

QIS4: significant improvements, but the main risk for life insurance is not taken into account in the standard formula

EDHEC's answer to the consultation on the specifications of the fourth quantitative impact survey

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Abstract

In its response to the CEIOPS consultation on the preliminary technical specifications for the fourth quantitative impact survey (QIS4), EDHEC argues that the main risk faced by life insurance companies is not taken into account in the standard formula. This risk is that following market (or other significant) losses, a wave of surrenders leaves shareholders bearing the entirety of losses. This is the phenomenon that led to such bankruptcies as that of Executive Life, where losses made public by rating agencies and the media triggered a wave of surrenders and bankruptcy—even though the losses alone were thought bearable for some time. In this paper, we argue that such a combined risk can be taken into account only in a scenario in which high levels of surrenders are combined with market losses, and that market losses alone merely added to surrenders alone may not suggest any need for shareholder capital.

We also argue that QIS4 has resulted in substantial practical improvements to the standard formula—in particular, guidelines as well as proxies that will allow the participation of smaller companies or of less strategic lines of business. These improvements are in line with our past recommendations for clear guidelines, as in previous works we pointed out that diverging interpretations of the necessary calculations could lead to significant differences in capital requirements as well as to an inability to compare results across insurance companies and countries.

The recognition of geographical diversification within life and non-life lines of business is likewise a great improvement.

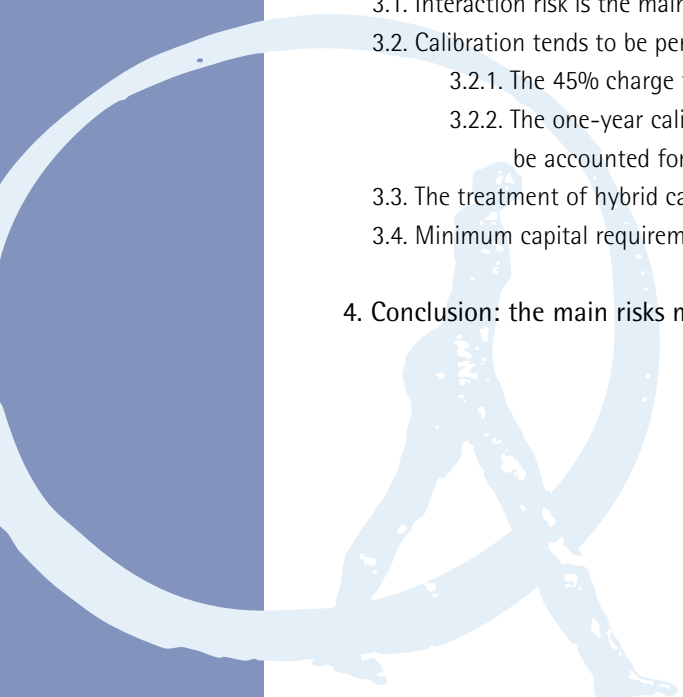
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1. Summary

This document outlines our position on the fourth quantitative impact survey on the standard formula for the calculation of capital requirements for insurance companies under Solvency II.

We will briefly review the main changes brought about by QIS4 and focus on the improvements that remain to be made. For a presentation of the concepts underlying Solvency II, we refer the reader to previous publications, as these concepts will remain essentially unchanged now that the framework directive has been submitted to the European parliament. The current consultation processes is specific because it is the direct responsibility not of CEIOPS but of the European Commission. Feedback on QIS4 will be used in the preparation of "level II" measures, that is, the second level of the legislative organisation known as the Lamfalussy process.¹

We argue that the fourth quantitative impact survey (QIS4) has resulted in substantial practical improvements to the standard formula—in particular, guidelines as well as proxies that will allow the participation of smaller companies or of less strategic lines of business. These improvements are in line with our past recommendations for clear guidelines, as in previous works we pointed out that diverging interpretations of the necessary calculations could lead to significant differences in capital requirements as well as to an inability to compare results across insurance companies and countries.

The recognition of geographical diversification within life and non-life lines of business is likewise a great improvement.

However, the main risk faced by life insurance companies is that of a wave of surrenders following market (or other significant) losses, a phenomenon that would limit the ability of the insurance company to pass on losses to policyholders over time in the form of reduced

profit sharing and instead leave the shareholder bearing the losses.

