

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2010 examinations

Subject SA5 — Finance Specialist Applications

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

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Chairman of the Board of Examiners

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- 1 (i) (a) The role of the risk process manager is to facilitate a risk management process.

The risk process manager would identify the causes of risk. This would be done by interviewing appropriate staff and reviewing the risks and outcomes of similar projects if available.

The risk process manager would be expected to keep formal track of risk identification and regularly report the risks.

The risk process manager would hold workshops for the purpose of identifying the risk and any mitigants that might be employed. Part of this would be to assess how risks are related to each other. Scenario planning should be used to illustrate the impact of combinations of risks and it will be important to assess the financial impacts of the project as a whole for reasonableness. The possible actions resulting from the workshop should be communicated to the project manager for assessment.

For each risk, the risk process manager would estimate the probability and severity. If there are any key areas where the timing of the risk may be more severe then this should be considered.

- (b) Difficulties encountered may be:

Individuals may not be able to assess probabilities and impacts accurately. They may not have the experience and can be prone to making poor estimates of probability. This can be mitigated by ensuring that the risk assessment meeting has a range of individuals involved with different backgrounds. The experience of similar projects can also be used as a further validation.

The involvement of an outsourcer may make it difficult to get an accurate assessment of the risks that they are running. The outsource contract would need to be examined to determine what covenants were included within it should a risk crystallise so that the net impact of the risk can be determined.

- (ii) The close down report would discuss the performance of the investment against the original objectives.

The risk management process would itself be critically assessed to determine the risks that had not been foreseen and the methods that could have been used to mitigate those risks.

Risks that were anticipated but had a materially different impact or probability to that originally envisaged would need specific comment.

The project sponsor (management individual) will be especially interested to discuss the report. All of the project participants should be

involved in signing off the report as a record of the events that took place. These will include the members of the risk review team, some of the internal management and some employees of the IT service provider.

- (iii) Using 8% assumes that the project will be financed in the same proportion as the firm itself is financed. This may not be correct.

The cost of debt may alter as a result of raising debt to support the project. This would alter the weighted-average cost of capital.

Borrowing additional funds creates financial risk for the company and therefore will increase the rate of return that they expect from the common equity.

- (iv) (a&b) Staff resource deficiencies at the outsourcer, either in number of appropriate skills. Mitigate by ensuring the outsourcer has implemented cross-training, has removed key-man dependency and has alternate sources of personnel that can be drafted into the project if required.

IT information system failures during the development process. Mitigate by including system back-ups and working at multiple sites.

Developer runs into financial difficulty and cannot deliver the project. Mitigate by including a full credit assessment at the start of the project.

Weaknesses in management leading to delivery failure. Mitigate by site visits to observe progress and implementing regular progress meetings and reports.

Physical disaster at the developer, such as fire, lead to delivery failure due to lack of back-up planning. Mitigate by preparing a full disaster recovery plan.

- (v) (a) The loss distribution approach requires, for each risk identified a probability distribution for the frequency of the risk and its severity.

Where observed data is available then a distribution may be fitted, otherwise parameters for the distributions will need to be estimated by fitting an appropriate distribution having developed sufficient estimates using experience.

Use a Monte-Carlo simulation to arrive at a distribution for each risk in isolation.

Determine the correlations between each risk.

Use a Monte-Carlo simulation to run a large number of scenarios through using the distributions and correlation matrix to generate a combined distribution.

The combined distribution can then be used to determine the likely cost of operational risk that should be allowed for in the project at the required confidence level.

- (v) (b) The model could be validated by:

Using industry data where losses have occurred in similar projects to calibrate the model. This would be losses occurred through IT equipment failure and the impact on the project budget.

Using sensitivity testing to determine how sensitive the model is to the parameters chosen. For example, altering the rate of failure of the IT system.

Determine whether the amount of loss at a particular probability level seems sensible by comparing to intuition and experience of similar projects within the company. The company will have experience of other IT projects, though they might be of different size.

Discuss the results amongst the project group sponsors and personnel to get a peer-group review, as well as amongst others who have worked with similar projects.

Where the risk can be insured, the insurance cost will provide an estimate. For IT systems this may only protect against a property disaster rather than failure through 'wear and tear'.

- 2** (i) There is a competitive process for awarding contracts.

Payment is made for services rather than assets.

