EXAMINERS' REPORT

June 2020 examinations

Subject F105 — *Finance and Investment*
Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principle Examiner. General comments are provided on the performance of candidates on each question. The solutions provided are an indication of the points sought by the examiners, and should not be taken as model solutions.

QUESTION 1

i. Quantitative Easing:
- Quantitative easing (QE) is a monetary policy used to increase the supply of money.
- It usually involves a direct increase in the money supply (printing money),
  - which is then used to purchase government debt and other debt from financial institutions in 'open market operations'.
- QE can also involve changing the reserve requirement for banks, which through the fractional reserve system, would increase the supply of money.

ii. Impact of QE:
- The increase in money supply will have resulted in a reduction of interest rates which should have led to (and will continue to lead to):
  - Consumers (personal sector) increasing borrowing leading to more sales of goods and greater company margins and profits;
  - Companies (business sector) finding it easier to finance existing debt and justify expansions as sales, margins and profits grow;
  - A reduction in unemployment further increases consumer expenditure, reinforcing the cycle of growth.

iii. Impact of expected growth:
- The impact on local market values should be an increase in general:
  - Share prices should increase to reflect higher expected future profits;
  - Corporate bond values should increase as the risk premium reduces to reflect a lower probability of default;
  - However the nature of the underlying business will determine the extent of the impact e.g.:
    - Cyclical companies should experience the biggest impact;
    - Non-cyclical companies might not be impacted much;
    - Companies dependent on foreign markets might not be impacted much.
- The timing of share and bond price increases will be difficult to predict:
  - Prices may already have adjusted to reflect anticipated economic growth, or investors might be waiting for further signs;
  - Prices of unlisted and/or illiquid assets might require a longer time to adjust.

iv. Instead of selling equities, the investor could:
- Sell futures or forward contracts on equities to reduce effective exposure and defer tax to the end of the contract when the shares are sold.
- Limitations that may apply:
  - This is only possible if futures exist on the appropriate shares;
  - It may not be possible to find a counterparty for the required forward;
  - Tax rules may not permit deferment of tax on futures contract gains as they are received over the contract's life;
  - Tax rules may be such that derivate gains are taxed as income and not as capital gains (and income tax rates may be higher).

Examiner Comments

The question was generally well answered. In part (ii) many candidates did not seem to realise that the driver of economic growth is not, per se, the additional money that has been created, but rather the reduction in interest rates which makes loans cheaper for companies and individuals.

QUESTION 2

i. Role of trustees:
- Trustees are appointed to carry out certain duties on behalf of the beneficiaries, such as:
  - Exercising control over the investment and management of assets;
  - The payment of benefits to beneficiaries;
  - Ensuring the smooth running and administration of the scheme.
- They are the legal owners of the funds of the pension fund, with the right to possession, the privileges of use and the power to convey those rights and privileges.
- They are required to act in the best interest of the beneficiaries who receive all the benefits of the pension fund.
- They are required to act within the provisions of the trust deed and may be required to exercise discretion in some respects.
- They are not expected to be experts themselves, but they are required to consult with experts in carrying out their duties.

ii. Steps taken:
- The trustees are responsible for ensuring compliance with the regulatory change and therefore have to take the required steps to ensure compliance and then continue to monitor compliance.
- Revise the fund's benchmark to ensure that it complies with new requirements.
- This revision exercise includes deciding which asset classes to allocate smaller proportion of assets to.
- An asset liability modelling exercise can be done (or an existing model updated) that will:
  - Help determine how the objectives of the fund should be amended;
  - Include the restriction that at least 10% of assets must be invested in government bonds of a term to maturity exceeding three years;
  - Incorporate the different types of government bonds (and their expected returns and risk profiles) available for investment;
  - Consider the costs associated with implementing a revised benchmark.
- The fund's risk budget might have to be revised through undertaking a risk budgeting exercise:
  - The impact of the restriction on the fund's strategic risk in particular must be determined.
  - The implications for the level and variability in employer costs must be considered and there might be a need to restructure fund benefits to ensure better matching of assets and liabilities, and to keep costs at an acceptable level.

