

EXAMINATIONS

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Subject 401 — UK Fellowship Investment

Paper One

EXAMINERS' REPORT

- 1
- (i)
 - (a) Term – Capital projects tend to be very long term in nature. Many are refinanced after say 5 years and once they have demonstrated a satisfactory track record. However, in this case, as in most cases the initial term of the bond is likely to reflect the long term nature of the project and be for the order of 30 years.
 - (b) Principal repayment schedule – Assuming a long term bond, the bond is unlikely to include full repayment of principal at maturity. Waste to energy plants are depreciating assets and it is appropriate to have some level of amortisation over the term. The amortisation may not commence immediately as it may take some time to build the cash flows up to the point where the project can withstand the cash consequences of the principal amortisation.
 - (c) Type and timing of interest payments - Interest payments are likely to be regular (say 3 or 6 monthly) and fixed rate.
 - (d) The method for setting the interest rate at the issue (and ongoing if needed) - The fixed rate at issue will be set at an agreed margin over the gross yield to redemption of a suitable government bond at the time of issue. A suitable government bond would be one of similar average term and one which is trading at about par.
 - (e) Security offered – The bondholders can expect to receive a fixed charge over the entire asset.
 - (f) Financial covenants – The main financial covenant will be a coverage ratio. Something like EBITDA (earnings before interest, tax and depreciation) being at least, say, 1.5 times the interest expense. If this ratio is breached then the bondholders will have the right to take control of the asset and the operations. There might be a second coverage ratio of, say, 1.1 which would be deemed a technical default. The default clauses would then take immediate effect. There could also be restrictions on any further borrowing.
 - (ii) The bond issue could be rated as investment grade by a recognised credit rating agency. It could also be made into a convertible so as to allow the option of some equity participation in the future. Also, the bond could be listed on a suitable exchange making it potentially more tradeable.
 - (iii) As noted in the question, the bond is not guaranteed by the sponsor.

The waste to energy plant has a realisable value. However, much of it is not easily moveable and only at significant cost. Hence if the project fails then it is likely that it will be difficult to realise the asset at a price that fully repays the bondholders.

The key credit factor in most capital projects is generally the quality of the future income stream. More particularly, there will likely be one or

more contracts to supply waste and one or more contracts to sell the energy produced. It is important to review the terms and conditions of all of the contracts in existence and to consider the credit worthiness of the counterparties.

Q1 Early parts of (i) tackled OK. Fewer candidates made the points required for (e) and (f).

(ii) OK

(iii) Most candidates scored something - few hit all points.

- 2** (i) Buying the basis is an arbitrage position comprising a long cash position (i.e. a long position in the underlying asset) and a short position in the respective future. A profit is achieved if the cash price plus the cost of carry is less than the price of the future.

- (ii) (a) The nominal exposure from one futures contract is $£25 \times 6,150 = £153,750$. The number of contracts required for an exposure of £1.23m is $£1.23\text{m} \div £153,750 = 8$

Note it could be argued that this provides exposure of £1.23m in three months time with a corresponding lower exposure in current terms.

(marks also given if £10 per point was used correctly ie 20 contracts)

- (b) Assuming expiry is 3 months away and ignoring expenses and tax, the cost of carry for the long cash position is:

$$\frac{1}{4} \times (6.25\% - 2.25\%) = 1\%$$

Therefore, buying in the cash market today is equivalent to buying in 3 months at a price of:

$$6,000 \times 1.01 = 6060$$

This is 90 points (or 1½%) lower than the current price of the three month future. Therefore, establishing a long position in the cash market would appear to be better value.

Before concluding this is the optimum course it is necessary to establish other factors:

- the time horizon of the investment
- the expenses of making and realising the investment
- the tax consequences of the alternative courses

- (iii) Assuming futures and options contracts are available on the same asset, at the same strike price, for the same term and consistent amounts then

the purchase of the futures contract can be replicated by purchasing call options and selling put options with the same strike price as the futures contract.

Under the futures contract, the buyer is committed to purchase the asset at the strike however its price moves prior to delivery.

For this combination of options:

- (a) If the asset price is above the strike price the call option is exercised and the asset is purchased at the strike price.
- (b) If the asset price is below the strike price the purchaser of the put option would exercise the put and sell the asset to you at the strike price.

Either way the asset is purchased at the strike price as for the futures contract.

Selling the futures contract can be replicated by selling call options and buying puts.

Q2 Many candidates scored well on this question.

Early parts (i) and (ii) a done well -marks were given if the calculation was done correctly using either £10 or £25 per point.

(ii) b not done well . Many candidates threw away marks by failing to state assumptions.

