INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2013 examinations

Subject SA5 – Finance
Specialist Applications

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.

D C Bowie
Chairman of the Board of Examiners

January 2014

General comments on Subject SA5

The SA5 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. 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.

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. Some points are more fundamental to the correct answer but, in the main, candidates earn one-half mark per correct point up to the limit of marks available for the question.

Comments on the September 2013 paper

Both questions were based on relatively common place circumstances. Question 1 focussed on how the choice of domicile can affect a company and on UK personal tax. Question 2 focussed on the issues an insurer must consider when establishing an SPV to underwrite credit default swaps.

The answers to the questions were well spread across the syllabus and the core reading. Some candidates appeared to have difficulty making a sufficient number of points which were directly relevant to the question to gain good marks. Also, relatively few candidates had prepared themselves to answer a question regarding FSAP or the calculation of UK personal tax liability.

Candidates will benefit from more practice with past papers and more frequently reading the financial press. The resulting improved depth of understanding of the application of finance in practical situations will make some questions much easier to answer.

The SA subjects are the last subjects in the sequence of formal actuarial exams. Candidates taking SA5 are expected to have at least a basic knowledge of how businesses such as banks, life insurance and general insurance companies function.

Well-prepared candidates scored acceptably well across the whole paper. The comments that follow the questions concentrate on areas where candidates could have improved their performance.

1 (i)

- Monetary policy – the control of some measures of the money supply and/or the level and structure of interest rates.

- Fiscal policy – decisions on the level and structure of taxation and government expenditure and hence, by implication, the public sector borrowing requirement (or debt repayment)

Many candidates scored full or near full marks for this question.

(ii)

- In reality, there is considerable overlap between policies. Throughout post-war period and until 1970's, monetary policy played a subsidiary supportive role to fiscal policy in most countries, including the UK.

- Governments tended to emphasise the use of demand management techniques in an attempt to "fine tune" the economy.

- Money supply often allowed to accommodate money demand, with little attention paid to the possible inflationary implications.

- From 1970's onwards, much more positive role was adopted for monetary policy in many countries, including the UK, with explicit recognition being given to control of money supply in fighting inflation.

- Monetary policy brought to the forefront of economic policy package, and the other policies were seen as being merely supportive to this.

- Governments have adopted Medium Term Financial Strategies aimed at reducing inflation (via a policy of strict monetary control) while reducing the proportion of national resources taken for public sector use and the burden of taxation on the working population.

- Such "supply side" measures are aimed at boosting incentives for investment and, hopefully, encouraging long-term economic growth.

- Monetary policy in the UK has been implemented by the Bank of England since May 1997, and does to substantially independently of government. The government sets an inflation target and the Bank retains responsibility for setting short-term interest rates to try to achieve this target. If it fails, it is required to explain the reasons to the government.

- Up until 2007, the frameworks for monetary policy, fiscal policy and public spending appeared to provide a coherent strategy for maintaining high and stable levels of growth and employment and for minimising the adverse effect of external events.

- Since 2007 the world economy has been in decline, with the collapse of several major financial institutions and with governments spending

£billions to support others. Monetary policy – through the use of very low interest rates – has been at the forefront of trying to stabilize the UK (and global) banking system

Candidates either found this question straightforward or very difficult. As ever, marks were given for other reasonable answers including the use of quantitative easing as an alternative to printing money to stimulate the economy.

(iii)

- UK is the principal centre for European financial services
- Likely to experience higher level of competition from established firms; depends on specific range of products the company transacts
- May retain expertise advantage for UK companies who want to do business in Germany / Europe
- May open up commercial activities with other English-speaking customers, e.g. USA
- Company's existing German customers should be unaffected if office in Frankfurt is full service office; if not, may lose business due to other German companies instead
- Moves to much smaller "local" marketplace (EMA has about 300m "local" inhabitants vs 60m in the UK), hence may reduce potential retail sales volume
- May experience reduced access to the EU single market in goods and services if Frankfurt office becomes a reduced presence (which is probable if head office is relocated)
- May secure fewer EU government business (if relevant) if relevant skills / employees moved to the UK
- Reduced transparency of prices for customers in EMU countries or multinationals (may be dealing with HQ and branch offering similar products in different currencies)
- However UK is principal European centre for financial services; may benefit from being closer to financial centre
- Much depends on the mix of business the company currently transacts; may already have a presence in the London market?
- Existing debt denominated in Euro but principal revenue henceforth probably in Sterling; implies currency mismatch; need a robust plan for ensuring predictable repayment of obligations