    - The active risk budget can then also be reconsidered.
- The trustees must identify suitable investment managers to manage their bond portfolio:
    - If a balanced mandate approach is followed, they might be able to use their existing managers.
    - Otherwise, managers can be appointed on a specialist basis, in which event a new manager must be sought.
- The active risk budget needs to be allocated to managers.
- The impact that the choice of manager is likely to have on the fund's structural risk must be considered.
- Explicit mandates must be put in place (or existing ones amended). These should include:
    - The objectives, benchmarks and risk parameters given to the managers, that are consistent with the fund's objectives and risk tolerances;
    - The managers' approach in attempting to achieve the objectives;
    - Clear time scales of measurement and evaluation.
- The trustees need to set the timeline for the implementation:
    - They must check that the existing investment managers dispose of the appropriate assets timeously (given the change in benchmark).

  The trustees need to consider communicating the changes to the members of the fund.

iii. Fund manager impact:

- The requirement may cause some disruption in the bond market in the short term as pension funds currently not meeting the requirement will need to purchase government bonds:
    - If most pension funds are already meeting the requirement, the disruption will be minimal;
    - The price of government bonds (3yr+) may rise due to higher demand, and there may be increased volatility;
    - The price of shorter government bonds (<3yr) may not be much affected (depending on how pension funds reallocate assets).
- To the extent that the manager uses past trends in yield differences, this history would now need to be used with greater caution e.g.:
    - The yield difference between a qualifying and non-qualifying (e.g. corporate) bond may now increase relative to the past and this may not be due to short-term price anomalies;
    - The yield difference between two qualifying bonds may also change as pension funds re-adjust their portfolios;
    - Yield differences between bonds and the yield curve may not be reliable due to instability of the yield curve.
- In the longer term, there may also be some impacts:
    - Bonds whose term approaches and reaches 3 years may see some volatility in prices and yields as pension funds switch to longer term bonds in order to remain above the prescribed minimum; yield differences based on such bonds need to take this into account.
    - There is a risk that the prescribed minimum level is increased in the future, causing further disruption/distortion in the bond market.
- The fund manager may need to re-evaluate his management methods and may need to place more reliance on other methods:

- Comparing prices/yields to price/yield models, if it is possible to incorporate the changes in the environment in the models;
- Policy switching- which requires the manager to have a view on changes in the shape or level of the yield curve and switching between bonds of differing terms and volatilities – however this introduces significant risk.

Examiner Comments

Overall not well done.

Most candidates were able to explain the role of trustees in part (i).

For part (ii) some candidates went into considerable detail on what is required for an ALM exercise assuming the fund has never gone through this exercise before. It would have been more appropriate (even if assuming the fund has never undertaken such an exercise) to indicate how the situation presented would impact an ALM exercise. Candidates' responses suggested that they did not understand the various types of risks (i.e. strategic, active and structural) taken by such a fund.

Part (iii) proved more difficult for candidates, with several assuming the fund manager was managing the assets of the pension fund mentioned in (ii) - while this possibility should not be excluded, the question related to a broader universe of fund managers.

QUESTION 3

i. F_0=forward bond price = (B_0-I) / P(0,T)
Where:
B_0 is the bond price at time zero = R5m/1.04^6 = R3.9516 million and
I is the present value of the coupons that would be paid during the life of the option.
In this case, I = Rnil
Thus F_0 = (R3.9516m) * 1.03 = R4.07million

ii. y_0 = initial forward yield on the bond underlying the option
= [R5m/R4.07m]^(1/5)-1=4.201%p.a.

iii. D = Modified duration of the forward bond underlying the option
= Duration / (1+y_0/m) = 5yr / 1.04201 = 4.79841 yrs (m=1)

iv. σ = forward price volatility = D* y_0* σ_y
where σ_y =0.11
σ = 4.79841yrs* 0.04201* 0.11 = 2.2175%

v. $d_1 = [\ln(F_0/X) + \frac{1}{2} T\sigma^2] / \sigma \sqrt{T} = (\ln (R4.07m / R4m) + \frac{1}{2} 0.022175^2) / (0.022175)$

= 0.794581

vi. $d_2 = d_1 - \sigma \sqrt{T}$
= 0.772406

Examiner Comments

Candidates performed poorly in this question, despite it being a relatively straightforward question and with some formulae provided. In part (ii), many students confused the forward yield on the bond, to be calculated, with the one-year spot rate provided. Many used a duration of 6 years, but the bond will only possibly be purchased in a year's time.

