INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 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
July 2020

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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 student 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 *student performance in this diet of the examination.*

Many candidates did not perform well in this diet.
The paper included many questions that required candidates to apply knowledge to circumstances described including data provided. 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 able to generate a volume of valid points. However, some of these questions were not well answered, particularly where candidates did not use the data given in the question to tailor the response or to quantify key points in their response. Knowledge questions were very well answered.

C. Pass Mark

The pass mark for this exam was 64
268 candidates presented themselves and 68 passed.

Solutions

Q1

(i)

The Walker Review (2009)

The key themes of the recommendations are:

- The 'comply or explain' approach under the UK Combined Code (now renamed the UK Corporate Governance Code) is still the best route to better corporate governance practice. [½]
- There is a need for more 'challenge' in Board discussions, [½]
- …coming from the right mix of capabilities and experience on the Board, [½]
- …and from a greater time commitment from non-executive directors. [½]
- Board-level engagement of risk oversight should be materially increased, [½]
- …with particular attention to the monitoring of risk and discussion leading to decisions on the entity's risk appetite and tolerance. [½]
- The review recommended the set up of a separate Board risk committee [½]
- …with support from a CRO and with clear enterprise-wide authority and independence. [½]
- There is need for better engagement between fund managers acting on behalf of their clients as beneficial owners, and the Boards of investee companies. [½]
- The remit of Board remuneration committees should be extended to cover other senior influential employees, [½]
- …and this remuneration should be aligned with the medium and longer-term risk appetite and strategy of the entity. [½]
- …The remuneration of these employees should be made publicly available on a 'banded' basis. [½]

[6, Max 3]

(ii)

- Group of representatives of the six teams… [½]
- …or a group independent of the six teams [½]
- The group should have a suitable skillset [½]
- These representatives are nominated and approved by vote [½]
- The group meets regularly [½]
- One chairman oversees meetings and operations (other formal roles may exist) [½]
- Roles/subcommittees should have clear/documented responsibilities, such as: [½]
- Oversight of the rating process [½]
- Oversight of remuneration [½]
- Risk management responsibilities (e.g. CRO) [½]
- Compliance with regulation/policies/ rules of the sport [½]
- Enforcement of compliance or penalties for non-compliance [½]
- Fit and proper assessment of LVA employees [½]

<u>Notes to marking team</u>

Other simple structures relevant to the scenario accepted

[7, Max 3]

(iii)

Code of conduct established and is published, containing items such as: [½]

- Anti-drugs policy [½]
- Anti-discrimination policies e.g. zero tolerance of racial abuse [½]

  - Guidance on use of social media [½]
  - Remuneration policies e.g. wage caps, equal pay etc [½]
  - Sponsorships or endorsements policies e.g. no tobacco companies [½]
  - Community engagement or charitable work [½]
- Teams consulted on any major changes [½]
- Teams could be given a veto on major changes (with a majority vote) [½]
- Transparent decision making [½]
- Regular sessions to understand risks to the game [½]
- Knowledge sharing sessions [½]
- Known penalties for breaching the rules [1]
- Breaches published with action taken and reasons for this [1]
- Reporting mechanism clear and encourage communication of potential breaches [½]
- Regular communication with key stakeholders [½]
- … such as between LVA and teams [½]

(Operational) risk measures to avoid public disasters such as:

  - Robust booking system to avoid IT failures [½]
  - Robust checks on the player rating system [½]
  - Safety measures to avoid injuries/deaths [½]
  - Business continuity plans [½]
  - Crises management plans [½]

[12, Max 5]

(iv)

- Prize money may be insufficient to justify the investment in the following year [½]
- Game is unknown outside Country A so quality of players in Country B may not be high [½]
- Game is unknown outside Country A so may take time to bring quality of players in Country B up to standard [½]
- Unable to secure funds for initial costs as prize money is received after the costs have been incurred [½]
- Salaries may not be high enough to attract competitive players [½]
- Salaries are likely be in foreign currency so there is foreign exchange risk if there is a salary cap in Country A currency [½]
- Cost of setting up the team or training venue (or other expenses) is higher than expected [½]
- Cost of travel to matches or cost of relocation (or other expenses) is higher than expected [½]
- May need a base in Country A to hold their matches which may increase costs [½]
- Social risk that search is unsuccessful/not well publicised [½]
- Risk that team is not allowed to enter the league as from overseas [½]
- Risk that a pandemic prevents travel [½]
- Risk the team does not perform well in a different climate [½]
- Risk of poor perception of team as from overseas [½]
- Reputational risk to the family if the project is unsuccessful [½]
- Reputational risk if the project is perceived as taking talented individuals away from Country B [½]
- Operational risk due to establishing new processes in relation to the search in Country B [½]
- Compliance risks, for example if there is a salary cap for teams [½]