(iii) OK

3 (i) The investment was declined because:

1. The life office does not have a sector fund which can accommodate residential property.
2. The total investment amount is likely to be quite small (100 homes for rental to lower income earners). The return from the investment is therefore not sufficiently high to warrant the difficulties of assessing, monitoring and accommodating the investment.
3. The investment includes construction risk and associated funding which is an additional complication. This adds to the time and expense of analysing the investment.
4. Returns from residential property can be diminished by government actions seeking to protect the tenant e.g. rent control.

This is more likely to be a problem for properties designed to be rented to lower income earners as is the case here.

5. Landlords can attract a poor public image as they seek to secure their return from the investment e.g. eviction of tenants who are in arrears.
 6. Managing the investment is often very labour intensive and hence expensive. Maintenance costs could be especially high for this portfolio of properties
 7. The development may be located well away from the other commercial property investments of the life office. If this is so then the area may be not well known and not frequently visited adding to the uncertainty of the investment and the difficulties with its ongoing management.
 8. It would seem that both the authorities and the developer believe that there will be sufficient demand from low income earners to rent the homes. However, the uncertainty caused by a new special purpose development some distance out from the city and possibly without adequate shopping and infrastructure adds to the uncertainty of the future returns from the investment making the investment more difficult to assess and more difficult to approve.
 9. The prospects for rental growth in this investment may be poor
 10. The risk of voids may be higher than for other properties
- (ii) Again, the investment should be declined by the investment manager for the reasons given above. The explanation given to the property developer should also include the following comments.

Fixed interest investments are characterised by an expectation of timing and amount of cash flow with respect to both interest and principal repayments.

The main features of this investment are as follows:

1. Relatively small total investment amount.
2. Investment in special purpose (low cost) and concentrated (by location) housing specifically designed to suit low income earners who wish to rent and not buy.
3. Some protection against home prices inflation but very limited. Protection at year 8 only and does not commence until the development is complete. Protection is limited to a maximum of 25% of the original investment amount.

4. Apart from significant protection against rent voids (assuming the creditworthiness of the management company is acceptable) no other protection against the amount of net rents received.
5. No protection against poor construction or the cost of repairs and maintenance. It is likely that the developer would have to offer some warranties of the construction of the properties for a period of say ten years.

In this case the guarantee provided by the financial institution goes some way towards providing a minimum level of principal repayment. However the net income from time to time is still subject to general market levels, lease terms and conditions, rent void periods and expenses. Hence, "interest" income is far from certain. The investment is therefore not suitable for inclusion in the fixed interest portfolio.

Even if the above problem could be overcome and a place found for the investment, the following considerations would also need to be taken into account which would add further to the uncertainty of the investment and the likelihood that it would be declined.

The credit worthiness of both the financial institution and the management company would need to be analysed and deemed to be satisfactory. Both entities are offering substantial guarantees to the investment income.

The life office would remain exposed to home prices for the remainder of the development period and until the date of the commencement of the guarantee.

The value of the investment at the end of year 8 would not be likely to increase precisely in line with the guarantee. The actual investment is concentrated in a new development in a rural area and with low cost flats and houses. All of the homes have been built by the same developer. The mismatch between the price inflation of the actual investment and the minimum return guarantee is likely to be quite large.

The guarantees offered by the financial institution and by the management company only last for 8 years. Even worse the guarantee from the financial institution applies to a snapshot event at year 8. It is unlikely that the development could be sold in the future in a short time frame at year 8. It is much more likely that the investment would end up being sold to the tenants over a very long period of time. Hence the life office would have a large exposure to home price risk over the term of its investment.

Even if a buyer could be found at year 8 with some certainty, the life office would generally not enter into a transaction which is both not marketable and has an 8 year term. The life office would generally look at shorter term investments of up to say 5 years and longer term investments of 20 years and more.

Future expected income and outgo from the investment will include:

Outgo

- Initial investment including construction costs
- Management company fees
- Management company outgoings (e.g. repairs, maintenance and council charges to the extent not paid by the tenant)
- Internal management cost allocation

Income

- Gross rents
- Sale proceeds
- Rent void reimbursements from the management company (if any)
- Prices guarantee payment from the financial institution (if any)

Q3 Overall many candidates had trouble with this question especially with part (ii). The solutions give a full account of what was required.

