

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2020

Subject SP9 – Enterprise Risk Management Specialist Principles

Introduction

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Mike Hammer
Chair of the Board of Examiners
December 2020

A. General comments on the *aims of this subject and how it is marked*

1. The aim of the Enterprise Risk Management (ERM) subject is to instil in successful candidates the key principles underlying the implementation and application of ERM within an organisation, including governance and process as well as quantitative methods of risk measurement and modelling. The candidate should gain the ability to apply the knowledge and understanding of ERM practices to any type of organisation.
2. The SP9 exam generally requires bullet point form or short form essay style answers that apply general principles to directly address specific circumstances. The answers given below are just one possible set of acceptable answers.
3. Candidates are awarded marks for all reasonable answers including different but still reasonable numerical solutions. Marks are awarded for working in the case of numerical answers.
4. Candidates' answers are made up of a series of points. For example, a point can be stating a valid type of risk, describing the type of risk or (part of) a calculation.
5. Candidates who give well-reasoned points, not in the marking schedule, are awarded marks for doing so.

B. Comments on *candidates' performance in this diet of the examination.*

Candidates performed well on this diet and appeared better to able to manage their time within the open book, online exam format.

Many questions required candidates to apply knowledge to the circumstances described. These questions gave candidates the opportunity to score well as a range of solutions were awarded marks. Some of these questions were very well answered with better prepared candidates identifying the key concepts and generating a volume of valid points. However, some of these questions were not well answered, particularly where candidates regurgitated generic points without applying them to the scenario or for numerical questions, failed to quantify the key points in their response.

C. Pass Mark

The pass mark for this exam was 61.

329 candidates presented themselves and 132 passed.

Solutions

Q1

(i)

If the PFX depreciates relative to the SFX, then some costs may increase substantially... [1]

...including fuel [½]

However, many of the costs such as the bulk of the labour costs would fall in PFX terms... [½]

...and in terms of other currencies... [½]

...increasing PlainSailing's competitiveness against shipping firms from S-Land... [½]

...and the rest of the world [½]

(the opposite is true if the PFX appreciates) [½]

An increase in trading restrictions might reduce the volume of shipping that PlainSailing can carry out with S-Land... [½]

... so that it may be necessary for PlainSailing to set up a subsidiary at S-Land [½]

This could offset the potential increase in business that currency depreciation might bring with the rest of the world [½]

Potential currency volatility could increase the cost of currency hedging [½]

The company may need to reset profit expectations once the exchange rates have settled [½]

There is a risk that redundancies may be required which could lead to additional HR costs [½]

Uncertainty could lead to an increase in the cost of capital (debt, equity) [½]

... for counterparties of PSC also, which makes default more likely [½]

... and may increase calls on collateral [½]

Agreements with customers in S-Land may need to be reviewed [½]

There may be additional time and cost involved at customs [½]

There may be additional tariffs applied [½]

... or different standards required for goods/services in S-Land which increases or decreases PlainSailing's costs [½]

It might be more difficult to repatriate funds from S-Land [½]

Uncertainties around the negotiation may lead to disruptions to PlainSailing's customers, affecting PlainSailing indirectly [½]

... for example protests at ports or strikes in response to the changes [½]

PlainSailing customers who dislike uncertainty will stop using PlainSailing in favour of other companies unaffected by the renegotiation [½]

Negotiation outcome may be better than expected... [½]

... which could increase shipping demand from S-Land and reduce cost of doing business with customers there [½]

Question asks for both upside and downside risks. Where a candidate replays an up/downside risk as the opposite of the down/upside risk award full marks for the first risk and max ½ for the opposite risk if valid.

[Total marks available 13½, maximum 8]

(ii)

If there are insufficient resources/expertise in-house, worth using a consultancy...	[½]
... for it could assess the firm's exposure independently...	[½]
...although consultancy will not have same level of in-depth knowledge of firm as employees	[½]
... and using a consultancy incurs a cost	[½]
...which should be balanced against the expected benefits	[½]
...and the internal cost (if there are sufficient resources/expertise)	[½]
Counterparty risks is introduced – the consultancy may fail to deliver on its obligations	[½]
Not developing internally or can learn from the consultancy	[½]
Scenario analysis appropriate here...	[½]
...as these risks are unlikely to be amenable to quantitative analysis	[½]
... the consultancy may have better access to external data and past experience	[½]
... or is better able to assess scenarios using models	[½]
However, scenario analysis doesn't not necessarily consider the probability of the scenario	[½]
Should not just consider likely scenarios...	[½]
...but also unlikely ones where the potential impact is high	[½]
Consultants may be more willing to consider negative scenarios	[½]
... and provide constructive challenge to PSC's business plan	[½]
[Total marks available 8½, maximum 3]	

