

Actuarial Society of South Africa

MARKING SCHEDULE

16 October 2024

Subject F205 - Investment

Fellowship Applications

The paper was written in online format, using the ASSA platform and the exam setting and marking process was undertaken as normal, with one important difference being that this was the first time that the examination was open book.

The paper comprised of three questions in the standard format and structured to include shorter sub-questions with smaller mark allocations. Question 1 (29 marks) delved into detail about hedge funds, their use of leverage, types of hedge fund strategies and their fees. Question 2 (31 marks) dealt with the valuation of a couple's assets for the purpose of a divorce settlement and required an understanding of private equity firm revenues. Question 3 (40 marks) explored an investment opportunity in an unlisted fibre business that had reached the limit of its debt facilities, with an interesting option included to sweeten the deal.

The exam covered a number of important investment concepts and candidates needed a solid understanding of the theory to evaluate investment strategies and opportunities, explore valuation methodologies and solve other practical challenges that investment actuaries might face.

Some well-prepared candidates produced excellent scripts, deserving of a pass. A few scripts were in the region of the pass mark but fell short of the level required to pass, so achieved FA. The average mark for this exam was in line with previous sessions. The overall result was that 17% of candidates passed. The majority of candidates scored FB with a few attaining FC.

Please note that this examiner report presents one possible model solution to the questions. Alternative solutions provided are considered and marks awarded where correct points are well motivated.

QUESTION 1

Examiner Comments:

Question 1 explored hedge funds and required candidates to demonstrate their understanding of this type of investment as well as the key factors to evaluate in an investment strategy.

Part (i) asked about the use of leverage by hedge funds. Generally well answered.

Part (ii) needed an explanation of how to short a share. Generally well answered.

Part (iii) was a lengthier question requiring an evaluation of three different hedge fund strategies for inclusion in a pension fund's investment strategy. The information provided in the tables, together with solid knowledge of hedge funds, would have enabled candidates to generate many points. Candidates scored some of the basic marks but many neglected to unpack the features in more detail and from different angles. Candidates should also beware of simply stating what is already provided in a question like this – insights need to be gleaned from the information provided.

Part (iv) required a good understanding of the specific features of hedge fund fees in order to assess the three fee bases and identify the missing information that would enable a more accurate assessment. Most candidates had fair knowledge of hedge fund fees.

i.

Reasons to utilise leverage:

- To gain additional exposure to assets without utilising the portfolio's capital.
- Leverage provides the opportunity for higher returns but also the risk of larger losses.
- The opportunity to use leverage introduces a wider set of opportunities relative to long only positions e.g. if a hedge fund manager thinks a share has poor prospects, then they can short it rather than just not holding it.
- The gross exposure of a hedge fund to a single asset class can be greater than 100% but the net exposure can be much less than 100%, thus enabling the manager to minimise the beta of the fund.

Ways to employ leverage:

- Borrowing.
- Repos – enter a repo agreement using instruments and use proceeds to purchase other instruments.
- Derivatives – using derivatives e.g. futures, options, total return swaps.
- Shorting shares and using the resulting cash to invest in long positions.

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ii.

- Borrow the number of shares on which the short position will be placed e.g. 10,000 Sasol (SOL) shares from an asset manager, pension fund or other share owner that engages in scrip lending.
- An agreement will be signed governing margin requirements, fees etc.
- Sell the SOL shares on the market.

- Share sale proceeds are retained. Subject to margin requirements, any available cash may be redirected to other investments.
- Pay any scrip lending fees and settle margin requirements as per the agreement.
- Agreement will stipulate the payment of synthetic dividends to original share owner as and when dividends are paid by the underlying share.
- Depending on how the investment thesis works out, buy the shares back at a point in time (e.g. if stop loss kicks in or if profit target / share price target reached, to reposition to another / better trade).
 - The agreement will also allow the lender of the scrip to recall the shares, in which case this will trigger a “forced” purchase.
- Return the scrip to the original owner / scrip lender.
- A short position in a share can also be achieved by buying single stock put options.

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iii.