There is a single point of contact in the private sector company to simplify contract management and problem resolution.

Risks that the private sector can manage better than the public sector are transferred from the public sector.

Encourages creativity and innovation to reduce costs and /or result in an asset better able to deliver the scheme's on-going requirements.

Typical PPPs include schools and hospitals.

- (ii) The project would need to be assessed by comparing the cost of the project against a model of the public sector providing the service itself.

The cost of risk mitigation would need to be factored in. The cost of the risks transferred to the private sector, both downside and upside risk, would need to be modelled.

The risks retained by the public sector would need to be assessed and the cost allowed for.

Allowance would need to be made for the risk that the private sector provider may not be able to manage the risks that it has taken on and could default.

The project would be suited to PPP if the cost of the chosen approach, less the value of transferred risk, plus the cost of risk generated through possible default, falls below the public sector comparator.

- (iii) An approach would be to consider the internal rates of return for both parties based on the initial outlay and the income that they can expect. Another approach would be to use the present value of future profits minus the initial outlay.

The contractor will not receive the social benefits but the Government will. However, the contractor will likely believe that participating in this project will help it to win more PPP work in the future.

The parties will have different hurdle rates for their investments. The Government will usually accept a rate of return much lower than the private contractor.

The actual investment from both parties will then be subject to negotiation based on the acceptable range of return for both parties.

- (iv) Both parties will have different views on the perceived risks involved in the project. This will determine their view of the risk-adjusted project return. In particular, the business will need to consider the political risk of entering into the transaction.

The business may be able to reinsure some of the risk to another party at a price that makes taking additional risk in the project attractive. The Government may be willing to act as the insurer of last resort for an additional premium and this can be included within the project terms.

The business will need to consider the rate of return after tax and the cost of any financing arrangements it needs to provide the investment.

The business may have partners or can form a consortium to spread the risk and provide specialist services.

The Government will consider the political popularity of PPPs as well as the opportunity cost of using its own funds and/or borrowings.

- 3** (i) The London Clearing House (LCH) is a limited liability company registered in the UK which clears trades for: LIFFE, Tradepoint, The International Petroleum Exchange of London (IPE) and The London Metal Exchange (LME).

LCH acts as the central counterparty to its members who in turn act as counterparties to their clients. LCH manages this exposure through:

- initial and on-going assessment of the financial & operational resources of members to meet their commitments to clients
- on-going monitoring of members positions
- daily – and sometimes intra-day – margining

LCH, in conjunction with the relevant exchange, can act to protect the integrity of the market by closing out the open interest in a contract that fails. Failure could arise from fraud, improper trading or lack of liquidity.

Once LCH has registered a matched trade it becomes the principal to that contract. LCH reduces counterparty risk for its members and allows them to net out contracts originally traded with different members. As LCH operates a centralised settlement process, netting payments and receipts within each currency block across contracts and exchanges, it reduces settlement costs for members and systemic risk.

- (ii)
- Use instruments available on other exchanges not cleared by LCH. These instruments may be more directly suited to reducing the credit risks in the fund.
 - Buy a CDS that pays out in the event of default of the underlying debtors or create the desired level of credit protection via a structured credit note or credit spread option for particular positions
 - Short sell a similar corporate bond where possible
 - Improve diversification of credit risk in the portfolio which is likely to be concentrated at the start – consider swapping some country or industry credit exposure for other countries or industries via a total return swap
 - Securitise the debt payments where possible and sell it on to another investor
 - Buy credit protection on the issuer / counterparty of the CDS or other credit protection contracts, should Mr Makemoney decide to use this as part of the options above, to reduce the credit risk as a result of counterparty exposure (which he won't currently have under the LCH).

- (iii) Areas of potential product risk facing CWAM can be outlined as follows:

Product definition

- competition – are there too many of these funds already being sold to the market?

- intellectual property position – name of the fund and terminology used already trademarked?
- lack of clear, stable product definition or objective for the fund
- not understanding the market needs – what type of investments the target market is after
- not understanding the user – what terms (e.g. fees, subscription, redemption terms and reporting would be acceptable to the end user
- onerous product cost constraints – not staying within the budget for set-up costs etc.