(iii)

The CEO's response is incorrect as the scenario could occur	[1]
The probability is relatively small...	[½]
...although not as small as that required for some economic capital calculations (e.g. Solvency II, at 0.5%)...	[½]
...but the impact could be significant...	[½]
...although it is important to assess what this impact on the firm would be	[½]
The CEO should at least seek more information to verify the 5% probability...	[½]
... and verify the consequence of an unsuccessful negotiation	[½]
The likelihood may be underestimated due to insufficient past data	[½]
The CEO's behaviour could also be considered inappropriate, as this is a strategic matter...	[½]
...meaning that the board as a whole should take a view on the scenarios...	[½]
...led by the chairman	[½]
The risk aspects could also be dealt with by the risk committee...	[½]
...which should consist mainly of non-executives...	[½]
...and be headed by the chief risk officer	[½]
The CEO also sets a bad example from a risk culture perspective	[½]
The CEO is exhibiting bias	[½]
... deliberate bias towards optimism or over confidence	[½]

... not recognizing the views of others are valid [½]

The CEO could be breaching the firm's own risk management procedures [½]

[Total marks available 10, maximum 5]

(iv)

Use currency futures or forwards... [½]

...to provide certainty over the future exchange rate [½]

Use currency options... [½]

...to protect against downside risk of depreciation [½]

Use commodity futures... [½]

...to provide certainty over the future oil prices [½]

Use commodity options... [½]

...to protect against downside risk of a rise in oil prices [½]

Use currency swaps [½]

... to provide certainty over the future exchange rate [½]

Match revenue and costs better from the currency perspective [½]

...leading, lagging and/or netting could be used [½]

Moving some operations to S-land (an example of matching) [½]

The options would need to be deep out-of-the-money options for tail risk protection [1]

[Total marks available 7½, maximum 4]

(v)

Counterparty risk, from the potential default of PlainBank... [½]

...mitigated by the use of collateral/central clearing... [½]

...or purchasing CDS... [½]

...or trade with multiple counterparties [½]

... or due diligence [½]

Operational risk, from execution errors [½]

... mitigated by having resources in place with sufficient expertise... [½]

... and robust internal control [½]

Liquidity risk, from collateral requirements when market moves against the firm [½]

... mitigated by setting aside sufficient amount of liquidity for the trade [½]

... and stress test the contracts to understand the potential liquidity requirements [½]

Roll risk, if the cost of the hedge is higher at some point in the future when its needs to be rolled forward [½]

...mitigated by entering into a contract with a long enough term [½]

Risk that unit size of some contracts is too small... [½]

...meaning that there is excessive cost and operational risk involved with managing the contracts... [½]

...mitigated by hedging only the main currencies to which the firm is exposed [½]

Risk derivatives are not available, as to be delta hedged against all currencies will require a lot of derivatives [½]

- ... mitigate by only hedging against the main currencies to which the firm is exposed [½]
- Substantial rebalancing may be needed on a daily basis to maintain the hedge (cost and time implications) [½]
- ... and there is a risk of not being hedged between rebalancing [½]
- ... mitigate by optimizing the trade-off between the cost of maintaining the hedge and the risk of not being hedged [½]

No mark for generic 'expense risk'

[Total marks available 10½, maximum 6]

(vi)

- The risk function can oversee this risk in the context of all other risks faced by the firms [1]
- Ensures that any additional risks introduced by trading derivatives are captured ... [½]
- ...and effectively managed [½]
- Provides sense check to the high level parameters (size, direction, which currencies to include) [½]
- Risk function might bring in extra experience and expertise [½]
- Risk function builds up internal expertise on derivatives [½]

[Marks available 3½, maximum 2]

[Total marks available 53½, maximum 28]

This question was generally well answered by candidates.
 Well prepared candidates were able to generate a range of upside and downside points under parts i, ii and iii.
 Higher scoring candidates explained how the derivative would be beneficial in part iv e.g. to provide certainty over the future exchange rate or oil price.
 Candidates generated a broad range of points under parts iv, v and vi.