- Strategy:
 - The three strategies are different, with different expected returns, risks and correlations to the current investment strategy.
 - The multi strategy fund invests across asset classes, so is a more diversified strategy.
 - Market neutral has much lower correlation to equities and higher correlation to cash, tends to be lower risk with lower drawdowns and risk of capital loss.
 - The long short equity strategy is equity-centric, i.e. no diversification by asset class. Need to find out more about the specific long short equity strategy e.g. pair trades.
- Strategy description:
 - All three of the hedge funds allocate to global assets to some extent. This will need to be taken into account in relation to existing offshore exposure to ensure Regulation 28 compliance.
 - Which asset classes will be switched out of to allocate to the hedge funds? The existing strategy is a single, global balanced portfolio. If this is a multi-manager strategy using specialist building blocks or a segregated portfolio, then there may be some flexibility to switch out of specific asset classes into the hedge funds. If it is a pooled portfolio with a single manager, then flexibility is limited, so the allocation to hedge funds is effectively an allocation from all asset classes.
 - The structure of the existing portfolio will also need to be considered in relation to offshore exposure. If the existing strategy contains an allocation of close to 45%, some adjustments may be required to either maintain the desired level of offshore exposure or alternatively limit the risk of breaches. Need to check if the three hedge funds limit offshore exposure to maximum of 45%. If not there is a higher risk of breaches.
 - Fund C allocates specifically to emerging markets – how does this fit into the overall strategy, does this result in unintended overweight to other emerging markets outside of South Africa, what is existing exposure to emerging markets?

- Benchmark:
 - Consistent with the type of hedge fund strategy, fund B has a cash benchmark. The short-term fixed interest call deposit index is the SteFI call deposit index, which is typically a lower return than SteFI Composite (which includes longer duration money market exposure)? This is not a demanding benchmark.
 - Fund A benchmark of SteFI +5% is approximately CPI+6% over time, which is consistent with member requirements over the long term.
 - The lack of a benchmark for fund C is a potential concern – how will the fund be measured? And how does decision-making and incentivization of the manager of the hedge fund work? The pension fund may decide to use its own benchmark anyway.
- Management company AUM & fund size:
 - Hedge fund C is managed by a pure hedge fund business with one fund only, Hedge fund B also appears to be a focused hedge fund business, Hedge fund A might be one fund within a more diversified asset manager.
 - All are small businesses – this does bring higher business risk, but the high fees of hedge funds change the nature of this risk.
- Portfolio valuation frequency:
 - Monthly is standard for hedge funds.
 - This may have administration implications if daily pricing is used for member records, static prices are usually used during each month.
- Redemptions:
 - Hedge fund C has a 2-month redemption period, longer than the others, does this affect liquidity requirements for the pension fund?
 - Even 1 month is longer than the current assets and managers (all conventional listed mandates). What administration implications does this introduce? Can fund's administrator handle this?
- Fund status:
 - Hedge fund C is closed. Does the pension fund have special access hence why the hedge fund is being considered? Is there a limit on any investment amount?
 - Gaining access to a closed fund can be advantageous.
- Gross & net exposure
 - Gross exposure = sum of long and short positions, expressed as percentage of value of fund.
 - Net exposure = long positions less short positions, expressed as percentage of value of fund.
 - Funds A and C have high gross exposure indicating higher leverage.
 - The net exposure for funds A and C is also high (above 70%) implying that the correlation to equity and other assets will be higher and volatility and correlation to other asset classes will be higher.
 - Fund C has net exposure higher than 100%, which is unusual and may just be temporary. This would imply higher risk more similar to equities than typical hedge

funds and would raise doubts about ability to limit downside of equities as expected from hedge funds.

- Fund B has lower gross and net exposure. At 40% net exposure the correlation to equities is expected to be low.
- TERs:
 - These are 12 month TERs, which are backward looking, how representative are these of the fees over time i.e. is this period different?
 - Transaction costs for hedge fund A are very high, indicative of lots of trading
 - Hedge fund B – the fees for a fund that targets cash plus seem high.
 - Hedge fund C – very low base fee? What is the reason for this? Seems attractive.
 - Performance fees for hedge fund A are very high. Is there no cap on performance fees?
 - How do these fees fit into the pension fund's fee budget? Will members accept the increase in portfolio management fees?
- Returns:
 - Funds A and C have very good track records, outperforming the equity index and cash plus 5% over long periods. This is better than the long term expectations of most hedge funds – two thirds of equity returns at one third of the risk. However, this is over a period of muted equity market returns in South Africa. The funds would be likely to lag behind equities in a strong bull market.
 - Consistent with its strategy, returns for fund B are lower and more like cash. The longer-term returns appear to be in line with cash plus 2-3% after fees. Is this worth the extra risk and cost?
 - Given the strong return profiles of funds A and C, to what extent has this influenced these two funds screening as being of interest? Is this just evidence of selecting based on past returns? How likely is this to persist into the future?
 - How do these returns compare to other similar hedge funds in these categories?
- Maximum drawdown & positive months
 - Fund B offers better downside protection / risk of capital loss, more consistent returns and lower volatility
 - Fund C has a similar risk profile relative to SA equities, so if the objective is absolute returns or reduced volatility this might be less suitable. It may still offer diversification benefits though as the exposure is likely to vary. Is the extra cost worth it?
 - Fund A seems to offer the best risk adjusted returns and a smoother return profile than equities.
- Other considerations:
 - Modelling of Strategic Asset Allocation to include hedge funds, or is this an alternative (possibly tactical?) allocation from existing asset classes?
 - Does the existing strategy / IPS allow the trustees to adjust asset allocation (e.g. if segregated) or is it a single pooled portfolio with discretion held by the asset manager?
 - Hedge fund A is multi strategy so the asset allocation may be reasonably similar to current, hedge fund B is a cash plus alpha strategy so may result in