- Higher transaction costs arise in dealing with Frankfurt branch (FX conversion charges to pay between HQ and branch); also balance sheet translation risks for Euro assets / liabilities held by Frankfurt branch

- Increased operational complexity in dealing with offices in 2 jurisdictions, including possibility of new head office becoming divorced from operating environment of Frankfurt branch.

- Public markets have smaller role in raising finance in Germany than in UK; direct borrowing from banks more common; company may need to substantially adjust its treasury operation to adapt to new local market preferences

- Principal operations / head office would in future be supervised by the FSA and operate under the FSMA 2000; it will need to seek authorisation for itself and its key staff from the FSA according to its expected activities or face a penalty

- The FSA itself has been replaced by 2 new regulators (the FCA and the PRA); The FCA regulates the financial markets, exchanges and most firms from a conduct perspective while the PRA regulates banks, building societies, insurers and major investment firms mainly from a solvency or capital adequacy perspective

- Frankfurt branch likely to be additionally regulated by local regulator; consequently parts of the company will operate under multiple regulatory regimes at the same time

Many candidates made approximately one-half of the number of points needed to score full marks.   Many of the candidates failed to address all of the five areas specified in the question thus losing marks.

(iv)

Mr X		*Personal allowance*	*Basic*		*Higher*			
Salary	100,000.00	−8,105.00	34,370.00	6,874.00	57,525.00	23,010.00		29,884.00
Living accommodation	18,000.00				18,000.00	7,200.00		7,200.00
Share portfolio capital gain	5,500.00				0	0		0
Share portfolio dividends	1,250.00				1,250.00	451.39	−138.9	312.5
OffshoreLand account	400				400	160	-133.33	26.67
Betting	1,000.00		Exempt					0
								37,423.17
Mrs X	*Income / gain*		*Basic*		*Higher*		*Credit*	*Tax due*
Salary	0		0	0	0	0		0
Living accommodation	0				0	0		0
Share portfolio capital gain	5,500.00				0	0		0
Share portfolio dividends	1,250.00		1,250.00	138.89			−138.9	0
Venture capital trust	8,000.00		Exempt					0
OffshoreLand account	400	−8,105.00	0	0				0
								0
Combined Tax Liability								
								37,423.17

Many candidates were not prepared for a tax calculation question.

The above calculations do not taper Mr X's personal allowance. From the 2010-11 tax year the Personal Allowance reduces where the income is above £100,000 by £1 for every £2 of income above the £100,000 limit. This reduction applies irrespective of age. Answers with and without the taper were accepted.

(v)

- MAD = refers to insider dealing and manipulation
- MIFID = provides harmonized regulatory regime for investment services across EEA by increasing competition and consumer protection
- PD = regulates laws which govern drawing up and publication of prospectuses
- TD = aims to increase financial market transparency

Many candidates scored full or near full marks for this question.

(vi)

- MAD key provisions are:
    - definition of inside information
    - define market abuse
    - require disclosure of inside information asap
    - require disclosure of personal interests
    - maintain list of insiders
    - report suspicious transactions

- MIFID key provisions are:
    - define range of investment services regulated by EU
    - increase governance and business conduct rules
    - set out more clearly allocation of responsibility between home and host state
    - applies to wide range of firms incl inv banks, PMs, brokers, commodity traders, corporate finance firms

- PD key provisions are:
    - can issue shares in one country while drawing up prospectus in another
    - all prospectuses approved by single regulatory authority

- TD key provisions are:
    - set out minimum financial info that company must publish in half-yearly and annual accounts
    - require public notification of shareholding sizes relative to certain limits

Many candidates were not prepared for this question. These directives are included in the core reading and candidates are expected to know their principal provisions.