QUESTION 4

i. Approaches that might be adopted:

- Full replication:
  - This entails holding all of the bonds in the index in proportion to their index weightings (usually their market capitalizations);
  - This should result in a close match to the index performance;
  - However it is only practical for large funds. And even then it can also be an expensive approach depending on the number of index constituents and how often they are changed.
- Stratified sampling / partial replication:
  - This entails holding a smaller number of bonds than full replication, such that the bonds held are broadly representative of the index with regards to various factors:
    - The market capitalization in each of the main categories (e.g. term);
    - The issuers/credit ratings (e.g. government, municipal, corporate).
  - Holding fewer stocks should lower management and transaction costs;
  - Some mismatching is likely;
  - A multifactor model will help determine a suitable stratified strategy.
- Synthetic fund:
  - This entails holding an appropriate combination of cash and derivatives aimed to broadly replicate the performance of the index;
  - Some mismatching is likely;
  - A multifactor model may help with constructing a suitable synthetic fund.

ii. Issues to consider:
- Overall risk budget.
- Extent of opportunities to generate excess returns using sector and stock selection.
- Liabilities to be matched by the assets as the passive approach takes no cognizance of the trust's liabilities:

    - In particular there may be a mismatch by term;
    - The active approach can give particular attention to the nature and term of the liabilities.
- Expected returns required:
    - The trustees should consider whether they believe that there are inefficiencies in the bond market which will allow active profits to be generated or not e.g.
        - A well-developed market is likely to be more efficient than a less developed one;
        - An inefficient market allows active bond managers to try beat the index by identifying mispricing;
        - Past performance of active managers, including methods for outperformance and whether these are sustainable.
- Differences in costs:
    - A passive approach is likely to be cheaper than an active approach due to lower management and transaction costs (unless full replication is used);
    - The requirement to avoid risk (relative to the index) removes ability to enhance returns to offset costs.
- Passive reduces the risk of significant underperformance:
    - However the trustees should consider likely tracking errors from passive investing, as it might be difficult to track the index (e.g. if some constituents are not very liquid).
- Level of risk the trust and its trustees are willing and able to assume:
    - The level of free assets given the trust's commitments will influence this:
        - An active approach may not be appropriate if free assets are low;
        - The level of risk in a passive approach depends on how well diversified the index is (e.g. it might be dominated by government bonds in general or at certain terms).
- Constraints imposed by the trust deed: some index constituents might not be permitted.
- Management implications:
    - Much more time and effort will be needed to select and monitor an active bond manager relative to a passive manager.

Examiner Comments

This question was generally well answered especially part (i) which was bookwork.

For part (ii) candidates did not, in general write enough to generate 5 marks and very few discussed the points about the liability mismatch for the passive approach. Marks were not awarded for general terms like "client objectives" or "availability of a suitable index" without expanding on what this meant in the context of the question.

QUESTION 5

i. STeFI is comprised of:
- 15% of the STeFI Call Deposit Index which is based on an Interbank Call rate;
- 30% of the STeFI 3-month NCD Index which is based on 3-month NCD instruments;
- 35% of the STeFI 6-month NCD Index which is based on 6-month NCD instruments;
- 20% of the STeFI 12-month NCD Index which is based on 12-month NCD instruments.

ii. Possible users and uses:
- Central bank:
  - Monitoring of short-term interest rates and liquidity in this market to guide monetary policy intervention.
- Active fund managers:
  - As a measure of short-term market movement;
  - As a tool for estimating future interest rates, based on past trends;
  - Analysing subsectors of the market.
- Passive fund managers:
  - Provides a basis for tracking short-term interest rates.
- Investors (institutional and retail):
  - As a benchmark against which to assess the investment performance of portfolios.
- Borrowers (commercial banks, companies and individuals):
  - Provides a basis against which to assess funding costs;
  - To define issued floating rate notes.
- Investment banks:
  - To define the floating leg of a swap.

iii. `Deficiencies:
- Based on rates from only two banks:
  - Interest rates might not be representative of the market (e.g. if one or both banks are offering relatively attractive returns in order to grow their deposits);
  - The averaging method might distort the benchmark further if rates are not suitably weighted (e.g. if the banks differ in size);
  - There is a potential for the rates to be manipulated by the banks in order to manipulate the benchmark;
  - Improvement to the benchmark:
    - Use more banks as a source of information.