higher allocation to cash overall, hedge fund C is long short equity so may result in higher overall exposure to equities.

- Too many managers in the overall investment strategy may diversify alpha potential – will the hedge fund managers selected replace existing, possibly long only, managers or add additional managers?
- Regulation 28 – max 2.5% in any one hedge fund. What is the overall target allocation? If more than 2.5%, then more than one of the hedge funds would need to be used.
- Consider allocating to all three hedge funds, better diversification across strategies and managers, will thus allow an allocation of up to 7.5%, which is more meaningful than 2.5% (which may not be worth the effort).
- Analysis of hedge funds requires the manager's long positions and short positions to be analysed separated. An attribution analysis will indicate whether the manager adds alpha via long positions as well as short positions or only one side.

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iv.

Standard fees and costs of hedge funds:

- Base fee:
 - Commonly 1-1.5% p.a. but may be zero or as high as 2%.
- Performance fees:
 - Participation rate – typically 15-20%
 - Hurdle – all positive performance or above the benchmark, is the hurdle a fair return relative to the fees for that return? .
 - Cap – maximum level of performance fee payable e.g. 3% p.a. Results in spreading of performance fees i.e. deferral of performance fees, rather than actual cap.
 - High water mark – performance fees only paid for performance that exceeds previous highest level; essential to ensure performance fees are not paid more than once for the same increase in value.
 - Measurement period – the period over which the performance relative to hurdle is calculated.
 - Crystallisation frequency – how often performance fees are calculated and deducted from the fund – monthly, quarterly, annually.
- Transaction costs – typically much higher than long only portfolios due to higher levels of trading.
- Other costs e.g. prime broker, audit costs, custodian fees – these are typically added into the TER on top of the base fees, although some of these costs may be paid from the base fee.

Hedge fund A

- This seems like an expensive fee basis.
- The base fee is reasonable but the performance fees start from 0%. So, if cash returns are 8% and the fund delivers a cash-like return, then the total fee will be 2.6% p.a.
- For above cash returns the manager will still earn 20% of the outperformance, on top of the 2.6%.

Hedge fund B

- A fairly standard hedge fund fee basis.
- The benchmark / hurdle is cash, which is not very demanding, although it is consistent with a market neutral fund.

Hedge fund C

- A slightly unusual fee basis.
- The lack of a base fee is attractive.
- However, the performance fee starts at zero. If we assume returns on cash average about 8% p.a. then the 'effective' base fee for delivery of cash-like returns is 1.2% p.a.
- For delivery of returns in line with cash, hedge fund B has a higher fee of 1.5% and hedge fund A is much higher. However, if cash returns are lower, then this fee basis could be advantageous and if cash returns are higher, then this fee basis will be less attractive.
- Above a 'cash-like return' the performance fees are lower (15%) than for hedge funds A and B.

The additional features of all three fee bases are important for a full evaluation and comparison e.g. high-water marks, caps, measurement periods, crystallisation frequency.

Analysing the past returns data (before and after fees) may also assist in determining if the fees earned in total are justified by the net returns earned by investors.

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[Total 29]

QUESTION 2

Examiner Comments:

Question 2 covered an interesting aspect of actuarial work, namely the valuation of assets in relation to a divorce settlement. The question considered the specific challenges in valuing annuities and placing a valuation on a stake in a private equity firm. The question also considered a challenge for retirement funds introduced by the treatment of divorce settlements under the Two-pot system

Part (i) quizzed candidates on the merits of a gross- or net-of-tax basis for valuing assets. Answers were reasonable.

Parts (ii) and (iii) focused on the method of valuing a living annuity and the assumptions required. Answers to (ii) were disappointing, with many candidates not understanding the nature of living annuities and hence the need to value these assets using the discounted value of the income stream plus residual capital on death. However, many candidates did manage to provide fair answers to (iii).