(vii)

- Aims of the FSAP are:
    - Create single EU wholesale market for financial services and products
    - Create open and secure financial retail market
    - Implement state of the art prudential rules and supervision

- MAD
    - seeks to create more secure and open securities transaction markets

    - seeks to prevent (institutional) insiders from unfairly benefiting from their relationship with particular companies at the expense of other market participants

- MIFID
    - seeks to introduce standardized conduct of business rules across EU
    - seeks to boost the competence and risk management of firms operating in EU financial services
    - improve security of customers dealing with EU financial firms
    - standardized conduct rules prevents barriers to entry for firms across member states therefore creating more open (retail) market
    - defines regulatory responsibility to improve prudential supervision of trading firms
- PD
    - standardized prospectus rules allows firms to issue securities across member states more easily so improves unification of wholesale listing market
- TD
    - by setting minimum publishing requirements, retail and wholesale investors have access to comparable financial information about listed securities regardless of which member state the security is primarily listed in so improves unity of market and openness of information

As for part (vi) many candidates were not prepared for this question.

(viii)

- investment banks tend to rely on capital market funding which is more volatile than (retail) deposits
- investment banks often operate at higher leverage than commercial banks
- retail deposits typically guaranteed (up to maximum) by government
- proposal designed to shield (mainly) retail customer deposits from riskier investment banking activities in the event of funding difficulties in the capital markets
- proposal seeks to limit public sector support needed in the event of (investment) banking arm experiencing problems and requiring lender of last resort stepping in
- proposal seeks to transfer risk from government to shareholders in respect of riskier parts of banking activities

The question was handled well by most. Almost all candidates made three or four of the above points but many made no further points.

(ix)

- The proposal is only relevant for banks engaged in both operations
- A split is likely to be difficult from a practical perspective as the activities are bound to overlap
- Will need allocate capital to the separated entities
- Shareholders will wind up owning two companies instead of one.
- Will need to duplicate senior management functions for each entity
- practical implications of the proposal, including impact on IT, human resources, operational capability (many functions may be shared between the divisions at present, and would need to be separated in future)
- if other countries do not adopt similar proposals, UK competitive position likely to be weakened as competitor banks have additional capital structure advantages which should translate into lower prices / more customised products / a wider one-shop product range etc.

Many candidates' answers failed to note the practical difficulties and costs. The majority of the answers addressed the need to separate capital and potential to weaken UK's competitive position. Other valid points included the difficulty of separating trading into hedging to reduce risk to the retail/commercial bank and speculative proprietary trading. It may be appropriate to separate hedge trading from proprietary trading.

2 (i) The UK insurance sector

The insurance sector is supervised by the Financial Services Authority.

Its prime focus is on insurers maintaining financial resources sufficient to meet their responsibilities to policyholders, including their ability to absorb any market falls that may occur.

The London Insurance Market (London Market) is a distinct part of the UK insurance and reinsurance industry.

It is the main centre for world reinsurance business and for energy, marine, aviation, satellite and other forms of transport insurance.
It comprises insurers, reinsurers, Lloyd's syndicates, Protection and Indemnity Clubs (mutual insurers for ship owners) and brokers.

The question was handled well by most.

(ii) Credit risk – in particular likely probability and magnitude of default of an individual contract – assessment of margin for error / model risk, and exposed to risk

Assessment of any systemic risk and the extent of likely correlation between contracts (particularly during a broad market stress event). Correlation of risk/return with XYZ Insurance's other books of business is likely to be low (assuming they are all traditional general insurance (P&C) business).

Volatility of default experience and volatility of exposure (e.g. if collateral invested in risky assets)

Likely capital required to reserve against losses, how will these be funded, how will these be invested?