- Political risk if the plan is perceived to be enhancing Country A's market rather than Country B [½]
- Political risk if being seen as not enhancing Country A's market. [½]
- Key man risk as one (or more) players may join a more successful team after the first year [½]
- Tax on repatriation of prize money means prize money is lower than expected [½]
- Commercial opportunities do not transpire as expected [½]

[11½, Max 5]

(v)

Mitigating factors could include:

- Confirm that prize money will remain high the following season [½]
- Hire coaches from Country A to increase standard of players [½]
- Pay in Country A currency [½]
- Use existing venues to train locally rather than build new ones [½]
- Obtain sponsorship or government grants to cover costs with a performance bonus[½]
- Lobby LVA to understand demand for an overseas team [½]
- Insure against losses due to pandemics or other events that prevent travel [½]
- Train in Country A to acclimatise [½]
- Hire experts to understand salary and effort required to have high enough ratings [½]
- Set up as a franchise of another region of Country A and have one local player [½]
- Monitor processes and costs of existing teams [½]
- Consider having an existing player play for this team [½]
- Increase awareness of the risks to people working on the search [½]
- Expense cost control (e.g. cost of flights to matches) [½]
- Financial and non-financial ways to motivate the team (to help retention) [½]
- Understand tax implications of prize money [½]
- Setting up the commercial opportunities in advance [½]

<u>Notes to marking team</u>

Actions should be consistent to the risks identified in (iv)

[8½, Max 5]

(vi)

- The family may be overly optimistic in their application. [½]
- This may have been intentional or unintentional resulting from a desire to be approved. [½]
- The people preparing the plan are the people who would stand to benefit from approval. [½]
- Insufficient care may have been devoted to the identification or analysis of risks of the plan. [½]
- Many of the metrics are subjective or requires an estimate of cash flows. [½]
- The family is likely to have a lower level of experience in Sport V as they are based in Country B. [½]
- Key risks may have been accidentally or deliberately omitted to make the application appear more favourable. [½]
- Incorrect assumptions that certain risks are independent of each other may have concealed the true likelihood of 'chain reactions' of adverse events. [½]
- The likelihood of finishing outside the top three may have been underestimated because of inadequate past experience. [½]

- Cash flows may have been guessed or, worse, deliberately biased towards optimism. [½]
- Insufficient account may have been taken of the future ups and downs of the economic cycle, which may affect salaries and/or sponsorship. [½]
- The risks associated with new technologies may have been given inadequate attention, such as training systems. [½]
- Not all the effects of the project on the family's other business may have been considered. [½]
- Credit may have been taken for benefits not directly attributable to the project. [½]
- The assumptions on which the estimates are based may not correspond with LVA's views of the world in future. [½]
- Arithmetic or spreadsheets may contain errors which lead to substantially incorrect evaluation, or there may be failures of logic in building the model. [½]

[8, Max 5]

(vii)

<u>Application form</u>:

- Ensure objective information is requested in the application form [½]
- Require evidence for any areas of subjectivity [½]
- Ask the applicant to sign a form committing them to any actions provided in the application form [½]
- Require an independent review of the information provided as part of the application [½]
- Ask the applicant to identify ranges in areas of bias [½]

<u>In assessing the application:</u>

- Sense check the information in application [½]
  For example
  - cashflows, predicted events, assumptions against: [½]
- Other applications [½]
- Past economic events [½]
- Similar events in other sports [½]
- Incorporate transparency in the assessment process: [½]
- Set limits/targets in advance [½]
- Use independent experts [½]
- Report the results of the assessment [½]

[7, Max 3]

(viii)

- The prime objective in building a model is to enable the actuary or risk manager to give an organisation appropriate advice so that it can manage its risks in a sound financial way. [1]
- The model can be used in a variety of ways: [1]
- To determine the expected prize money received based on the quality of players in the team. [1]
- To determine the expected future earnings from investment (considering all income and outgo, prize money, sponsorship, costs…) [½]
- To assess the volatility of future earnings from the proposed investment [½]
- To assess the amount of investment required and the timing (considering prize money, sponsorship, costs and other expenses) [½]