Part (iv) required candidates to compare how the approach might differ for a guaranteed inflation-linked annuity. Answers were surprisingly poor given the lead-in provided by parts (ii) and (iii) of the question.

Part (v) pivoted slightly to a question about a somewhat unusual asset of the divorcing couple, but one that provided an opportunity to test understanding of private equity fees and hence the revenue generated by private equity firms. Some candidates achieved good marks for this question, demonstrating solid knowledge of the expected revenues and the challenges of forecasting them, while many candidates struggled.

Part (vi) considered the risks posed to pension funds by the fact that, under the Two pot system, divorced spouses will be able to cash out their portion of retirement fund credit. Answers were quite disappointing.

i.

Advantages

- Gross of tax valuations are simpler;
 - As they involve estimating the market value without consideration for tax.
 - More objective; as do not have to allow for subjective assumptions such as timing of disposals and tax rates at time of disposal.
- Any future changes in the taxation regime may result in a mismatch relative to the assumptions made in determining net of tax valuations.
- Less work for valuations experts; thus costing less to estimate asset values.
- Not having to factor in potential future tax liabilities can simplify negotiations, saving time and legal costs.

Disadvantages

- Eventually assets have to be realised, whether as part of a divorce order or further down the line, and associated tax may have to be paid.
 - This would leave whichever party that had to realise the assets with a (possibly unanticipated) shortfall.
- Valuing on a gross of tax basis would disadvantage whichever party has the most associated tax liabilities.
 - Typically this is the party who has more assets in their name.
 - The tax applicable to different types of assets also has a bearing.
 - The level of unrealised capital gains within specific assets will also be a consideration.

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ii.

- He cannot withdraw or transfer part of the living annuity or the income to his spouse; so does not have immediate access to it.
- So; it needs to be valued as the present value of the annuity payments he will receive.
- The PV of annuity payments plus remaining capital at death is not equal to the current market value as:
 - Tax needs to be paid on them.
 - A liquidity premium needs to be applied to the discount rate, which may not be earned on the assets.

[2]

iii.

- Since he cannot surrender or transfer part of the living annuity, it would need to be valued as the present value of future annuity payments plus remaining capital at death.
- Data:
 - Date of calculation of asset values.
 - Total market value of underlying assets on calculation date.
 - Tax rate being paid on annuity payments, and any projected changes to this tax rate.
 - Credit risk of the insurer, or argue that it's immaterial.
- A withdrawal rate assumption will need to be made which could be based on:
 - The current withdrawal rate and any changes the annuitant anticipates making to it.
 - An argument could be made that the maximum withdrawal rate be used, as that is the most liquid form of the annuity.
 - An alternative argument could be made to use a starting drawdown rate, allowing for CPI increases in the Rand amount per annum and allowing capital to last for curtate life expectancy of annuitant (i.e. not breaching the 17.5% maximum limit within curtate life expectancy).
 - The maximum withdrawal rate is 17.5% p.a.
- Determine an appropriate discount rate, taking into account:
 - Asset mix as well as any projected changes to it.
 - Gross expected returns on asset classes.
 - Asset management fees and product fees.

- A liquidity premium, since any transfer of assets to his wife would need to be funded now, but the payments are only available in the future.
- To take mortality into account, establish an appropriate mortality table to use based on
 - Age & gender of client.
 - Health status of client (e.g. is he a smoker)?
 - Standard mortality rates for guaranteed annuitants;
 - Unlikely to find tables specifically for living annuitants
 - May need to be adjusted for possible higher mortality for living annuitants.
- Project future cashflows:
 - Project assets at expected net-of-fees return and apply income withdrawal percentage / assumption, deduct any tax payable either:
 - Over the expected remaining lifespan of the annuitant; or
 - Taking probabilities of survival and death (the cap of 17.5% on withdrawals means there will be a death benefit that must also be discounted) and their associated benefits into account in each future period.
- Discount the future projected cashflows to the annuitant at the appropriate discount rate.

[7]

iv.

- The current level of income would be set, rather than requiring an assumption about drawdown.
- The projection of future payments would take expected future inflation into account.
 - This can be derived from the nominal and real interest rate curves.
- Allow for guaranteed minimum death benefits (if any).
 - However, other than these benefits, there is no residual capital remaining like in a living annuity.
 - Factor in mortality of the second life if it is a joint life annuity.
- It will become more important that discount rates are time dependent.

[2]

v.

The revenue earned by a private equity firm typically consists mainly of:

- management fees
- carried interest.