- Based on offered rates on NCDs:
  - There may not be a significant 3-month NCD active market hence rates might not be representative of short-term rates;
  - Rates are “offered” and not based on actual transactions, hence the benchmark index might not reflect realistic and actual rates in the market;
  - Improvement to the benchmark:
    - Use other instruments if markets exist (e.g. bills, fixed deposits, commercial paper);

        - Use actual transactional data to determine the benchmark.

- The benchmark is not risk-free:
    - Banks will need to compensate investors for credit risk;
    - The credit risk premium is unknown and variable over time;
    - The benchmark is unsuitable for users needing a risk-free benchmark;
    - Improvement to the benchmark:
        - Use government-issued treasury bills to create a risk-free benchmark (in place of the current benchmark, or in in addition to it) however these may only be issued irregularly.

- Frequency of calculation:
    - Daily calculation may not be suitable for some uses e.g. if used as a basis for pricing derivative contracts;
    - This problem is greatest if rates can change significantly within a day (which might be possible for a developing country, however they are normally stable);
    - Improvement to the benchmark:
        - More frequent updating of the benchmark.

Examiner Comments

Overall this was done reasonably well. Part (i) was bookwork and very few students got this right.

Part (ii) was generally done well. A common mistake was to list several examples of the same type of user (e.g. investors) and then repeat the same point about uses, hoping that this would count more than once.

Part (iii) was generally done well, however many answers were lacking in detail and substantiation. For example most students realised that there might be a problem using only two banks for data, but most could not explain why.

QUESTION 6

i. Information and investigations needed:

Details about current operations:

- Current funding details, including cost and terms of funding.
- Location of existing plant, details of size (number of turbines) and set-up costs.
- Ongoing maintenance costs and compared to other plants elsewhere.
- Details of key personnel and their experience and skills to run and expand operations.
- Income analysis, including wind analysis of current plant.
- Financial strength of the company to the extent that information is available given that this a private company, considering:
  - the financial accounts and accounting ratios;
  - dividends and earning cover;
  - profitability and growth;
  - level of borrowing;
  - level of liquidity.

Details about future roll-out plans:

- Number of plants planned, exact locations and timeframes.
- Size of plants planned (e.g. number and capacity of turbines), estimated set-up costs.
- Analysis of wind speeds and variability by season to estimate power generated by each plant.

Details about contracts with the national energy supplier:

- Agreements (and likely agreements) for revenue paid by per unit of power generated and how this will increase each year.
- Time limit of agreements and possible outcomes at maturity.
- Ability for the national energy supplier to cancel agreements.
- Ability of national supplier to meet financial obligations (e.g. ratings if applicable), financial position and guarantees by national supplier owner(s) (e.g. government).
- Minimum requirements from the company (e.g. in terms of power generated, or deadlines) and penalties for non-performance.

Competition:

- Details of other companies that have (or will) enter this market, together with an understanding of relative competitive advantages.

Government (and/or national energy supplier) energy strategy and related regulations:

- Strategy in terms of current and future planned split of power generation from different sources (coal, wind, solar, nuclear).
- Ownership of the national energy supplier and level of autonomy and independence and risk of interference after agreements are put in place.
- Projections of estimated power needs for the country (based on population and economic growth).

Initial public offering details:

- Funding requested, and how and when this will be deployed.

- Company funding policy for future funding especially debt funding.
- Whether anyone is underwriting the issue, and key stakeholders/institutions/partnerships involved in the funding and expansion.
- Current shareholding and how this may change after share issue.

Modelling of future cashflows:

- Modelling of future revenues and costs, ideally using stochastic models for key variables e.g. wind and economic variables to obtain a range of estimates.
- Estimate future dividends from company's dividend policy.

ii. Key difficulties:

- Availability of information in general may be difficult and limited to public offering documents.
- Historic performance and ratios may be of little value for estimating future performance:
  - Existing plant details may be of limited value in estimating projections (e.g. setup and maintenance costs);
  - The company's track record is limited and its ability to expand operations is untested – hence considerable uncertainty in the cashflows and success of future plants.
- Developing country risks make economic projections difficult as they will be subject to cyclical factors and political uncertainty:
  - National energy supplier (or government) may want the right to cancel agreements, and future governments may not honour the terms of current arrangements;
  - National energy supplier (or government) may limit future revenue by capping the amount of power purchased, or the total amount paid for power (e.g. if demand for power reduces).
- Information about wind speeds may not be available to assess viability of future plants.
- Competitor information and strategies may be unknown.
- Cost projection uncertainty due to fast-developing technology.
- There will be difficulty in deriving an estimate of fundamental value from projections:
  - A discounted value relies on a discount rate which will be difficult to assess as there are similar companies listed for estimating systemic risk;
  - Relative valuation (e.g. using price multiples) is not possible due to lack of similar listed companies.