Development team

- project leadership – lack of clear leader with ultimate responsibility creating inefficiencies
- availability of staff – not having enough staff available to set-up the fund on time
- specific skills needed – e.g. lack of investment research, risk management, trading, legal, compliance, accounting skills
- team integration – dispersed locations hampering communication and creating inefficiencies

Technical

- inadequate technology availability / readiness to manage the fund and the business
- inadequate product / system architecture, including back-up systems and disaster recovery

Counterparties, outside resources & outsourcing

- unsuitable fund counterparties or inadequate terms with fund counterparties
- trouble with sourcing, resource availability, supplier quality (e.g. data for investment research)
- inadequate or unsuitable alliances, partners (e.g. outsourcing of marketing, legal and accounting where there are conflicts of interest)

Quality and legal

- quality systems requirements – e.g. inadequate checks on trade compliance / mandate adherence
- regulatory requirements not fully taken into account
- product liability – risk of product being mismanaged relative to its stated objectives and terms

Sales and distribution

- poor timing of fund launch — tradeshow or seasonal requirements or unfavourable market environment for raising capital

- inadequate product distribution, sales support
 - insufficient documentation, training, service, maintenance
 - risk of misselling
- (iv) Most of the product risks could be managed by adhering to good project management principles. This can include consideration of:
- schedule of constraints / milestones
 - project budget
 - training needs
 - facilities needs
 - resource needs

Some of the areas for risk management can be taken from the following list:

Product definition

- competition – analyse likely competitive pressures (e.g. Porter's five forces)
- intellectual property position – register relevant trade marks
- set out clear, stable fund definition and objectives
- understanding the market needs – consider conducting some market research in advance
- understanding the user – survey prospective clients on likely fund terms and reporting requirements.
- Make sure fund terms offered make sense – e.g. the liquidity of the portfolio matches the liquidity offered to clients, and that there are measure in place to protect investors in the fund in the event of significant redemptions
- product cost constraints – come up with a realistic budget and stick to it

Development team

- project leadership – appoint a project leader to manage to process
- availability of staff, specific skills needed and team integration (dispersed locations) needs to be taken in to account in the project plan and additional resources appointed if needed

Technical

- ensure setting up of technology availability / readiness and product / system architecture is included in the project plan and that appropriately qualified resources and contingencies are assigned to technical set-up and support

Counterparties, outside resources & outsourcing

- ensure adequate counterparty agreements with appropriate terms are in place

- conduct thorough due diligence to assess quality and suitability of suppliers, alliances or partners. Make sure all relevant legal contracts are in place outlining scope of service and all terms and conditions.

Quality and legal

- ensure good systems, procedures and controls are in place to monitor quality of internal processes
- ensure fund and firm complies with latest regulatory requirements
- product liability – ensure independent checks are in place to monitor the fund's adherence to its mandate

Sales and distribution

- consider timing of fund launch – is the current market environment going to be conducive or not to raising capital for the fund
- make sure adequate product distribution and sales support are in place
- make sure sufficient documentation, training, service, and maintenance are in place, particularly to avoid the risk of misselling

- (v) The FSA operates as a reactive and a pro-active regulator. It is reactive in that it receives regular flow of information from regulated firms, as a result of which it can institute investigations and/or take disciplinary action. This information includes accounts and auditors' statements, banking returns and insurance returns, as well as concerns expressed by official bodies, individuals and the media.

If any of this information gave cause for concern, then the FSA could take the appropriate action. The FSA is also a pro-active regulator in the sense that it has a regular programme of inspection visits for regulated firms as part of its enforcement regime. If, as a result of complaints, inspection visits or investigations, the FSA decides that the law or its rules have been broken, then it can take disciplinary action.

This could include:

- public announcements
- fines
- conditions on future business
- obtaining a court injunction
- ordering compensation for customers
- withdrawing authorisation
- prohibiting any individual from carrying out regulated activities.

- (vi) Having the following information, systems and procedures in place should minimise the impact of employee absence as a result of an influenza outbreak:

- Clear management succession (chain of command)

- Alternative locations for work (including working from home) while providing full remote access to all relevant systems
- Emergency communication (phone + email)
- Pre-agreed controls to manage portfolio risk limits in the event of absence of a fund manager
- Also having someone else that can trade the portfolio on the fund manager's behalf in the event of a significant news event
- Management of Public relations and news control
- Medical care for staff (if needed)

END OF EXAMINERS' REPORT