The partnership agreement with clients will set out the specifics of the private equity fund fees, which can vary.

Management Fees:

- Annual Management fee: Private equity firms typically charge an annual management fee based on the committed capital (in this case, R500m). This fee is usually around 1-2% per year.
- For example, if the firm charges a 2% management fee on committed capital of R500m, the annual management fee would be R10m.
- Once each underlying investment is exited and cash returned to investors then this fee will usually cease in relation to the value of that asset. Management fees thus decline over time as exits take place.
- Only one fund is mentioned but it would be usual to raise further funds if the first fund is successful and this would lead to a step change in the management fee revenue for the firm.

Performance fees or Carried Interest:

- Carried interest, also known as "carry," is a share of the profits that the private equity firm earns on successful investments.
- It is typically expressed as a percentage of the fund's profits above a specified hurdle rate, also called the preferred rate;
 - Which is the minimum rate of return that investors in the fund must receive before the manager can start receiving carried interest.
 - The carried interest is usually based on a sharing rate of 15-20 percent above the hurdle rate.
- It is typically calculated as an IRR, taking into account cash flows committed, any dividends and exit values and will also take into account any loans or debt utilized within the fund.
- Carried interest is commonly realised according to one of two structures:
 - When investments are exited, which can happen sporadically over a period of time as portfolio companies are sold, listed or otherwise exited.
 - On the fund as a whole, meaning it is only calculated and earned when the last investment is exited and the fund is wrapped up.
 - The expected time horizon of 10 to 12 years is only a rough estimate, and it's likely that some exits occur before or after.
 - Some assets may not be possible to sell; and may be dealt with by either moving them to a new fund or distributing the shares amongst investors; with an accompanying agreement on how to deal with their carried interest.
- There is sometimes a "clawback" clause that allows the carried interest on a poorly performing investment to be clawed back against the carried interest on successful investments.

Other sources of revenue:

- Fees from transactions, such as deal fees or advisory fees from portfolio company transactions.
- Some firms charge portfolio companies ongoing fees for strategic advice or board representation.

The primary revenue for the firm over the next 10-12 years is likely to come from management fees and carried interest.

Management fees will provide a steady income stream annually, based on the committed capital.

Carried interest will be earned upon successful exits of investments, providing a significant portion of revenue, but realised over time as successful investments mature and is therefore 'lumpy' and difficult to forecast.

Private equity funds typically only invest in 8-12 underlying investments, with the result that returns could be less predictable. This would be exacerbated if it was a venture capital fund with less certain future outcomes for each investment.

Revenue projections can vary widely based on the performance of the underlying investments, and the firm's ability to exit investments profitably.

The quality of the investments made will determine the extent of future carried interest. Track record thus matters. As this is the first fund in a new firm it is difficult to know whether the private equity firm has the ability to select successful investments and hence earn significant carried interest.

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vi.

- The level of risk will depend on the proportion of the fund's assets belonging to married members.
- The intention of the retirement component is that it remains untouched until retirement.
- This allows the fund to have a high degree of certainty about the liquidity requirements of the retirement component.
 - Having this certainty, allows the fund to invest a higher proportion of its assets in illiquid assets.
 - The one risk is that a member is allowed to transfer the retirement component to another fund in the event of changing jobs, which would still pose a challenge if the fund had very high allocation to illiquid assets.
- If the retirement component is unexpectedly withdrawn; this may result in:
 - Higher proportion of illiquid assets in the remaining assets – assuming liquid assets need to be used for such withdrawals.
 - Forced sale of relatively illiquid assets at lower values.
- Funds will likely try anticipating the level of divorce-related cashflows, but this comes at the cost of holding potentially suboptimum (more liquid) assets, which potentially have lower expected returns.
- There is always the risk that funds get their predictions wrong:
 - The proportion of assets belonging to married members varies over time.

- Divorce rates vary over time.
- Behavioural risks – it's possible that members fake divorces, to draw on the retirement component.
- In aggregate members and their spouses will have less money available for their retirement needs.
- It is likely to be tax inefficient, with the withdrawal tax being payable
 - Unless the withdrawing spouse has a low marginal rate of taxation at the time of making the withdrawal.
 - Which is yet another behavioural pitfall i.e. taking advantage of the tax status of the spouse.

[6]

[Total 31]

QUESTION 3

Examiner Comments:

Question 3 considered the evaluation of an equity investment in an unlisted company by a pension fund, with an infrastructure angle. The question also tested the investment rationale of including an option to convert the stake into an investment in a listed investment holding company. Finally, possible reasons for the low level of investment in infrastructure by pension funds were explored as well as potential ways to encourage more investment.