- There is three years of results from the league and only six teams which is not a significant amount of data. [½]
- The players' ratings are the main indicator of their quality. [½]
- The new team would have an unknown rating and will be determined at the start of the season, so would require expert opinion. [½]
- Test for any dependency on other parameters, such as location of match or gender. [½]
- Collect the data and supplement it with expert opinion [½]
- Ratings may be adjusted for ratings inflation (although this is unlikely with only three years' data)… [½]
- …or removal of outliers (likely in first year where ratings may not be based on competition). [½]
- Ratings are only produced annually and do not consider improvements over the year, so this could be considered in the model. [½]
- Check the fit on the model and determine the distribution of victories dependent on the rating of the team against expected opponents. [½]
- Run a model a large number of times (simulations) to determine the outcome [½]
- Obtain output of league table to determine probability of becoming 1st, 2nd, 3rd [½]
- Compare the expected future income to other costs and income to determine the present value of future profits. [½]
- Could develop scenarios to test reasonableness of output. [½]
- Consider impact of risks on the results [½]
- Consider mitigating factors, (with relevant example) [½]
- Consider the impact of risk mitigating actions/risk management (with relevant example) [½]
- Consider qualitative factors (with relevant example) [½]
- Consider alternative strategies (with relevant example) [½]
- Perform sensitivities on results. [½]
- Review and discuss results with relevant stakeholders e.g. the family, sponsors… [½]
- Perform validations on the outputs such as comparisons to historical events or public data. [½]

Notes to marking team

Points must be linked to the scenario in the question, e.g. no mark for "collect data" unless some example of relevant data is given

[15, Max 10]

[Total 39]

This question was generally well answered by candidates. Candidates able to apply some of the points from part (i) and other governance structures to the circumstances in the question scored well under part (ii). Well prepared candidates were able to generate a broad range of points under parts (iii), (iv), (v), (vi) and (vii). For part (viii), some candidates produced a generic list of steps to build and run a model without linking them to the circumstances in the question and so did not score well.

Q2

(i)

ROE

- ROE = risk-adjusted return / equity [½]
- = 9 / 216 = 4.17% [½]
- ROE measures how effectively management is using a company's assets to create profits. [½]
- The ROE can be compared to others in the sector to determine their relative profitability. [½]

RAROC

- RAROC = risk-adjusted return / economic capital [½]
- = 9 / 200 = 4.50% [½]
- RAROC provides an indication of actual profitability [½]
- It can be used to compare the risk/return of the bank [½]
- or a specific product line… [½]
- …in particular when capital is scarce and the investor needs to choose between projects [½]
- Does not capture the quantity of return [½]

SHV

- SHV = economic capital * (RAROC – g) / (Hurdle – g) [½]
- = 200 * (0.045 – 0.03) / (0.04 – 0.03) = 300 SVP Millions [½]
- SHV represents the present value of future cashflows [½]
- SHV provides measures for the economic value of the bank. [½]

SHA

- SVA = economic capital * (((RAROC – g) / (Hurdle – g)) – 1) [½]
- = 200 * (((0.045 – 0.03) / (0.04 – 0.03)) – 1) = 100 SVP Millions [½]
- SVA represents the present value of Economic Value Added [½]
- SVA provides measures for the economic value of the bank. [½]
- SVA can be used to support decisions around investment [½]

EIC

- EIC = risk-adjusted return – (Hurdle * economic capital) [½]
- = 9 – (0.04 * 200) = 1 SVP Millions [½]
- EIC incorporates the quantity of return that a unit of activity generates [½]
- EIC is positive so the marginal economic capital is greater than the hurdle rate. [½]
- EIC can be used in setting performance targets and executive compensation payouts [½]

Notes to marking team

Per metric [Max 2]

[12, Max 10]

(ii)

- Scenario analysis looks at outcomes under devised 'what if' scenarios, normally measuring loss under several related stressed variables without considering the probability of occurrence of that scenario. [1]

- Stress testing measures loss under extreme values of the chosen variable without necessarily considering the probability of that extreme event. [1]
- 'Sensitivity analysis' is often used to describe a stress test but under less extreme variation. [1]