Examiner Comments

This question was tested candidates' ability to apply bookwork to a very specific situation. While it appeared that most students knew the list well, most fell quite short on applying this to the specific situation in of the question. For example many just stated "quality of product" without explaining this in the context of wind generated electricity, or even considered if this point is even applicable here. In these cases no marks were awarded. Points relating to modelling of cashflows, and particularly taking into account the range of outcomes, were seldom mentioned.

QUESTION 7

i. Fund performance can be assessed relative to :

- Other portfolios (e.g. competitor funds):
  - This is easy if the data is available and gives an indication of cost or benefit of following a particular strategy relative to that adopted by other funds, however other funds might have different objectives and are thus not comparable.
- Published indices:
  - This should be easy, however the published index may not be appropriate for the investor's objectives, and there may not exist a suitable index for the investor.
- Benchmark portfolio:
  - This can be constructed to reflect the objectives of the fund and can help align manager interests with liability requirements.

ii. Portfolio assessment:

- Fund return:
  - Return is based on actual weights by sector/duration and actual stock returns
  - Return = 0.7x(1.04)x(1.04) + 0.2x(1.05)x(1.06) + 0.1x(1.03)x(1.11) -1 = 9.405%
- Benchmark return
  - Return is based on benchmark weights by sector/duration and index stock returns
  - Return = 0.5x(1.039)x(1.039) + 0.3x(1.049)x(1.055) + 0.2x(1.03)x(1.105) -1 = 9.940%
- Hence outperformance = -0.535% (i.e. underperformance)
- This performance can be split as follows:
- Notional fund return (actual sector weights, benchmark stocks):
  - Return = 0.7x(1.039)x(1.039) + 0.2x(1.049)x(1.055) + 0.1x(1.03)x(1.105) -1 = 9.082%
  - Hence sector selection profit = 9.082% - 9.940% = -0.858%
  - And stock selection profit = -0.535% - (-0.858%) = 0.323%
- *Alternatively:* Notional fund return (benchmark sector weights, actual stocks):
  - Return = 0.5x(1.04)x(1.04) + 0.3x(1.05)x(1.06) + 0.2x(1.03)x(1.11) -1 = 10.336%
  - Hence stock selection profit = 10.336% - 9.940% = 0.396%
  - And sector selection = -0.535% - 0.396% = -0.931

- Comments:
  - The manager's return is below benchmark overall - stock selection profits were not enough to offset poor sector/duration selection;
  - The manger was significantly overweight cash and underweight longer-term bonds, suggesting that the manager chose to be cautious and avoid capital losses from longer-term volatile bonds.
  - One year is too short to make any meaningful analysis;
  - It is not clear if returns are gross of fees and taxes or net;
  - No information is given on risk taken by the fund manager:

- Superior stock performance could due to high credit or liquidity risk taken rather than skill;
- Returns adjusted for risk measured in various ways is more helpful to assess the manager's performance.

Examiner Comments

Overall this was done reasonably well by many students, however given that it was a reasonably easy questions, student performance should have done much better.

Part (i) was bookwork and many students did not get these easy marks.

Part (ii) was a simple performance attribution where student performance was varied. Some students assumed returns given were annualised despite there being no indication that this was the case. Few students provided comments as required.

QUESTION 8

i. "Liability Hedging":

- Liability hedging is where the assets are chosen in such a way as to perform *exactly* in the same way as the liabilities in all states and in respect of all factors that influence liability values.

- Problems:
  - duration of liabilities might be longer than duration of available assets;
  - there may be "gaps" between bond maturities especially at longer terms;
  - use of government bonds has small degree of credit risk not in the liability;
  - if tax status of government bonds worsens, assets are likely to be insufficient;
  - the fund may not have sufficient assets.

ii.

- LDI is an *approach* to setting investment strategy whereby the asset allocation is determined in whole or in part relative to a specific set of liabilities.