Part (i) discussed the trade-offs involved in debt vs equity funding. Most candidates answered the question well.

Part (ii) required candidates to evaluate the unlisted entity as a potential investment for the pension fund. As with many questions carrying higher marks, a lot of candidates mentioned a number of the more obvious points, but failed to capture more marks by considering other angles and considerations as well as some of the broader risks.

Part (iii) needed candidates to assess certain financial metrics and describe a method for determining an intrinsic value, including assumptions and data required. Those candidates with a solid grasp of valuations produced good answers but many candidates did not interpret the data and derive meaningful insights on the financial health of the company. Some candidates also failed to identify the appropriate valuation method or discuss other methods that might be of value.

In part (iv), the rationale for making a conversion option available was considered, as well as considerations in relation to exercising the option. Candidates unfortunately neglected to unpack the various considerations in enough detail and even fundamental issues like the conversion ratio and valuation of the business at the exercise date were omitted.

Part (v) explored the reasons for low allocations to infrastructure assets by pension funds and possible factors that might lead to an increase in future. Candidates generally understood the reasons, but did not follow that up with the factors that might unlock more investment. Quite a few scripts indicated that candidates may have run out of time, particularly on part b.

i.

- Cost of equity is more expensive than debt funding (equity risk premium demanded).
- A downside to additional equity finance is that current equity holders would potentially see their future return on investment diluted because of the need to inject additional equity to maintain their percentage stake.
- If they fail to follow their rights, current equity holders would face dilution of their stake by issuance of new equity to a 3rd party. Additional debt financing would preserve current position in terms of ownership and control.
- Debt financing provides a tax shield (interest expense is tax deductible).
- Because debt financing is cheaper than equity, adding debt financing should lower the company's WACC.

- However, beyond some point, the higher the level of balance sheet leverage, the higher the cost of equity becomes (equity risk premium increases). FibreCo has reached the limit of its current debt facilities: implying current lenders deem the risk as too high and the inflection point has been reached. So additional debt might no longer reduce WACC.
- The current debt agreements might include covenants that preclude additional debt.
- Equity funding does not impose regular dividend obligations like debt does (to cover regular interest payments).
- FibreCo's balance sheet is highly geared so additional equity would reduce this gearing and related financial risk.
- Financial risk to shareholders may be heightened by some debt being secured against FibreCo's assets.
- Reduced gearing due to equity raise may encourage lenders to increase debt funding to FibreCo.
- Debt eventually has to be repaid.

[4]

ii.

- Ultimately, a suitable investment will provide a reasonable match for both duration and nature of liabilities.
- FibreCo is fast growing. However, even at steady state, FibreCo provides a steady and predictable income stream from leasing out the network to ISPs. It will likely be able to grow in line with the economy and increase prices in line with inflation over time. Hence the profits and cash flows generated are likely to be real in nature. This is a good match for the pension fund's real liabilities.
- Fibre optic cable networks are long duration assets (fibre lasts many decades) and should be a good match for the long duration of pension fund liabilities.
- Yield: FibreCo is unlikely to pay a regular dividend while in its expansion phase. This lack of yield is not likely to be problematic for a well-diversified pension fund. However, the total expected return from an investment in FibreCo would need to be substantially higher than inflation and the long duration bond yield plus a risk margin to justify the risk.
 - Timing of expansion phase and expected date of dividends commencing.
- Liquidity: FibreCo is unlisted and hence extremely illiquid. How will pension fund exit the investment? This is potentially not a significant problem for a pension fund that has very long duration liabilities.
 - In fact, this illiquidity may allow the pension fund to earn an illiquidity premium.
 - Ultimate disposal will be time consuming and costly.
 - This makes FibreCo suitable for a very large fund where the illiquid investment does not represent too large a percentage of the total fund size.
 - Two pot system considerations – suitable for retirement pot / vesting pot but not savings pot.
- Valuation consideration – required for daily unit pricing.