This is the phenomenon that led to such bankruptcies as that of Executive Life, where losses made public by rating agencies and the media triggered a wave of surrenders and bankruptcy—even though the losses alone were thought bearable for some time.

Whether an insurance company is able to survive that single main risk can be assessed only by means of a combined test in which the surrenders take place in the context of losses. Without such a test, many life insurance companies would state that . . . they do not need shareholders' equity at all because reducing profit sharing is enough to fully absorb any market loss.

There have been no major changes to calibration. As before, EDHEC argues that as the solvency horizon is one year, the resulting fall in the market value of equities should be observed in one year's time rather than immediately. The recognition that risk accrues progressively over the solvency time-horizon should lead to the recognition of dynamic hedging strategies (CPPI or other risk mitigation techniques where documented). The current lack of recognition is unfortunately more of an incentive to regulatory arbitrage than to good risk management practices.

1 - The Lamfalussy process is an approach to the development of financial service industry regulations used by the European Union. Originally developed in March of 2001, it is named after the chair of the EU advisory committee that created it, Alexandre Lamfalussy. It is composed of four "levels", each focusing on a specific stage of the implementation of legislation. At the first level, the European Parliament and Council of the European Union adopt a piece of legislation, establishing the core values of a law and building guidelines on its implementation. In the case of Solvency II, this is the framework directive currently being examined by the European parliament. The law then progresses to the second level, where sector-specific committees and regulators advise on technical details, then bring it to a vote before member-state representatives. At the third level, national regulators work on coordinating new regulations with other nations. The fourth level involves compliance and enforcement of the new rules and laws.

2. Main improvements to the standard approach in QIS4

2.1. Pillar I: Guidance has been improved

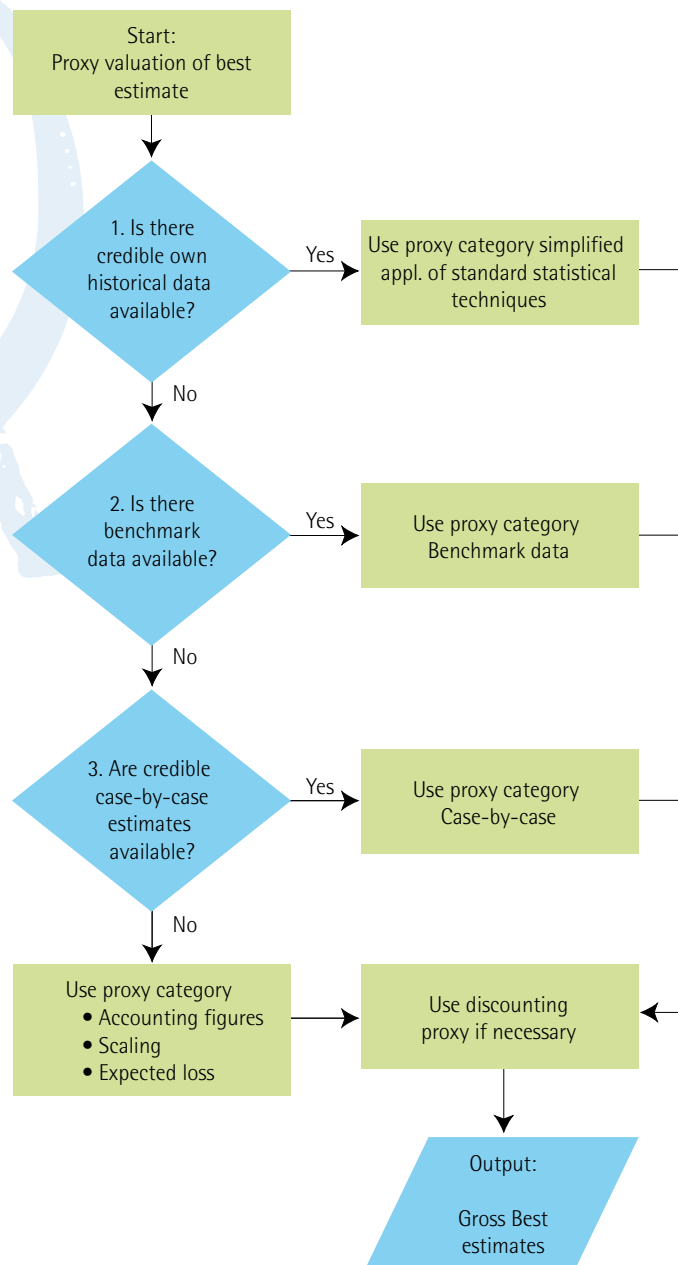
Guidance has improved greatly since QIS3, as CEIOPS has provided the industry with proxies that can be used in particular by small undertakings.