- Key risks faced by the scheme that LDI hedges (in whole or in part):
  - interest rate risk;
  - inflation linked risk.

iii. Objectives:

- First objective:
  - The probability of a deficit arising in the future must be less than a specified small probability.
- Second objective:

- The probability of receiving less than guaranteed benefits in the future must be less than a specified small probability.

iv. Derivatives:
- Suppose that you want to invest Rx in a bond of term n years but such a bond is not available. Then:
  - Invest Rx in the money market at floating rate;
  - Use an interest rate swap of term n to swap the floating rate for a 6-monthly fixed rate.
- This is then equivalent to investing in a bond of term n years at a coupon equal to the fixed rate.
- This will only be possible if an n-year swap can be arranged in the local market.

Accept alternative valid suggestions.

v. Risks associated with the development and use of an ALM include:
- Model risk (i.e. the risk that the model structure is wrong):
  - This can be mitigated by running alternative models to assess sensitivity of results to model;
  - Obtain an independent expert view on the suitability of the model's structure.
- Risk of incorrect assumptions:
  - This can include economic or demographic assumptions (e.g. pensioner mortality);
  - This can be mitigated by running the ALM on various assumptions to assess sensitivity of results to changes in assumptions.
- Risk of errors in running the model:
  - Stochastic models are very complex making the possibility of errors quite high;
  - This can be mitigated by detailed audit trails and review by an independent practitioner.
- Risk of results not being understood correctly by trustees leading to incorrect decisions:
  - This can be mitigated by adequate trustee training and use of professional trustees.

Examiner Comments

Overall this was well done. However several students did not know their bookwork well and thus struggled with parts (i) and (ii).

Part (iii) illustrates the importance of basing the answer on the scenario sketched in the question and not simply giving a generic answer. Many students ignored the fact that the ALM was a stochastic one thus the answer required reference to confidence levels.

Parts (iv)-(v) were reasonably well done. Students should be aware that, as a general rule, if asked for a specific number of items, they should provide no more than the required number. For example, in part (v) three risks were asked for, and only the first three responses given by students would have been marked.

QUESTION 9

i. Private debt:
- Refers to loan capital issued by companies that is not publicly listed and traded on the stock exchange.
- It generally has covenant features similar to a bank loan and is often used as an alternative to bank funding.

ii. Considerations and steps for a financial plan:
- The starting point should be Trident's business plans (liase with management):
  - Includes expansion plans e.g.
    - Infrastructure, vessels and staff;
    - Expected timing of expansion / purchases of vessels / hiring new staff;
    - Projected additional sales / sales targets and other operational objectives.
  - Business plan sensitivity analysis (e.g. using probability trees).

- Financial plans follow from business plans:
  - Future cashflows (revenues, expenses) are estimated:
    - Working capital;
    - Tax, dividends, interest payments;
    - Expansion costs (one-off and recurring);
    - Revenues (before and after expansion).
  - Future capital requirements are estimated:
    - Amounts and timing (capital budgeting);
    - Sources (equity/debt) and costs (capital structure);
    - Mix of capital sources are influenced by uncertainty of future profits and relative cost of capital.
  - Include a sensitivity analysis to allow for possible changes in the financial environment in line with business plan sensitivity analysis.

- Business and financial plans should include an analysis of risks and mitigations:
  - Example breaching financial covenants and needing more borrowings.
  - Effect of additional borrowing on credit ratings.

- An iterative process may be required (e.g. financial planning may require changes to business plans).

iii. Private vs public debt:
- The main advantage is that a private debt issue will not require a formal long-term debt rating from a credit rating agency:
  - Which is a costly and time-consuming process.
- The company may have a closer relationship with debtholders who may be able to offer expertise to the company.

- No listing authority requirements to be met, which could be considerable and costly.
- The company might be able to issue private debt on terms more favourable to it compared to public debt.
- Trident may have more negotiating power in terms of setting the terms of the loan, such as the repayment period and interest rate.

iv. Information in the prospectus:
- Company details:
  - Overview of existing operations, competitive landscape and target markets;
  - Stability of fishing rights;
  - Objectives and strategy;
  - Key individuals and retention strategy;
  - Governance details (people, processes);
  - Details of current equity and debt funding:
    - Including seniority and covenants for each loan.
- Details of planned debt issue:
  - Size, term, coupons (amount and timing);
  - Any special features:
    - Covenants;
    - Seniority of debt.
- Underwriting details (if there are any underwriters).
- Use of funds.
- Audited financials and financial projections.
- If Trident is unlisted, the prospectus might specify accounting information (including frequency) that will be made available to debtholders.
- Management view on company and industry prospects and key risks.