(iii)

- As a new bank business plan, deterministic modelling will be used. [½]
- Deterministic modelling involves agreeing a single assumption for each variable for projection [½]
- Sensitivity analysis can be performed by changing each underlying assumption and noting the effect. [½]
- Scenario analysis is an extension of the deterministic approach where a small number of assumptions are evaluated using pre-specified assumptions. [½]
- Selection of appropriate and comprehensive scenarios often involves cross-discipline discussions. [½]
- Scenarios need to be internally consistent and the underlying assumptions reflect both the overall scenario and each other. [½]
- Scenarios may be based on previous situations that impacted other banks… [½]
- … relevant examples with link to actual/potential bank impact [½]
- …but are not restricted to past experience. [½]
- Since The Bank is not currently a bank, there is no internal data. [½]
- Scenarios themselves might be given in quite general terms [½]
- Stress testing would typically involve only extremely bad outcomes ... [½]
- …with little or no focus on the upside. [½]
- Deterministic modelling may be useful for the regulator to compare the effect of a range of consistent scenarios on a number of firms. [½]
- Deterministic modelling could allow consistent extreme scenarios to be considered without a need to assess their likelihood [½]
- The analysis would allow the bank to identify scenarios or stresses that cause insolvency/ruin [½]
- …and/or set thresholds for warning triggers [½]

<u>Notes to marking team</u>

Stochastic model can be accepted if justified. For example, if stochastic models are widely used and a standard stochastic model available from regulator...

For examples of scenarios (multiple variables) relevant to the bank [½, Max 1]

For examples of stress tests (single variable) relevant to the bank [½, Max 1]

Example sensitivities are marked in the next question

[8½, Max 5]

(iv)

An increase in loans and deposits since inception of 20%

- Means that expected to increase the interest income by 20%… [½]
- …and increase the interest expenses by 20% [½]
- Part of the operating expenses will be direct expenses… [½]
- ...so a portion of the operating expenses will increase by 20%. [½]
- The bad debt impairment will increase by 20%. [½]
- Example solution = 46*1.2 – 13*1.2 – 10*1.1 – 12*1.2 = 14.2 [1]

[3½, Max 2]

An increase in the level of credit risk by 20%

- This will increase the bad debt impairment by 20%… [½]
- …assuming other impairment assumptions are not affected. [½]
- Example solution = 46 – 13 – 10 – 12*1.2 = 8.6 [1]

An increase in overheads by 25%

- Not all expenses will increase… [½]
- …because overheads reflect a portion of operating expenses. [½]
- Example solution = 46 – 13 – 10*1.1 – 12 = 10 [1]

A decrease in loan interest rates

- Depends on whether loans are fixed or variable rate [½]
- If loans are variable rate and capital and interest… [½]
- …interest income will decrease by more than the relative decrease in interest rate… [½]
- …because more of the principal is paid off… [½]
- …which will mean impairments also decrease slightly. [½]
- Example solution = 40 – 13 – 10 – 11 = 6 [1]

[3½, Max 2]

An increase in deposit interest rates

- Interest expenses will increase… [½]
- …assuming behaviour is unchanged. [½]
- Example solution = 46 – 16 – 10 – 12 = 8 [1]

Notes to marking team

There are a number of acceptable answers for this question depending on the approach. Accept a sensible sensitivity (not an extreme case) which takes into account second order impacts.

For each sensitivity calculation [1, Max 3]

For each sensitivity example [2, Max 6]

(v)

- A risk taxonomy contains a full list and description of all risks might be faced, with these risks also being fully categorised. [1]

(vi)

- Market risk could refer to risks relating to changes in investment markets, or to risks relating to changes in conditions of the particular market segment of the bank. [1]
- Business risk could refer to risks relating to the general business environment, or to risks specific to the business undertaken by the bank. [1]
- Changes in credit spreads can be considered either market risk or credit risk. [1]

Notes to marking team

For any other sensible relevant examples [1]

[3, Max 3]

(vii)

Credit risk

- We do not know the nature of the loans which will support in quantifying the credit risk. [½]