These simplifications are generally available for short-tailed risks, option-less contracts, reinsurance captives.

The proportionality principle is in force: "undertakings may use simplified methods and techniques to calculate insurance liabilities, using

actuarial methods and statistical techniques that are proportionate to the nature, scale and complexity of the risks they support; a continuum of methods is suggested ranging from low to high complexity to determine the insurance liabilities. In application of the proportionality principle, the undertaking may choose a simplified method if it is proportionate to the underlying risk."

The decision tree for proxies for technical provisions is illustrated below:



2. Main improvements to the standard approach in QIS4

For instance, for low risk provisions, statutory (local GAAP) technical provisions may be used for the purpose of QIS4. Other statistical techniques are also presented, such as the so-called frequency-severity and Bornhuetter-Ferguson proxies.³

When there is no company data to estimate claim patterns, the "market-development-pattern proxy" can be used together with "market tail factors" (in which the consideration of tail factors is necessary to avoid an underestimation of provisions). Expert opinion must validate simplifications. There are many other proxies and they will not be listed here, but they are a great help for small entities.

Finally, case by case estimates, generally a rather subjective valuation method that still makes some non-life companies balance sheets totally unrealistic,⁴ are allowed, provided that:

- Future inflation is taken into account.
- An adjustment is made to take into account incurred but not (yet) reported (IBNR) claims, that is, losses not taken into account in the case-by-case estimate.

Finally, national accounting figures may be used where the asset or liability designated is not significant in terms of the financial position and when calculation of an economic value "can be shown to be unjustifiable and impractical in terms of the costs involved and the benefits derived".

Proxies are also available for the risk margin, including a simplified approach to the estimate of the cost of capital.

One main issue is whether these proxies are available temporarily or permanently. As a matter of fact, as the Framework Directive Proposal requires an actuarial function to be implemented in 2012,⁵ proxies based on a lack of actuarial expertise would not be admissible under Solvency II. Nonetheless, they are considered useful for many insurers, so CEIOPS and the

European Commission should be clear on the use of proxies in the future.

2.1.1. Technical Provisions: discounting at government bond yields rather than at swap rates

The reader will note that technical provisions are now to be discounted at risk-free rates derived from government bonds rather than at swap rates.

2.2. Pillar II: an actuarial or risk function is required

Article 47 of the Framework Directive requires the creation of an actuarial function to coordinate, validate, and assess the appropriateness of the calculation of technical provisions, and by default to contribute to the effective implementation of the risk management system referred to in Article 43.

Article 43 states that insurance and reinsurance undertakings shall have in place an effective risk management system comprising the strategies, processes, and reporting procedures necessary to monitor, manage, and report, on a continuous basis, the risks, on an individual and aggregated level, to which they are or could be exposed and their interdependencies. This risk management system shall be well integrated into the organisational structure of the insurance or reinsurance undertaking. It shall contain contingency plans.

It shall cover at least the following areas:

- (a) Underwriting and reserving;
- (b) Asset-liability management;
- (c) Investment, in particular derivatives and similar commitments;
- (d) Liquidity and concentration risk management;
- (e) Reinsurance and other risk mitigation techniques.

Own risk and solvency assessment

1. As part of its risk management system every insurance or reinsurance undertaking shall

³ - By using an initial estimate of the ultimate loss ratio, Bornhuetter-Ferguson diminishes the volatility of the estimate of the development factor in early years.

⁴ - This method may make it possible to hide profits in technical provisions in Solvency I.

⁵ - See details below.

2. Main improvements to the standard approach in QIS4

conduct its own risk and solvency assessment. That assessment shall include at least the following:

(a) overall solvency needs, taking into account the specific risk profile, approved risk tolerance limits, and the business strategy of the undertaking.

2.3. Geographic diversification is now recognised for groups

A significant improvement is that geographic diversification is now recognised—naturally, this recognition applies mainly to groups, though also to companies that have branches or are active outside their home countries.