- The investment will likely be classifiable as infrastructure for Reg 28 purposes so well placed to take advantage of recent change to infrastructure limit of 45% as per Reg 28.
- Infrastructure investment by pension funds in SA is quite nascent and thus there is a lack of experience/skills in this asset class. This particular investment requires specialised skills to understand the details and risks involved (which trustees and ordinary asset consultants may not possess).
- Has the fund got the administrative and governance experience to manage the investment?
- Does fund have skills for direct investment in unlisted businesses? Does the Fund's IPS allow direct investments? Does it have a portfolio of such investments? If not, it would be preferable to access investments like this via an infrastructure fund or other portfolio.
- Size of investment relative to size of pension fund: would need to ensure diversification and avoid concentration risk.
- Balance sheet considerations:
 - How indebted is FibreCo? It has reached limit, implying significant debt.
 - What are the types of debt (bank loans/bonds), terms of the debt (term, interest rates, covenants).
 - How much additional debt capacity will equity raise provide?
- The investment is likely to have lower volatility (unlisted, infrequent valuations) and a low correlation with traditional asset classes.
- Internet connectivity has become an essential utility-like service and the investment in FibreCo could be expected to be defensive in economic downturns.
- What is the fund's exposure to similar assets e.g. other SA telecommunication company equities and bonds?
- ABCco's track record in relation to good corporate governance and operational excellence in managing its investments. This is important as ABCco is FibreCo controlling shareholder.
- Why is ABCco seeking external investors i.e. why does it not inject additional equity in FibreCo and maintain its 100% ownership?
- SA lacks infrastructure investment so this investment is beneficial to society and the economy.
- Good for fund ESG credentials: growing company likely creating jobs, increased internet connectivity is good for economy.
- What about the alternative of investing in ABCco directly. Thereby gaining exposure to FibreCo but with better diversification, liquidity, listed, valuations etc.
- Risks:
 - Competition: how many companies are rolling out fibre networks in SA? How long until the market becomes saturated? Is there a risk of a price war or irrational pricing by competitors?
 - Risk of alternative solutions e.g. Starlink.
 - Project / operating risk: ISP demand for the network ends up being lower than expected, delays or cost overruns in rollout phase.
 - Technological risk: newer technologies arising which make fibre networks redundant.

- Regulation: the telecom industry is regulated in SA. Is there a chance of price regulation? Competition regulation preventing M&A?
- Political risk: given the importance of telecoms/internet infrastructure, there is the risk of political interference/involvement.

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iii.

Financial health of FibreCo:

- Revenue is growing very fast, suggesting strong demand for FibreCo's offering. Despite still growing quickly, the rate of growth is slowing.
- But FibreCo must be investing a lot of capex to achieve this growth (evidenced by the increase in net debt despite positive EBITDA and no dividend).
- The company has been profitable, since at least 2019, at the EBITDA level.
- Given the capital-intensive nature of its business, depreciation is likely to be high, as is the interest cost (given the high levels of debt). How profitable is FibreCo at a net profit level?
- No cashflow metrics are disclosed. How healthy is FibreCo's free cashflow?
- The company is achieving operating leverage: EBITDA margin is expanding as the revenue grows. Why the spike in margin in 2021? Need to understand what caused this – perhaps an increase in working from home during pandemic?
- High level of financial gearing: net debt to EBITDA of 4.6x is very high.

Valuation method – DCF

- Will need to project revenue/costs/capex to determine cashflows from FibreCo.
- Discount the FCF projected to today to determine the NPV of FibreCo.
- Would need to determine appropriate risk discount rate: risk free plus equity risk premium
- Revenue:
 - How long can FibreCo maintain such high levels of revenue growth? At what rate will revenue grow after expansion phase ends?
 - What are the important cable network metrics? How large is the current network (in terms of km of cable or houses passed)? What is the size of the total addressable market in SA? What is the competitive environment like – are there many competitors?
 - How long will expansion phase last? How much capex will be needed for this? How will this capex be financed?
- Costs. What comprises the cost base? At what level does EBITDA margin stabilise? What are the margins at similar businesses in SA and internationally?
- Need to determine some other important metrics:
 - sustaining capex (during steady state),
 - cost of debt,
 - tax rate.

- Dividends are unlikely to be paid until expansion phase over and required capex reduces. However, understanding management's capital allocation priorities is essential. What is the level of gearing (net debt to EBITDA) at which dividends will commence? Or will management prefer M&A?
- What is the total invested capital and what is the return on invested capital? This needs to be compared to the WACC.
- Should the pension fund apply an illiquidity discount to the valuation?
- Conduct a scenario analysis with probabilities of scenarios, as well as sensitivity to important factors.
- Consider the NAV of the company.
- Compare valuation metrics to similar listed companies (EV/sales; EV/EBITDA, PE, P/B) and apply appropriate multiple to FibreCo metrics
 - If no SA equivalents, use international but apply SA discount.
- Need to understand the debt on the balance sheet:
 - Cost of debt: interest rate? Fixed or floating?
 - Weighted average maturity of debt.
 - Composition of debt: bank loans, bonds etc. Who are the main lenders?
 - Any covenants on the debt as well as details of these?