- Bad debt impairment is 22 on total loans of 4506, or 0.49%... [½]
- …benchmarks could be used to determine the relative riskiness of loans against similar loans… [½]
- …however since the loans will originate in one area these may not be as applicable. [½]
- Credit risk models can be used to quantify credit risk, such as:
  - Credit scoring model [½]
  - Credit migration model [½]
  - Credit portfolio model [½]
  - Credit exposure model [½]
- As The Bank is not currently a bank, there is no internal data to model probability of default. [½]

Notes to marking team
For generic examples of credit risk models [Max 1]
[4½, Max 2]

Market risk
- The scenario testing/sensitivities can be used to quantify market risk… [½]
- …in addition, an interest rate sensitivity can be used. [½]
- Interest rate models could be used to price interest rate risk. [½]
- Various metrics can be used, such as:
  - Value at Risk (VaR) [½]
  - Tail Value at Risk (TVaR) [½]
  - Expected Shortfall (ES) [½]

Notes to marking team
For metrics [Max 1]
[2½, Max 2]

Liquidity risk
- Asset-Liability modelling can be used [½]
- To model cash flows in each time period [½]
- There is likely to be a mismatch between terms of loans and deposits… [½]
- …which will need to be quantified. [½]
- Cash ratio is 733 out of total assets of 5239, or 14%... *[or other liquidity ratio]* [½]
- …which could be benchmarked against peers. [½]

[3, Max 2]

Operational risk
- Operational risks are difficult to quantify [½]
- Scenario analysis can be used. [½]
- The Bank is not currently a bank, so there are no past events… [½]
- …so these will need to be devised from industry data or external loss data. [½]
- As the business will originate in one area there may be events in that region. [½]
- Mitigation actions can be considered. [½]

[3, Max 2]

Notes to marking team
For each risk [Max 2]

[Total 8]

(viii)

- An organisation's economic capital is an assessment of the capital required to cover its risks. It is the amount of capital that an organisation requires to cover its liabilities and obligations (or to remain solvent) under adverse outcomes, with a given degree of confidence and over a given time horizon. [1]

(ix)

The key quantitative components The Bank would consider are:

- Solvency standard – desired creditworthiness of the organisation which can be inferred from its (desired) debt ratings. [1]
- Level of risk – the greater the risk, the greater the capital required. [1]

(x)

<u>Introduction</u>

- Credit rating agencies issue ratings based on an assessment of financial strength [½]
- These rating assessments occur on a periodic basis [½]
- Credit ratings give the position over an economic cycle [½]

<u>Approach of the bank</u>

- As this will be a new bank, the Standardized approach for credit risk is likely be used… [½]
- …however as the bank grows the Internal Ratings Based (IRB) approach will be used. [½]
- The bank may have one model for all of the risks, or more commonly, by a series of separate models, usually one or more for each separate risk-taking activity. [½]
- Economic capital encourages over-reliance on a single model and a single-number measure of risk, which may not predict future risk positions well. [½]
- The bank's ability to monitor, control and manage risk exposures will be important… [½]
- … so selection and use of indicative, predictive and sensitivity measures will be considered including the: [½]
  - Appropriateness of the risk models used, [½]
  - Range of risk measures used e.g. the bank may have a series of KRIs in addition to its base economic capital calculation [½]
  - Assumptions that underlie those models e.g. appropriate time horizon for the bank may be days or months rather years [½]
  - Treatment of risk-mitigation activities in those models e.g. level of collateral or timing of warning triggers against loan default [½]
  - Infrastructure to feed data to the models, [½]
  - The procedures that are followed to run the models, e.g. do - check - review [½]
  - Validation process of the models such as comparing output against national banking industry models and understanding the differences for the regional bank [½]

<u>Assessment of the approach</u>

- The standardized approach is unlikely to be representative of the company… [½]
- …and is unlikely to be used efficiently in strategic planning. [½]

- The IRB approach allows the bank to perform a more tailored approach and will be considered more favourably. [½]
- The credit rating agency will perform a business assessment of the bank [½]
- This will primarily focus on business risk. [½]
- As the business will predominantly be from one region, the bank will have a higher concentration risk. [½]
- The credit risk agency would look for the bank to be using economic capital actively in their strategic [½]
- and business planning, and decision making. [1]
- ERM is considered as part of a rating agency assessment. [½]
- The credit rating agency will consider the capital position of the bank [½]
- They will look at the level of capital compared to the risk weighted assets [½]
- Consideration will occur against regulatory requirements… [½]
- …tier 1 capital needs to constitute at least 6% of RWAs… [½]
- …and common equity is at least 4.5% of RWAs. [½]
- Quality of capital will be considered… [½]
- …as a new bank it is likely the majority (if not all) of the capital will be Tier 1. [½]
- Benchmarking of credit ratios will occur against peers [½]
- Availability of capital will also be considered. [½]
- Excess capital is not penalized. [½]