For non-life premium⁶ and reserve⁷ risk, a Herfindahl index based on the geographic location of the underlying risks is used to take into account geographical diversification. The Herfindahl index, also known as the Herfindahl-Hirschman Index or HHI, is used in the present context as a measure of concentration (the reverse of diversification). Put simply, it is the sum of the squares of the share of premiums in each location, where only shares over 5% are taken into account for the calculation of diversification benefits.

$$DIV_{pr,lob} = \frac{\sum_j (V_{(prem,j,lob)} + V_{(res,j,lob)})^2}{\left(\sum_j (V_{(prem,j,lob)} + V_{(res,j,lob)})\right)^2}$$

Where V is the volume of premiums or reserves for a given line of business in a given country.

The result from the calculation of the HHI (<1) is then applied to the standard calculation for reserve and premium risk, which has remained unchanged since QIS3.

6 - Premium risk is the risk that expenses plus the volume of losses (incurred and to be incurred) for future claims (not related to past periods) will be higher than the premiums received.

7 - Reserve risk has to do with (past) assured periods. It stems from two sources: the absolute level of the claims provisions may be badly estimated or, because of the stochastic nature of future claims payouts, the actual claims will fluctuate around their statistical mean value.

3. Problems remaining in the standard formula

3.1. Interaction risk is the main risk faced by insurance companies and should also be measured

We reiterate the view that the standard formula should include tests for combined risks. Inclusion of these tests is particularly relevant to life insurance, but also to some extent to non-life.

In life insurance, the main risk—sometimes even the sole risk—is a policyholder run touched off by market, credit, or operational losses.

This is one of the important historical scenarios, very similar to that of Executive Life and to that of the US during the depression. At Executive Life, market losses resulting from investments in junk bonds were publicised first by a Moody's downgrade in 1989 and subsequently by the press, triggering a deluge of surrenders and the liquidation of the business in 1991. And in the 1930's, the US saw bank runs and surrenders take place for economic reasons (falling incomes), a phenomenon that in falling markets was bound to lead to a wave of bankruptcies. These bankruptcies were prevented by the following institutional changes:

- The American government suspended insurance payments for six months.
- Accounting rules were changed, with asset valuation switched from market value to book value to limit the evidence of losses.

A wave of surrenders may totally alter the ability of the insurance company to pass losses on to policyholders over time in the form of reduced profit sharing, as it would do in normal circumstances. As policyholders have left the boat, the shareholder is left alone with the losses.

In the current standard formula, market and surrender risks are measured separately; capital requirements are then aggregated (in practice, the capital requirement for the combined risk is equal to $k=(a^2+b^2)^{0.5}$). But for some companies this requirement may present no difficulties whatsoever.

When considered separately, neither market stress nor surrender is particularly demanding of capital. Available capital and required capital are generally presented on separate lines of the simplified balance sheet, so any capital requirements may be perceived as demanding. However, when—for the product or business line considered—they are less than expected future profits plus available buffers (such as a surplus or deferred profit-sharing), one can say that there are no net capital requirements. That being said, we understand that market risk and surrender risk considered separately may not allow for an adequate assessment of the solvency strength of an insurance company:

- Market losses alone may be passed on to the policyholders in the form of reduced profit-sharing.
- Surrenders without market losses may even be beneficial to shareholders because when surrendering, policyholders may leave surpluses for shareholders.

The next two paragraphs give a more detailed illustration of this idea.

Assume a life profit-sharing policy of ten years' duration and a zero guaranteed rate; the risk-free rate is a flat 4%. To make things simpler, we will assume only one source of risk, equity risk (duration risk is matched with bonds or with swaps, futures, and derivatives when large equity investments make cash unavailable). Assets are worth 100, so policyholder liabilities, expected costs, and expected profits combined are also worth 100—only assets and liabilities backing this life product are included in the calculation, not shareholders' equity. Deferred profit sharing can be reduced . . . to zero, as long as the liability remains at least equal to its guaranteed value of $100/(1+4\%)^{10}=67$ when discounted over a ten-year horizon. When costs are ignored in the calculation, available capital against risks is 33. With a 32% charge for equity risk, there is room to invest 100%⁸ of the reserves in equities.⁹ The least we can say is that in normal circumstances, many life policies can absorb a significant amount of

⁸ $8 - 33/32\% = 103$.