Q2

(i)

- Solvency II is the risk framework for insurance companies operation in EU member states [½]
- Basel II is the global risk framework for the banking sector [½]
- Compliance with Solvency II is mandatory for relevant insurers [½]
- Compliance with Basel II is mandatory for relevant banks [½]
- Three pillars are involved for both regimes: [½]
- Pillar 1 – quantitative (or minimum capital) requirements [½]
- Pillar 2 – governance and risk management requirements and effective supervision [½]

Pillar 3 – disclosure and transparency (or market discipline) requirements	[½]
Both frameworks adopt a risk-based approach to the assessment of capital	[½]
The capital requirement under pillar 1 for both regimes includes market, credit and operational risks	[½]
Both frameworks allow the use of an approved internal model or a standard model	[½]
Assets and liabilities are taken at fair value / calculated on a market consistent basis wherever possible	[½]
The Solvency Capital Requirement (SCR) is the main standard by which solvency is measured...	[½]
... with the Minimum Capital Requirement (MCR) being a lower capital requirement	[½]
Under Pillar 2, both banks and insurers are required to make their own capital and risk assessments	[½]
...Own Risk & Solvency Assessment (ORSA) for insurers	[½]
...Capital adequacy assessment for banks	[½]
The regulator has different levels of intervention	[½]
... dependent the risk of the level of capital falling below minimum levels	[½]
Under Pillar 3, both insurers and banks are required to publish details of the risks facing them, capital adequacy and risk management...	[½]
... which has been designed to encourage firms to control risk in order to reduce the cost of capital	[½]
Capital resource is tiered, with requirements for the quality of capital to meet the capital requirement	[½]
Both frameworks consider that capital is not the only way to militate against risk (so require controls to be documented)	[½]

[Total marks available 11½, maximum 6]

(ii)	
Solvency II defines the statutory amount of capital required to be held to cover risks	[1]
The SCR is calibrated with a 99.5% level of confidence over a one-year time horizon	[1]
The SCR covers risk categories..	[½]
... underwriting, market, credit, operational	[½]
Firms can calculate the SCR using the Standard Formula or Internal Model	[½]
Standard formula uses a stress test and correlation approach	[½]
An internal model must meet a number of criteria...	[½]
... out of use test, statistical quality standards, calibration standards, P&L attribution, validation standards, documentation standards,	[max ½ for any 3 criteria]
... and be approved by a regulator	[½]
The ORSA requires a firm quantify its ongoing ability to continue to meet the capital requirements (MCR and SCR)	[½]

[Total marks available 5 ½, maximum 3]

(iii)

Economy doing well	[½]
...Good for balance sheet assets and liabilities	[½]
....So LongLife is more resilient to stresses	[1]
Coverage ratio will have improved even if stresses are nominally higher	[1]
Any approximate calculations assume the company's assets and liabilities behave in the same way as the benchmarks specified in the financial press article	[1]
This may not be the case	[½]
Expect lower lapse rates as people can afford to continue paying their policies	[½]
Alternatively, higher inflation could lead to more spending and less saving so higher lapse rates on the savings products	[½]
...Lapse SCR could be decreased/increased (depending on the preceding points) if this is likely believed to be sustainable	[½]
People able to take better care of themselves so if this continues may see improvement in mortality/morbidity rates – not an effect to be seen in this recalculation	[½]
Good equity/property performance could drive sales of products related to these assets	[½]
Equity values increased	[½]
So equity exposure increased	[½]
So equity stress increased	[½]
Assume the equity stress is 40%. If the equity holding is similar to the index then could have $15\% \times 40\% = 6\%$ increase in equity stress	
	[1 for any reasonable stress assumption and calculation]
Property values increased	[½]
So property exposure increased	[½]
So property SCR increased	[½]
<i>Any similar calculation for equity stress</i>	<i>[1 for any reasonable stress]</i>
Share prices increased	[½]
So company debt to equity ratios improved	[½]
Less likely to default on corporate bonds	[½]
Spreads narrowed	[½]
So market value and credit risk exposure increased	[½]
Credit risk SCR increased	[½]
Make any reasonable assumption on average duration for approximate stress impact	[1]
Expenses may have increased due to inflation increasing	[½]
Exposure increased so expense SCR increased	[½]
Inflation may be more volatile if government takes action to reduce inflation back to target	[1]
SCR is aggregated with correlation matrix if standard formula	[½]
Or copula or another method if internal model	[½]
Diversification reduces the impact of the SCR increase	[1]
Improved base balance sheet position dampens the SCR increase	[1]

For internal model consider if 3 months of new data is sufficient for recalibration i.e. are stresses and correlations still appropriate in the new market conditions [½]
Difference between base and stress – position is better so risk is reducing [½]
[Total marks available 20, maximum 11]