The firm's cost of capital, what is the required rate of return given other potential uses of capital, and the required (net of tax) profit margin Expenses incurred in setting up, selling, managing, monitoring and administering the contracts (in the case of fixed costs – likely volume of business sold, and if say development costs will be amortised over time).

Competitive considerations (premium rates charged by other market participants)

Depends on if hand over debt or net position on default (What do you get on default)

Contract terms including term, timing of premium and claim payment, conditions to make a claim

There were a wide range of relatively poor answers. Only a few candidates mentioned all of the relatively straightforward points including frequency, severity, capital requirement, cost of capital, contract terms and competitor's rates.

(iii) General Insurance companies are taxed on a trading profit basis.

The profits of a proprietary general insurance company calculated for taxation purposes are likely to differ from those disclosed in its financial statements. These differences will include:

- the investment return, particularly equity dividends
- depreciation and disallowable expenses

For tax purposes the insurance technical provisions are deductible following the accounting policy adopted in the financial statements.

Health and care insurance business is generally treated as a subsidiary fund within long term or short term insurance companies.

General insurance companies (and most Lloyd's members) face a clawback of the tax benefits they get by not discounting provisions for outstanding claims. This restriction also applies where they significantly overestimate the provisions for settling claims in future years. The technical provisions for claims liabilities must be certified as “not excessive” when included in the tax computation.

This question was not well handled by most. A similar question has been asked in the past. As ever marks were given for other valid points including noting that the main rate for corporation tax is 25%.

(iv)

- Regulatory: regulator may require high levels of solvency capital against this business or limit insurance companies’ exposure to financial credit risk

- To evidence good risk management (through transfer of risk) under Solvency II

- Improve solvency capital funding ratio

- This book of business may be assessed to not be diverse enough and highly correlated to certain economic events. Hence XYZ may want to protect against extreme events by diversifying its book of business through transferring any concentrated risk exposures.

- It may improve the insurance company’s own credit rating

- Profit considerations (write more risk and earn ceding commission – e.g. specially if viewed to be a good environment currently to transfer risk at favourable rates)

- XYZ’s may not have enough capital currently to write this line of business (Book may become too big, or limited existing capital) etc.

Most candidates made the points regarding rebalancing the book, maintaining an appropriate level of capital and the potential to profit from a favourable transfer.

(v) Features should look to meet the needs of XYZ Insurance company, while at the same time remain attractive enough to be able to sell to outside investors.

Main factors/features to be considered when setting up the SPV:

- Split between Equity/Debt and max leverage – this would influence the risk and return profile for the various equity and debt tranches

- Maximum/Minimum size and total capacity of the SPV – is it large enough to be worthwhile for XYZ and small enough not to be too difficult to sell all the capacity at favourable terms

- Duration of SPV – what duration capital does XYZ require to write this business?

- Composition of the target book of credit default protection contracts, including guidelines around concentration and other risk limits

- Form of risk transfer to the SPV – securitised (e.g. bond), insurance-linked swap, reinsurance contract, etc.

- Retention and alignment of interest – to what extent do XYZ want to participate in the SPV and in which tranches.

- Fair allocation policy – what procedures and mechanisms should be in place to ensure XYZ does not just fill the SPV with low quality / higher risk contracts and keep all the higher quality contracts for itself?

- Who retains the tail risk (if any)?

- SPV's exposure to counterparty risk (in the form of XYZ itself, the collateral manager, etc.)

- Ownership and voting rights of investors in the SPV (who controls the SPV and how would any disputes between the owners be resolved)

- Appropriate termination features, including an ability to wind the vehicle up early should the need arise (e.g. market environment no longer attractive)

- Fees, including any set-up costs, ongoing, and winding-up expenses/management fees. What impact are these likely to have on the expected return delivered by the SPV, and would this still be acceptable to investors?

- Extent of any ceding and profit commissions taken by XYZ Insurance and how do these compare to peers

- Capitalisation during ramp-up, including how capital is likely to be drawn down and manage expectations in terms of potential impact on returns during the early part of the SPV's life.