⁹ - There is room, that is, as long as the duration is matched (in this case with futures or swaps rather than bonds because of the limited cash available after such equity investments).

3. Problems remaining in the standard formula

risk, even in the absence of shareholder funds.

Similarly, surrender risk may seem negligible, and even aggregated with market risk will be less than available capital inherent to the life product.

However, the real risk is that market losses trigger surrenders. If policyholders surrender en masse—suppose 50% of them surrender immediately—the duration of the liability is halved and so is the ability to pass risks on to policyholders. In particular, the discounted minimum value of the liability rises from 67 to 84, and the ability to pass losses on to policyholders is reduced to 16. Suppose a portfolio 65% invested in equities—prudent compared to the 100% equity investment that would have been possible. A fall in equity prices of 30% generates a loss of 20, already superior to deferred profit-sharing that can be reduced to cover losses, plus expected value of future profits. Additionally, surrenders create a new duration mismatch, as the ten-year maturity investments may be sold at an additional loss to cope with surrenders.

As a consequence, by failing to examine this single major risk, the standard formula results in a very poor approximation of the risk faced by a life insurance company.

Using the standard formula to gauge this risk is much like saying that if losing one leg diminishes your ability to walk by 50%, losing two legs would probably diminish your ability to walk by $(50\%^2+50\%^2)^{0.5}=70\%$. If losing both legs is a risk, then you would do well to examine what the effect would be more directly than can be done through correlation.

It also is at odds with CEIOPS's principle that: "Appropriate considerations should also be given for an increasing future awareness of policy options as well as policyholders' possible reactions to a reduced solvency of a firm".¹⁰

In addition, requesting the calculation of a combined surrender and market stress-test would probably help harmonise the modelling

assumptions used in different countries and in the end make it easier to compare balance sheets and solvency strength. As a matter of fact, this combined risk is often modelled in some European countries (in France, for example, where "dynamic surrenders" may be modelled) but not in all others.

Another drawback of the current standard formula is that it introduces pro-cyclicality. After all, when the surrender stress-test is performed in a favourable market situation, it has little effect. When surrendering in favourable conditions, policyholders leave an additional surplus to mitigate risks that sometimes can even be accounted as shareholder's wealth, resulting in a net positive impact for the shareholder—even when taking into account the diminished ability to collect fees from mathematical reserves because of diminished duration. However, surrender risk will be much more demanding after a market crash, because policyholders leave losses instead of surpluses in the balance sheet when they surrender. This possibility of rising capital requirements during downturns is known as pro-cyclicality, and this is what most regulators would try to avoid nowadays.

One of the arguments against the inclusion of this combined test in the standard formula is that calibration for this combined stress scenario is arduous, so it is usually dealt with in internal models. However, since for many life insurance companies the standard formula would be easier to implement and lead to no capital requirements, we wonder whether the failure to include this combined risk is a good incentive for companies to invest in modelling capabilities (to build internal models) and in risk management.

Overall, we would strongly advise CEIOPS and the European Union to ask companies to perform this combined test, and to assign it either a relatively small probability weight or a reasonable calibration (a market stress less severe than in market risk alone), so as to avoid the risk of unrealistically high capital requirements.

3. Problems remaining in the standard formula

The same combination risk applies for non-life insurance companies. After all, the combined inflation and reserve/premium risk is much more demanding than these two risks aggregated (partly summed). As a matter of fact, when the best estimate inflation risk is hedged, one

assumes, in the current formula, that it has been gotten rid of.

But this assumption would be mistaken, because in the event of higher-than-expected claims, inflation exposure rises, as illustrated in the box below.

Overhedging strategy for inflation exposure in a non-life book.

One interesting feature of non-life insurance is the randomness of the exposure to risk factors. It is clear that when claims are heavy inflation exposure is higher and that when they are few it is lower.

