down depending on term A reduction in the credit for illiquidity premium

Source: Fitch

Annex C: Deviations of Observed Volatility from Standard Charges

Historical volatility vs charges

Figure 15

Comparison Standard Formula and Historical Market Stresses

Module	Stress under Standard Formula	Historical 0.5% one year Value at Risk	Comment
Equity Global	30-39%	42.1% MSCI World	The base equity charge is in line with experience
Equity others	40-49%	68.7% LPX50 (private equity) 59.5% S&P GSCI (commodity) 23.1% HFRX Global (hedge funds) 63.8% MSCI EM BRIC (emerging markets)	The "other" equity charge is also in line on average. However, the charge may be over penal for hedge funds which have hedging embedded while assets following other indices may get under charged.
Spread	0.9% to 7.5% per unit of modified duration For ex, 12.5% shock for BBB bond with 5 duration	14% price drawdown from Oct 2007 to Oct 2008 for Merrill Lynch 'BBB' Euro corporate (5 duration)	No difference between sectors
Property	25%	25.7% IPD UK All property	The stress is in line with UK property volatility. However, the continental European market is historically less volatile and implies a stress of about 12-15%

Source: EIOPA, Fitch

Correlations

The impact of correlation is most important for the asset classes that contribute the most to the market component of the SCR, i.e., equity and spread. The correlation between the two is assumed at 0.75 under the standard formula, based on historical experience, and is likely to be calibrated similarly in companies' internal models. Any difference in correlation levels is likely to have a moderate impact on the market SCR, except in case of highly diversified asset bases (notably by geography).

Annex D: Incorporating correlations

Correlations are incorporated at two levels:

In the equity sub-module, the capital requirement for equity risk is derived by combining the capital requirements for the global equity and other equity categories using a correlation matrix as follows:

$$MKT_{eq} = \sqrt{\sum_{rxc} CorrIndex^{rxc} \cdot Mkt_r \cdot Mkt_c}$$

CorrIndex	Global	Other
Global	1	
Other	0.75	1

In the market risk module, the market sub-risks should be combined to an overall market SCR using a correlation matrix as follows:

$$SCR_{mkt} = \max \left(\frac{\sqrt{\sum_{rxc} CorrMktUp_{r,c} \cdot Mkt_{up,r} \cdot Mkt_{up,c}}}{\sqrt{\sum_{rxc} CorrMktDown_{r,c} \cdot Mkt_{down,r} \cdot Mkt_{down,c}}} \right)$$

Where

- $CorrMktUp_{r,c}$ = the entities of the correlation matrix *CorrMktUP*
- $Mkt_{up,r}, Mkt_{up,c}$ = Capital requirements for the individual market risks under the interest rate up stress according to the rows and columns of the correlation matrix *CorrMktUP*
- $CorrMktDown_{r,c}$ = the entries of the correlation matrix *CorrMktDown*
- $Mkt_{down,r}, Mkt_{down,c}$ = capital requirements for the individual market risks under the interest rate stresses according to the rows and columns of the correlation matrix *CorrMktDown*

Where interest rates are down:

CorrMktDown	Interest	Equity	Property	Spread	Currency	Concentration	Illiquidity premium
Interest	1						
Equity	0.5	1					
Property	0.5	0.75	1				
Spread	0.5	0.75	0.5	1			
Currency	0.25	0.25	0.25	0.25	1		
Concentration	0	0	0	0	0	1	
Illiquidity premium	0	0	0	-0.5	0	0	1

Where interest rates are up:

CorrMktUp	Interest	Equity	Property	Spread	Currency	Concentration	Illiquidity premium
Interest	1						
Equity	0	1					
Property	0	0.75	1				
Spread	0	0.75	0.5	1			
Currency	0.25	0.25	0.25	0.25	1		
Concentration	0	0	0	0	0	1	
Illiquidity premium	0	0	0	-0.5	0	0	1

The higher of the two SCRs is considered.

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