(iv)

Adverse selection is where demand for a product is positively correlated with the risk of loss [½]

Or

The inability to differentiate between different risks when pricing [½]
[Max ½ for definition of adverse selection]

For example if healthy and unhealthy people are charged the same for life insurance, the unhealthy people may be more likely to buy it (or any similar argument) [1]

Moral hazard is where one party behaves differently than they would as they are not facing the full consequences of their action [½]

Or

The party behaves less carefully than they would as the counterparty/another party bears part of the risk [½]

[Max ½ for definition of moral hazard]

For example not following all safety instructions when carrying out sports/extreme physical activities because they are insured (or any reasonable example) [1]

Both adverse selection and moral hazard can arise from information asymmetry [1]

...but for moral hazard, once the insurance is in place, the insurer has no control over the policyholder's behaviour [½]

[Marks available 5½, maximum 4]

(v)

Likely increased critical illness sales [½]

Which may seem positive [½]

However these are people who know they are susceptible to particular critical illness [½]

They have information the insurance company does not have [½]

This is adverse selection rather than moral hazard [1]

Increased critical illness lapses for non-susceptible lives [½]

Adverse selection could occur on the life insurance and CI policies [½]

Moral hazard is possible on the CI and life insurance policies... [½]

...for example disproportionate risk taking when you believe you don't have much time left (any valid example) [½]

LongLife is likely to experience worse claim experience than assumed in pricing [1]

This will reduce the profitability of this business [½]

Pricing and reserving bases will need to be changed [½]

Investment strategy may need to be changed to match the new incidence of claims [½]

Capital requirements may increase due to the increased uncertainty	[½]
Non-susceptible lives may lapse their policies if they believe they are immune	[½]
...or decide not to buy critical illness with long life	[½]
...which will exacerbate the claim experience	[½]
Potential for lapses on other products as susceptible lives 'live for the moment'	[½]
... or switch to critical illness	[½]
Alternatively susceptible lives become more aware of their health and take preventative measures to prevent/minimise the severity of the illness	[½]
And the experience of the policyholders is better than in pricing	[½]
If other insurers are allowed to use genetic test results, they may be more price competitive	[½]

[Total marks available 12, maximum 4]

(vi)

Predisposition or susceptibility to a critical illness does not ensure the illness will materialise	[½]
Investigate the accuracy of the tests as this risk may be perceived to be more serious than it is	[½]
...This action has a cost	[½]
Cap on the volume of new critical illness business	[½]
Increase prices for critical illness policies	[½]
...These actions may make the firm less competitive	[½]
Exclude some critical illnesses that are included in the DNA tests	[½]
...This may increase the reputational risk from not covering standard illnesses	[½]
Reinsure critical illness policies	[½]
...There is a premium cost	[½]
...And a counterparty risk	[½]
Hold additional reserves	[½]
...There is an opportunity cost as this can't be invested elsewhere	[½]
If regulations allow, request policyholders voluntarily share the results	[½]
...This allows actual experience data to be collated over time	[½]
... but may need to offer a discount as an incentive to disclose the information	[½]

[Total marks available 8, maximum 5]

(vii)

Corporate governance ensures the board of directors and management have appropriate processes and controls	[½]
to measure and manage risks holistically across the company	[½]
Holistically ensures both upside and downside are managed	[1]
To optimise company strategy	[½]
... Such as capital allocation to the activities with the highest risk-adjusted returns	[½]
Consistent risk taxonomy to encourage a shared understanding of risk / avoid confusion	[½]

Central risk function to co-ordinate ERM, resulting in increased operational efficiency	[½]
Line management ensures risk management is integrated into the revenue generating activities of the company	[½]
Revenue activities include pricing, product development, relationship management.	[½]
<i>Portfolio management</i> sets portfolio targets and risk limits to ensure optimal returns	[½]
<i>Portfolio management</i> aggregates risk exposures and incorporates diversification ... including any natural hedges	[½]
Risk transfer is centralised and so more cost effective	[½]
Risk transfer used to mitigate risk exposures that are too high compared to risk appetite	[½]
Or most cost effectively managed by a third party	[½]
For example, ERM would help LL evaluate the use of reinsurance to manage its mortality and morbidity risk	[½]
Risk transfer can also be used to buy in desirable risks	[½]
Risk analytics provide the tools to identify, measure, analyse, quantify and report risks in a consistent way to reporting profitability	[½]
Better risk reporting enables LL to react more quickly to risks ... such as changes in mortality/morbidity risks from adverse selection	[1]
... and proactively monitor emerging risks and extreme events	[½]
Data and technology are integrated into LL's risk and reporting systems	[½]
Stakeholder management ensures strategic and risk information is communicated effectively	[½]
Reduced risk of regulatory intervention due to better understanding off LL's risks and risk management	[½]
An enhanced credit rating due to better communication of LL's risks and risk management	[½]