Consider, for example, a very simplified model for which it is assumed that claims are reported and paid at the same time, in one year. The uninflated sum of claims to be paid is assumed to follow a lognormal process, with a mean equal to 4.6% and volatility equal to 20%. We also assume that the price index follows a lognormal process with a mean equal to 2% and volatility equal to 20%. The price index is released with no delay. Inflation and claims are assumed independent. The above drifts and volatilities are such that, on average, the price index is 1 and uninflated claims are 100. There is no interest rate, so both the discounted and undiscounted reserves are 100. We then calculate the 99th percentile or Value-at-Risk and the 99% Tail VaR (also known as Conditional VaR), given by the expected value above the 99th percentile. The Tail Value-at-Risk at the 99% probability for inflated claims is 209 without any hedging strategy. This is to be compared with a Tail Value-at-Risk for uninflated claims of 171.¹¹

Since the best estimate of uninflated claims is 100, a "natural" hedge would consist of buying zero-coupon inflation swaps for a nominal amount (k) of 100. They will pay the consumer price index minus one in one year. With this swap transaction, the 99% Tail VaR is 176, 15% less than the Tail VaR

without hedging inflation exposure. This is still far above the Tail VaR for uninflated claims, because inflation exposure increases when claims are heavy. In the tail of the distribution, inflation exposure is higher because claims are higher. An exposure greater than that of the best estimate can thus help diminish economic capital. It can be achieved by increased exposure to inflation.

Minimising Conditional VaR leads to more stable results than minimising Value-at-Risk. We have chosen to minimise the risk on the claims by finding the appropriate nominal amount of inflation swaps, where the risk is measured by the TVaR99% of the portfolio.

Minimising $TVaR99\%(C * inflation - k * (inflation - 1))$ gives a value of $k=171$, and the solution is very close to $TVaR(C)$. After all, $TVaR(C)$ is the average exposure to inflation where $C > VaR(C)$ because the two factors are independent. In our example there would be an analytical solution because the lognormal is tractable. However, it is generally necessary to use numerical procedures because $TVaR(C)$ is not exactly the inflation exposure in the $TVaR((C - TVaR(C)) * infl + TVaR(C))$ zone. $C > VaR99\%(C)$ generally approximates but does not match exactly $((C - k_{opt}) * infl + k_{opt}) > Var99\%((C - k_{opt}) * infl + k_{opt})$.

The optimum is fairly stable because the exposure to inflation is extremely low in the TVaR of the portfolio. In addition, it remains fairly low even in the case of a moderate error of estimate. In our case, the Conditional VaR of our portfolio is between 171 and 172 for a hedge ratio and between 140 and 180 for independent factors.

3. Problems remaining in the standard formula

Previous EDHEC recommendation

In many cases, market risks cannot be entirely eliminated, especially in the presence of non-hedgeable risk or insurance risk. This residual market risk remaining on top of underwriting risk can be called interaction risk. It is the result of the interaction of financial risk and insurance risk. In life insurance, the surrenders (early withdrawals) will tend to be exceptionally high when interest rates rise, forcing the company to sell bonds at a loss, and the reduced number of customers will limit the ability to pass these losses on to those remaining. In non-life insurance, inflation exposure is naturally higher when claims are heavy than when there is less property

to replace. So hedging the average inflation exposure will prove insufficient in the risk scenario—inflation risk cannot be totally shed. We recommended using a scenario in which the risk factors that combine are simultaneously degraded to gauge the risk of the interaction described here.

The example above also reflects the need to measure inflation risk, which, just like interest-rate risk, is a financial hedgeable risk that is present on both the asset and liability sides of the balance sheet. In this respect, there has been no significant progress since our last recommendation.

When it comes to capital requirements for non-life companies, one should bear in mind that calibration in the standard formula is very severe, so that taking into account the combined inflation and underwriting risks should not lead to additional capital requirements, but rather to a more precise mapping of risks, and diminished capital requirements for those who manage this risk accurately.

taken into account. However, the rule is quite restrictive, as dynamic hedging strategies are not integrated, and only instruments with at least a one-year maturity are taken into account.

The stress scenario for developed markets is that of a 32% price fall, while the stress scenario for all other exposures accounted for in the equity sub-module is that of a 45% price fall. The two resulting capital charges are aggregated with a correlation coefficient of 0.75.

3.2. Calibration tends to be penalising

3.2.1. The 45% charge for hedge funds is unnecessarily high

For the determination of this capital charge, all equities and equity type exposures have to be taken into account, including private equity. This includes emerging markets, non-listed equities, and alternative investments. "Alternative investments" include all types of risk exposures like hedge funds, derivatives, managed futures, investments in SPVs, CDOs (the equity tranche), etc., which cannot be allocated to spread risk or classic equity type risk.