[18, Max 8]

(xi)

- Credit risk capital requirement = Pillar 1 credit risk Risk Weighted Assets… [½]
- …multiplied by 8%. [½]
- Pillar 1 credit risk: Risk Weighted Assets = Exposure * Risk Weight… [½]
- …summed over all assets. [½]
- Assume risk weight for loans is 35% [alternatives accepted] [1]
- Assume cash is held in central bank so has risk weight of 0% [1]
- Assume defaulted loans proportion is 22/4506 = 0.49%... [½]
- …and has a risk weight of 100% *[alternatives accepted]* [1]
- Pillar 1 credit risk: Risk Weighted Assets (RWAs) = 733 * 0% + 4506 * (1 - 22/4506) * 35% + 4506 * 22/4506 * 100% = 1591.4 SVP Millions [1]
- Credit risk capital requirement = 8% * 1591.4 = 127.3 SVP Millions [½]

<u>Notes to marking team</u>

Note that the Pillar 1 credit risk capital requirement is one component of the Pillar 1 capital requirement, so estimates should be lower than the capital of 209 SVP Millions.

[7, Max 6]

(xii)

- As the entity is a bank significant credit risk is to be expected [½]
- The bank is holding capital for this risk [½]
- The decision to invest should be based the investors tolerance to risk [½]
- And desired return [½]
- The expected return reflects how successful the bank could be at managing the risk [½]
- Risk based metrics such as those in part i will help aid the investment decision [½]
- To optimise the investor's strategy [½]

- The investor may be heavily exposed to credit risk from other investments [½]
- Other investors may wish to increase their exposure to credit risk to diversify their portfolio [½]

[4½, Max 3]

(xiii)

- Avoidance – take on less business [½]
- ...this will reduce other risks too [½]
- ...and reduces the overall return [½]
- Take on less risky business – better underwriting [½]
- Diversification – take on negatively correlated risks [½]
    - ... different types of customers – retail, commercial, individual [½]
    - ...or different levels of security [½]
    - ... several smaller loans instead of a few large loans [½]
    - ... cover different regions but this is outside of the current business plan [½]
- Reduce random fluctuations by increasing the size of the portfolio [½]
- ...although this can increase other risks such as operational risks [½]
- Better matching of assets and liabilities [½]
- ... better matching of deposits with loans [½]
- Due diligence and exposure management [½]
- ... to correctly assess and price the risks [½]
- Use collateral arrangements to reduce the expected loss on default [½]

Notes to marking team

For examples of diversification [Max 1]

[7, Max 5]

[Total 61]

[Paper Total 100]

Candidate scores varied on this question.
Parts (i) and (ii) were straight forward questions for a well prepared candidate. Some candidates used the balance sheet regulatory capital instead of the economic capital in some of the ratios. These questions were generally well answered.
Most candidates were able to score some marks on part (iii). Some candidates listed stress tests, sensitivities and scenarios without explaining how the bank would be able to do this analysis.
Some candidates did not carry out any quantification of the sensitivity tests they suggested in part (iv) and some candidates did not explain the assumptions underlying their assessment so did not score well.
Parts (v) and (vi) were generally well answered with candidates able to generate many good examples.
Most candidates were able to score some marks on part (vii). Candidates that scored well considered the different quantification methods available for different risks allowing for the circumstances of The Bank.
Part (viii) was a straight forward question for a well prepared candidate.
Part (ix) was generally well answered. Some candidates explained how to calculate economic capital rather than how to set a target level.
Part (x) was not generally well answered. Well prepared candidates were able to generate points covering a range of different factors to review.

Many candidates did not attempt a calculation for part (xi). Some candidates did not use the knowledge given in the question that The Bank was going to operate under the Basel risk framework. Candidates that attempted the calculation generally scored some points.
Part (xii) was generally not well answered as some candidates did not consider the investor's attitude to risk
Part xiii was well answered as candidates generated many actions the bank could take.

END OF EXAMINERS' REPORT