- Need for a rating for the SPV debt tranches – requirements of investors, and rating agencies and likely costs

- Capital structure –

  (a) Debt: level of coupons, security ranks above equity holders if the structure were to wind up

  (b) Equity – dividend payment policy, greater potential/levered participation in upside of any excess profits, though less secure than debt

- Collateral structure and permissible collateral investments, and specifying the currency of collateral

- Legal / regulatory (including domicile) considerations and resulting impact on regulatory capital requirements, and compliance requirements / costs

- Tax considerations (how are premiums, yield on collateral, profits, dividends, coupon, and other distributions taxed in various potential domiciles)?

- Entity responsible for ongoing management of SPV – is it more cost effective to outsource, or are there specific regulatory requirements?

A number of candidates included a structure schematic. Marks were given if the drawing included a reasonable description of the design and set up. Many candidates failed to consider the issues relevant to the specific SPV including the relationship with XYZ and the relationship with third party investors including the term of the SPV.

(vi)

- Increased retention (minimum co-investment levels) and clear alignment of interest mechanisms

- Committing to structuring a diversified portfolio of high quality risks, with clear risk limits

- Setting up independent management of SPV, ideally removing any counterparty risks

- Committing to high underwriting standards, and providing investors with detailed information on the minimum requirements for taking on risks

- Minimum return on equity (won't write business with an expected profit below a certain limit).

- Return to investors supplemented by XYZ if the SPV's minimum return on equity is not met

- Specifying a reduced max loss (through use of hedging -> XYZ taking on the tail risk, or transferring it to someone else)

- Equity holders: payment of a regular dividend, greater potential/levered participation in upside of any excess profits, though less secure than debt

- For debt holders: paying out a steady and attractive coupon, providing additional security/collateral/guarantees, limit leverage levels to reduce risk of the debt experiencing losses, making it convertible to equity, or callable, etc…

Many candidates found this question difficult. Marks were given for a wide range of different points including:

- *it must be tax-efficient, low fees/expenses, cap on expenses*
- *good levels of initial and on-going transparency offered to investors*
- *don't take on legacy risks,*
- *limited life – no long-tailed liabilities*
- *obtain ratings for debt tranches – e.g. in case this is a minimum requirement for investors to invest*

(vii)

Pension scheme may view it as a good tactical/opportunistic investment if premiums are unusually attractive

Potentially higher risk if the SPV experience losses at a time when the scheme sponsor is in distress (due to difficult economic environment).

Credit risk – loss from default of underlying credit contracts in SPV

Credit risk – loss from default from SPV itself (due to SPV's counterparty risk)

Market risk – investment loss assuming collateral is invested in risky assets

Liquidity risk – not being able to sell the SPV at a reasonable price within a short timeframe

Currency risk – potential currency mismatch between SPV assets + payouts and the scheme liabilities

Operational risk – risk of loss due to fraud, operational failures etc.

Monoline – limited life – hence market timing may be important.

Duration – extent of any potential duration mismatch (e.g. scheme may look to derisk in the near term)

Governance levels of pension fund trustees, do they understand what they are buying and able to monitor it?

Tax efficiency, would this count towards permissible assets, etc.

A straight forward question that was well handled by most.

(viii) Only for companies regulated in the UK (both UK based and the UK trading arms of foreign companies). Hence relative to XYZ's international competitors, XYZ might see the new legislation as unhelpful and business limiting.

UK Government likely to be keen to stop insurers from taking undue risk that they are not well equipped to estimate and provide for. In so doing the UK government will believe that it is protecting the consumer and helping to ensure confidence in the insurance market.

Different regulation focus between banks and insurance companies meaning that there may be an unintended regulatory arbitrage between banks and insurance companies writing the risks.

Banks are likely to have more knowledge and to use this to their benefit over insurers.

Banks have both data and scale to analyse and price risks. The insurer is unlikely to have access to this data.

Removing insurers from the market, may limit supply and result in increased premiums for these contracts.

The question was well handled by most. In particular most candidates' answers included comment on the relative expertise of banks when pricing credit risk.

END OF EXAMINERS' REPORT