v. Ratio analysis for credit analysis:
- These will focus on financial strength and profitability (to the extent that debt obligations can be paid):
  - Income gearing = interest (for private debt and prior ranking debt) / profit (before interest and tax) = 5 / 55 = 9.1% (2018) 5 / 24 = 20.8% (2019) 15 / 34 = 44.1% (2020)
  - Asset or capital gearing = debt (private debt and prior ranking debt) / (debt + equity) = 60 / 200 = 30% (2018) 60 / 215 = 28% (2019) 170 / 330 = 51.5% (2020)
    Alternatively if equity only is used in the denominator:
  - Capital cover = 42.9% (2018) = 38.7% (2019) = 106.3% (2020)
  - Operating leverage = (sales – variable costs) / profit (before interest and tax) = (115 – 15) / 55 = 181.8% (2018) 74 / 24 = 308.3% (2019) 104 / 34 = 305.9% (2020)
  - Earnings before interest and tax (EBIT) margin =
    55 / 115 = 47.8% (2018) 24 / 90 = 26.7% (2019) 34 / 125 = 27.2% (2020)
- Assumptions:
  - Private debt ranks behind existing debt.
- Comment on the ratios:
  - The impact of the private debt is to weaken Trident's projected financial strength:

        - Sales do not increase in line with assets - perhaps a longer time period is needed before the full benefits of the expansion are seen; this should be confirmed with the company;
        - Unexpected subsequent falls in revenue or increases in expenses could lead to a high risk of default on debt obligations e.g. ZAR appreciating will reduce ZAR revenue from exports.
    - Operating leverage increases and EBIT margin reduces significantly in 2019/2020 due to a jump in fixed costs relative to variable costs and sales:
        - This increases default risk if there is an unexpected fall in sales.
    - Projection assumptions and sensitivity analysis are needed for better insight;
    - More than two years history would be helpful to understand trends, past growth and volatility of sales and costs.

vi. Use of futures and difficulties:

- The Rand price of products sold offshore comprises two components:
    - The price of fish in foreign currency;
    - The Rand / foreign currency exchange rate.
- Trident can use futures to fix both of these variables:
    - It would sell / go "short" on fish contracts whereby it secures a fixed price for its produce in foreign currency;
    - It would sell / go "short" on foreign currency whereby it secures a fixed price for foreign currency in ZAR terms.
- Key difficulties:
    - It might not be possible to fix the price of fish and foreign currency in all markets;
        - Cross hedging risk is introduced: Futures on proxy products might be found but the hedge may not be good.
    - The quantum of fish produced/sold offshore must be known:
        - If it is underestimated, some produce will have to be sold at spot (and unknown) prices and foreign revenues converted at spot exchange rates;
        - If it is overestimated, it will need to exit (by going "long") some contracts at possibly a loss.
    - While fixing prices reduces uncertainty, it also removes the possibility of gaining from increasing fish prices and depreciating ZAR.
    - Futures contracts are usually for short periods, hence Trident will need to keep entering into new futures contracts on an ongoing basis:
        - Hence the benefit of removing uncertainty is only short term;
        - The continuous need to roll over futures is administratively and operationally demanding requiring expertise in monitoring and managing the contracts.
- Basis risk is introduced: While the price of a future follows the cash price very closely, the basis may not move exactly as expected.
- Trident will need to pay daily margin on contracts, probably in foreign currency, which may cause liquidity problems.

Examiner Comments

Overall this question was done reasonably well by many students.

Part (i) was bookwork which could have been done better. A number of students thought that only private/unlisted companies can issue private debt, however listed companies may also do so.

Parts (ii) – (iv) were either based on bookwork, or straightforward application of bookwork, and were generally well done.

Part (v) was more challenging for students. Many tried to calculate a liquidity ratio (using net current assets / short term debt) however this is not correct or possible from the accounting numbers given. Short term debt represents a bank loan.

Part (vi) was also more challenging. Most candidates identified the possibility of hedging foreign currency income, the potential loss of upside as well as the problem of income not being known. However very few candidates mentioned the possibility of hedging fish prices. Candidates who scored well identified the problems of margin and the administrative burden.

END OF EXAMINERS' REPORT