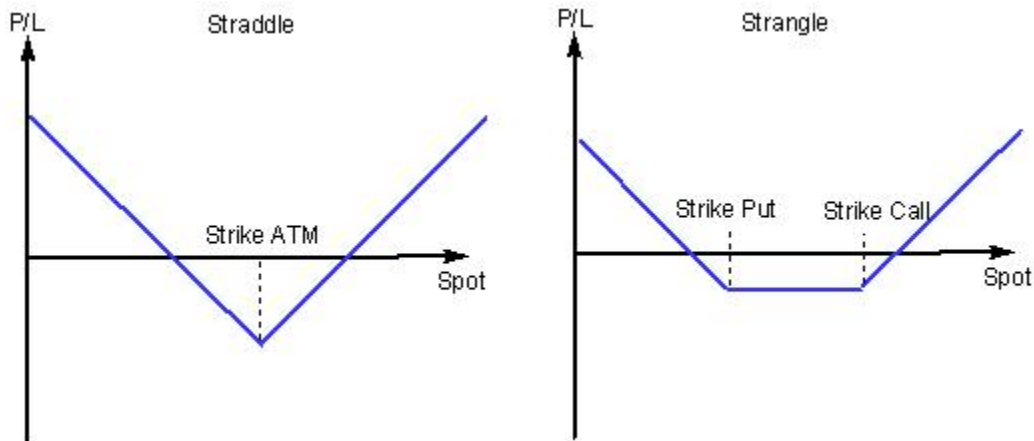
[Additional ½ marks for any LL specific examples adding value]

[Marks available 13½, maximum 9]

[Total marks available 75½, maximum 42]

Parts i and ii were straight forward questions for a well prepared candidates.
 Part iii was a challenging question for candidates to develop points on how a risk metric responds to exposure changes. Some candidates appeared to confuse the capital requirement with the capital ratio (ratio of available capital to required capital). Some candidates did not include any quantification. However, a variety of marks were available for different aspects of the solution.
 Parts iv was straight forward questions for a well prepared candidate.
 Well prepared candidates were able to generate a range of points under parts v, vi and vii.
 High scoring candidates were able to identify the ERM benefits that could apply to LongLife in the scenario in part vii.

Q3



[½ mark for choosing a correct diagram – either straddle (diagram A) or strangle(diagram C)]

(i)

Diagram A straddle

Buy long positions in equal number of equity put and call options... [½]

...with the same expiration date... [½]

...and with the strike price at the money (straddle) [½]

Increased volatility – i.e. significant movement up or down in price – will result in the strategy yielding a profit [1]

If equity volatility increases, the value of any equity option will also increase... [½]

...so closing out a strategy prior to expiration should also yield a profit [½]

Or

Diagram C strangle

Buy long positions in equal number of equity put and call options... [½]

...with the same expiration date... [½]

... with the strike price of the put option below the ATM price, [½]

... and the strike price of the call option above (strangle) [½]

Increased volatility – i.e. significant movement up or down in price – will result in the strategy yielding a profit [1]

If equity volatility increases, the value of any equity option will also increase... [½]

...so closing out a strategy prior to expiration should also yield a profit [½]

[Total marks available 7½, maximum 3]

(ii)

Given the guarantee in the investment products, market falls are bad news [1]

Thinks that markets might fall... [1]

...but doesn't want to stay disinvested in case they rise... [½]

...and wants to avoid the cost of disinvesting a large part of the portfolio [½]

...so buys options to benefit from potential volatility that might occur alongside a correction [½]

Because implied volatility is low, the price of options is similarly low [½]
 Using a straddle allows the fund to benefit from even a small increase in volatility [½]
 (or: using a strangle keeps the cost of options low... [½]
 ...and pays out only if a significant correction occurs) [½]
 ActuarInvest can take these positions without having to allocate additional capital [½]
 Alternatively, can structure the trade as a hedge against extreme movements of equities [1]
 In this case, only the downside protection is required... [½]
 ... with the notional and strike level dependent on the tail event being targeted [½]

[Total marks available 8, maximum 5]

(iii)