In practical terms, this means that for all hedge fund positions that cannot be looked-through as well as all positions that are managed dynamically rather than protected with listed one-year put options, insurance companies will be subject to a 45% capital charge.

EDHEC's work clearly shows that this capital charge is totally inconsistent with the real risk profile of hedge funds. Indeed, hedge funds as an asset class are far less risky than stock indices: funds of hedge funds have an empirical downside risk with a 5% confidence interval of 3.83%, three times less than the S&P500's downside risk of 10.59%.

For the calculation of the risk capital charge, hedging and risk transfer mechanisms should be

3. Problems remaining in the standard formula

Hedge Fund Strategy Risks (1998-2007) - Source: V. Le Sourd (2007)

Reference period: January 1998–December 2007	Risk Dimension			
	Maximum Drawdown (in %)	Volatility (in %)*	Downside Risk (in %)*	Modified Value-at-Risk (in %)**
S&P 500 Composite (Total Return)	44.73%	14.72%	10.59%	6.98%
Convertible Arbitrage	8.22%	4.07%	3.06%	1.47%
CTA Global	11.68%	8.81%	4.85%	3.48%
Distressed Securities	11.62%	5.29%	5.08%	1.96%
Emerging Markets	31.69%	12.19%	11.52%	5.59%
Equity Market Neutral	1.07%	2.02%	1.27%	0.24%
Event Driven	10.92%	5.56%	5.68%	2.27%
Fixed Income Arbitrage	12.61%	3.60%	5.75%	1.46%
Global Macro	5.36%	5.34%	2.45%	1.41%
Long/Short Equity	10.75%	6.95%	4.22%	2.39%
Merger Arbitrage	5.44%	3.79%	3.98%	1.44%
Relative Value	4.71%	3.36%	2.92%	1.07%
Short Selling	49.56%	19.95%	11.82%	7.76%
Funds of Funds	7.07%	5.58%	3.83%	1.73%

* Annualised statistics are given

** Non-annualised 5%-quantiles are estimated

The above table suggests that the stress scenario for a well-diversified position in hedge funds should be three times less than that for equities. Since the risk scenario for equities is 32% with a 1% confidence interval, the stress test for hedge funds should be a third of 32%, i.e. 10% to 11% instead of 45%.

3.2.2. The one-year calibration horizon must be respected and active risk management be accounted for

Risk management best practices in financial institutions involve dynamic risk-control procedures. As far as Solvency II is concerned, some of these procedures must be implemented at insurance companies as part of the second pillar, where companies must monitor capital requirements and ensure compliance on a regular basis—for large institutions “regular” will probably mean at least quarterly.

Firms are monitoring their risk exposure not only to comply with the second pillar of the coming regulations, but also because in an economic framework risk exposure has a cost, whether it stems from idiosyncratic or systematic risk, and risk-control procedures help reduce the cost of

capital. Solvency II will be called an economic framework only if it manages to abide by these principles.

Currently, even though Solvency II's second pillar aims to set qualitative standards for risk management, good risk management practices are not taken into account in first-pillar calculations. From a purely methodological point of view, the scenario recommended to measure capital charges is inconsistent with the time horizon chosen for calibration and adequate solvency. Calibration principles are based on the *Framework for consultation*¹² as mandated by the European Commission. In this framework, a one-year horizon is set for calibration. However, market risks supposedly materialise instantaneously—for instance, a single-day fall in all equity markets of 32%, which naturally renders any monitoring of the balance sheet totally inefficient. And a company that does not manage its equity position at all may have the same capital charge as a company that uses CPPI funds, as the CPPI market-risk reduction technique will not be recognised. The failure to recognise dynamic hedging strategies and the use of CPPI is also inconsistent with risk-

12 - European Commission (2006) - Amended Framework for Consultation on Solvency II. MARKT/2515/06 (http://ec.europa.eu/internal_market/insurance/docs/markt-2506-04/amendedframework_en.pdf).

3. Problems remaining in the standard formula

mitigation principles as stated by CEIOPS itself: "A broad assumption is made that the effect of risk mitigation techniques should be given adequate recognition in reducing the relevant risk capital charges."¹³ We have shown in our previous papers that this failure to recognise the effect of risk-mitigation techniques encourages regulatory arbitrage rather than the implementation of good risk management.