[10]

iv.

- Makes sense for ABCco as it will be easier to manage FibreCo without the presence of minority investors.
 - The pension fund would not be a strategic partner (i.e. contributing knowledge, skills, technology etc) but rather a pure financier - easing financial (balance sheet) pressure at a point in time.
- Makes sense for pension fund as FibreCo is unlisted and therefore extremely illiquid and difficult to exit.
 - Converting this illiquid investment to listed shares in ABCco offers liquidity and option to easily exit (sell) the investment one day.
- The option makes the investment more appealing for the pension fund, which means they may place a higher value on the investment opportunity, which is then positive for ABCco.

Considerations:

- How will the conversion ratio (i.e. number of ABCco shares for Fibreco shares) be calculated?
- How will the valuation of FibreCo be determined at the option date?
- It is not unusual for a listed investment holding company like ABCco to trade at significant discount to NAV.
 - What is ABCco's discount/premium to NAV?

- How has this changed over time?
- What proportion of the ten underlying investments is listed vs unlisted? Higher listed proportion improves ability to value ABCco's sum of the parts.
- What premium/discount assumption should the fund use in its calculations?
- The term of 5-years (until strike date of option) is not a long time, especially when considering infrastructure investments that typically have a long duration and relative to the long duration of the pension fund's liabilities.
 - How does the five years correspond to the investment phase of FibreCo? If it is still in the expansion phase, then value is unlikely to have been unlocked during this short period.
- What companies/industries does the rest of ABCco's investment portfolio comprise? Is this portfolio a suitable investment for the pension fund?
- Is the option once-off (at the 5-year point)?
 - If so, what are the other options for exiting the investment, perhaps at a later stage?
 - If not, what are the terms of conversion beyond that?
- Is it preferable to just invest in ABCco today instead of FibreCo if this is such a valuable option i.e. why is the FibreCo with option to convert to ABCco a more valuable option?
- Is there a lock-up period post the exercise of the option?
- What is the pension fund's overall exposure to ABCco? Because it is listed the pension fund is likely to have existing exposure through its equity allocation.

[6]

v.

a.

- Lack of infrastructure investment options (so called 'bankable projects') available for pension funds to invest in.
- Accessed mostly via private equity/debt
 - with higher associated fees.
- These assets are illiquid and defined contribution funds (i.e. the majority of funds in South Africa) require liquidity to manage member claims and uncertainty about membership and hence redemptions.
- These assets pose a challenge in terms of valuation for daily pricing purposes.
- These assets may have a higher perceived level of risk.
- Greater level of due diligence work required along with lack of trustee skills to evaluate and monitor this type of investment. Also, lack of experience and expertise amongst investment consultants.
- High bond yields in SA have created a high hurdle in terms of required return for relatively higher risk infrastructure projects to attract investors.
- Regulation 28 offshore allocation limit was also recently increased, which has resulted in higher offshore allocations. This rebalancing has taken priority for most pension funds.

- Possible “wait and see” attitude ahead of Two pot implementation.
- Uncertainty about classification and reporting of infrastructure assets.
- Distrust between business and government following years of corruption have hampered development of public private partnerships.
- Some areas have attracted investment e.g. renewable energy.
- Limited data on this type of asset, meaning it is difficult to model appropriate allocations.

[5]

b.

- Implementation of the Two-pot system – potential for retirement component to justify higher unlisted / infrastructure investment due to lack of accessibility by members, which means the illiquidity is less of a consideration. Although transfers still allowed meaning some liquidity still required.
- Listed infrastructure instruments – available in developed markets but not in South Africa at this stage – if innovation leads to these types of instruments being developed then it would allow pension funds to access infrastructure assets without the limitations of lack of liquidity and daily valuations.
- Increase in availability of investable or bankable projects:
 - GNU with improved accountability and lower levels of corruption may lead to greater confidence and hence more investment.
 - Greater awareness of government of the need for public private partnerships to solve many of the crises e.g. railway and ports, electricity.
- Climate change and just transition – the requirement to invest in alternative energy sources and transition existing infrastructure to renewable sources in a just manner may spur additional investment in infrastructure.
- Although not desirable, threat of introduction of prescribed assets i.e. changes to Regulation 28 to require minimum investment in infrastructure rather than a maximum limit.
- Clarification or standardisation of classification of infrastructure instruments, thus improving reporting and awareness of infrastructure.
- Investment in building skills (trustees, asset consultants) in relation to understanding, evaluating and investing in infrastructure projects will enable pension funds to explore this type of investment.

[3]

[Total 39]

[Grand Total 100]