Availability of appropriate options... [1]
 ...in sufficient volume [½]
 Suitable and willing counterparty/counterparties to trade [½]
 Affordability and transaction costs [½]
 Whether the policy wording allows it [½]
 Whether regulations allow it [½]
 Whether internal governance allows it [½]
 ... such as whether it is within ActuarInvest's risk appetite/risk limits [½]
 Whether ActuarInvest has appropriate systems and people in place to trade options... [1]
 ...and monitor the positions... [½]
 ...and post/monitor margins... [½]
 ... and manage the risks properly on an ongoing basis [½]
 ... this is additional time/resource costs [½]

[Total marks available 7½, maximum 4]

(iv)

Requires regular monitoring and expertise for changing of positions... [1]
 ...which may increase operational risk... [½]
 ... and these trades incur transactions costs [½]
 Transaction costs can be substantial given options are bought over-the-counter [½]
 If these are used to match the guarantees, this approach ensures that the firm achieves optimal hedging [1]
 ... by matching the greeks of put options and guarantees, as the market level moves [½]
 The regular adjustment of exposure can be used to reflect the varying performance of different equity indices... [½]
 ... or to reflect changes in investment strategy... [½]
 ... or more up-to-date information about the cost of guarantee [½]
 The regular monitoring and adjusting helps the firm to accumulate more data and enhance the firm's capabilities to manage the volatility risk exposure [1]

[Total marks available 6½, maximum 4]

(v)

Need to work out the correlation/diversification with other risks...	[1]
... especially equity level risk...	[½]
...to decide which quantitative model to use for this risk...	[½]
... and the appropriate stress and scenario tests...	[½]
... using consistent high-level approach / philosophy with what is used for other risks	[½]
Consider the extent to which this risk is already included in current allowance for equity risk	[½]
Include equity volatility risk in the risk taxonomy	[½]
Include equity volatility in key risk indicators	[½]
... and performance indicators	[½]
Include existing equity volatility controls / mitigation	[½]
Sufficient amount of high quality data should be used for the economic capital modelling	[1]
The model and calibration should be reviewed by experts	[½]
To decide how to monitor the risk over time...	[½]
... including agreed risk limits and escalation procedures...	[½]
... reporting format and content should be consistent with other risks	[½]
To incorporate the risk being captured within the risk policies...	[½]
... including the periodical risk preference and appetite assessments	[½]
To formalise the responsibilities of managing and monitoring this risk...	[½]
... if necessary, clarify the Three Lines of Defence involved	[½]
To potentially incorporate the risk in the remuneration metrics, in order to encourage the right behaviour	[½]
To clarify the governance and oversight arrangement for this risk	[½]
To educate senior management and governance committees about the risk	[½]
Changes to the model and the rationale should be well documented	[½]

[Total marks available 12½, maximum 8]

(vi)

Need to ensure that the hedging is implemented in such a manner that it is recognised under the capital model as risk mitigation...	[1]
...so that appropriate capital saving is achieved	[½]
This may involve some specification / restriction on what instruments are used, how frequently the trades are rebalanced etc	[1]
How the hedge is viewed through the lens of economic capital may differ from the angle of achieving high level of hedge effectiveness and cost efficiency	[1]
Given inclusion in the ERM framework, a more formalised process is required for managing this risk type...	[½]
...including managing the hedging strategy in the context of/according to ...	[½]
... risk appetite of and risk attitude towards equity volatility risk	[½]
... monitoring requirement, including management information report	[½]
... scenario and stress testing requirements	[½]

Operational risk will also be captured more holistically... [½]

...as will counterparty default risk [½]

This holistic view from the economic capital model could make the hedging more reliable [½]

The holistic view may highlight a more effective method of hedging the equity volatility risk [½]

[Marks available 8, maximum 6]

[Total marks available 50, maximum 30]

Candidate scores varied on this question.

Part i was a straightforward question for a well prepared candidate, however some candidates did not describe the relative expiration dates and strike prices of the options.

Many candidates missed the relevance of product guarantee in part ii.

Most candidates scored well on part iii by generating a range of valid points.

Parts iv, v and vi were not well answered.

Most candidates did not address the variable exposure in part iv.

The question in part v is not how to develop an economic model but how to add a risk to an ERM framework (which includes how to add a risk to existing economic capital model). Many candidates focussed on the economic capital model and missed marks as they did not comment on any other aspect of the ERM framework.

Part vi was generally not well answered with candidates not noting the holistic implications of being included in the ERM framework or the recognition of the hedge.

END OF EXAMINERS' REPORT