Our position on the subject has been spelled out in previous papers and remains largely unchanged: EDHEC regrets that at this stage no progress has been made on the treatment of dynamic hedging strategies such as the use of CPPI techniques. More and more financial institutions are setting limits (equivalent to economic capital budgets) for a given set of risk factors or portfolios, and it would be unfortunate if CEIOPS decisions were to put a halt to this trend.

3.3. The treatment of hybrid capital is different from that accepted in the banking sector

As far as hybrids are concerned, there is currently an inconsistency between the proposed treatment under Solvency II and the accepted treatment for banks. The difference is that, for a bank, a long-dated subordinated debt remains eligible for Tier 1 to maturity whenever it is initially eligible for Tier 1;¹⁴ for insurance companies, by contrast, the instrument is no longer admissible as Tier 1 available capital when the maturity (at reporting date) falls below ten years.¹⁵

Our two comments on this issue are as follows:

- Consistency should be sought for the treatment of hybrids for banking and insurance; otherwise, arbitrage opportunities may prove too tempting to some conglomerates (where supervisors have not agreed to harmonise the treatment of hybrids). Harmonisation would also facilitate supervisory review. In theory, either regulation could converge towards the other, and the future European treatment of hybrid capital could well be aligned with Solvency II proposals.

- The proposed treatment may also mean particularly heavy penalties for some instruments already issued. Not only would past transactions become inefficient because of regulatory changes, but some hybrid capital recognised as Tier 1 for a bank would also fall directly to Tier 3 when in an insurance company balance sheet. After all, to belong to Tier 1, any step-up must take place in more than ten years and be less than 100bp,¹⁶ while to belong to Tier 2, any step-up must take place in more than five years from the reporting date and must not exceed 50 basis points. As a consequence, an instrument with a step-up of 50bp to 100bp would fall directly from Tier 1 to Tier 3 when the residual maturity becomes shorter than ten years.

3.4. Minimum capital requirements do not recognise the benefits of diversification

For some reason, CEIOPS and the European Commission have reintroduced minimum capital requirements (MCR) to the so-called "linear approach", in which the requirements for the different risks and lines of business are summed rather than aggregated as in the "modular approach". In other words, in the linear approach, the benefits of diversification are not recognised.

While we acknowledge the need for a simple formula that can be audited, the use of a correlation matrix to aggregate capital requirements seems perfectly feasible to us.

¹³ - QIS3 Technical Specification Part 2, II.3.4.

¹⁴ - Subordinated debt or other hybrid instruments for which any interest step-ups do not apply before 10 years from the issuance date and do not exceed 100 basis points or 50% of the initial credit spread are Tier 1 in banks.

¹⁵ - Hybrid instruments for which any interest step-ups do not apply before 10 years from the reporting date and do not exceed 100 basis points or 50% of the initial credit spread would be Tier 1 in insurance.

¹⁶ - It must also be less than 50% of the initial spread.

4. Conclusion

Providing the insurance industry with a standard formula for the calculation of solvency capital requirements is no easy task. In an ideal world, Solvency II would be an ALM-based body of regulation in which solvency requirements were calculated from internal models, as long as they reflected dynamic hedging strategies and vice-versa. At the same time, a standard formula is needed for the vast majority of companies that do not model all risk factors, and additional guidance and simplified methods are necessary for the many small and medium size insurers.

With respect to both goals, CEIOPS and the European commission have made considerable progress.

The hope is that QIS4 results will show that the formula and its calculations are largely applicable. However, beyond all the detailed specifications and guidance, it is essential not to neglect the greatest of the many risks faced by insurance companies.

And when it comes to life insurance we feel that this great risk is being neglected, because the risk of a bankruptcy of the sort undergone by Executive Life, perhaps the single greatest risk faced by life insurance companies, is simply not being taken into account.

On the other hand, risk calibration is unnecessarily demanding for asset classes such as hedge funds, which, as has been shown by advanced risk management techniques, are on average far less risky than traditional equities. Equally important is that in the standard formula, internal risk management techniques are not approved, as they prove inefficient in the event of single-day market crashes (that day being in the past).

So, to improve the internal and external credibility of the standard approach to Solvency II, we recommend incorporating a combined stress test that would make it possible to assess the ability of life insurance companies to withstand the main risk they face: surrender risk triggered by

market (or operational) losses. In this period of turbulence, which has certainly shown that one adverse event can trigger another, such a test could only be most welcome.

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