- 4** (i) Adv – only 10 to look after
holdings not too small
dealing costs not too disproportionate
possibly some overseas exposure - direct or indirect
complete control over stock names but not over effective exposure
Disadv – miss out on the true niche players / high growth areas
Less diversification – only ten names - high tracking error of overall portfolio
Although apparently have control its difficult to focus on the areas to which you really want to have exposure.
- (ii) Approach is direct
No access to expertise of professional fund manager
Less diversification
Costs comparison dependant on level of activity in direct portfolio
Less control over overseas exposure than with specific collective vehicles
Could be tax implications depending on the specific tax regime of the country involved
No prospect of any gearing or playing the discount to NAV as in the case of Investment trusts

Q4 Straightforward question and in general good marks were scored here by many.

- 5** (i)
- Tax – both the tax treatment of different investments and the tax position of the investor need to be considered.
 - Statutory, legal or voluntary restrictions on how the fund may invest.
 - The size of the assets, both in relation to the liabilities and in absolute terms.

- The expected long term return from various asset classes.
- Statutory valuation and solvency requirements.
- Future accrual of liabilities.
- The existing portfolio.
- The strategy followed by other funds.
- The amount of risk that the investor is prepared to take.
- The investor's objectives.

(ii) Need to project forward the funds assets and liabilities using a stochastic model. Each of the variables (eg salary progression, withdrawals, interest rates, asset returns etc.) needs to be modelled on the basis of its historical behaviour and on the basis of its relationship with the other variables. Final model is a series of equations. Model should be run many times over a variety of periods and with a variety of appropriate asset distributions. The aim is to determine the spread of possible values in the medium or long term and hence give the trustees or plan sponsor an idea of the consequences of different actions or decisions. In particular it may be run over specific (eg 5 year) periods. Thus it will be possible to adopt a strategy which will have the highest probability of achieving a particular objective eg less than 10% chance of any MFR problems in any one year.

Limitations - Models are only as good as their assumptions - Garbage in, garbage out. Results can be difficult to interpret and to explain to clients. Once the concept is understood clients may regard the model as more precise and accurate than is justified and rely on it too much.

(iii) Liabilities are generally long term but a 5-10 year timescale with interim reviews is typical. If projections are too long any accuracy which the model does have will deteriorate. On the other hand the timescale should not be too short since frequent changes in the benchmark or to the objectives can cause confusion in the mind of the fund manager and incur unnecessary extra costs. Also bear in mind the particular circumstances of the scheme in question and those of the plan sponsor as well. Consider the purpose of the review - ie to correct a MFR shortfall. How stable is the fund - is there a bulge of liabilities maturing at a particular time in the future.

Q5 Part (i) done well - remainder less so. Parts (iii) esp was not well done and once again marks were lost by not discussing the limitations in part (ii)

- 6**
- (i) Rules & regulations governing pension funds might prevent such concentration
Trust deed and rules of individual schemes
Investment aims of individual schemes
Liquidity in the stock – free float
Risk -asset liability matching - the stock may not be a suitable asset for a particular pension fund
High specific risk
 - (ii) Use time weighted returns.
Assess perf overall relative to the appropriate benchmark and in light of the stated objectives.

Consider a detailed attribution of the returns and consider overall results in light of the risks taken to achieve them.

If benchmark is unadjusted then no problem. If restrictions on the dominant stock have been imposed the re-weight the index using a smaller proportion of the large stock and proportionately increasing other stocks. May use free float weighted index.

May compare performance against a peer group which has similar restrictions

- (iii) Decide on the local /overseas asset split in view of the liability profile, attitude to risk, funding position and any restrictions (either statutory or in the trust deed). Construct a composite benchmark eg 60/40 with the domestic component adjusted where appropriate to reflect any problems with the large stock. Overseas could be a global index ex the local country or could be just a regional index. Could include the markets of close trading partners who will be tied in with the economic fortunes of the original country. Need to establish rules about rebalancing the composite index eg monthly , quarterly.

- (iv) Availability and nature of contracts
– OTC Exchange based options /futures/ forwards

Pricing and valuation arrangements of the contracts

Duration of hedge.

Rollover/ roll forward options

Reinvestment risk

Counterparty risk

Risk relative to benchmark

Regulations on use of derivatives in the funds

Q6 Overall poorly done – virtually no candidates scored over half marks and many scored very little. Most of the marks which were scored were gained in part (i) and the straightforward bit of part (ii) ie timeweighted returns, possibly against a peer group which is similarly affected by the large stock.

(iii) not tackled well

(iv) most candidates discussed the rationale behind overseas investment and hedging in general. Virtually no-one discussed the asset considerations as asked (see solutions).

- 7** (i) The performance of the funds need to be considered in the light of the nature of the mandates and the risk profile of the funds.

The strength of the management company must be reassessed. What is the expertise of relevant decision makers. What is the nature and size of their research ability. Do they have the capacity to make investments globally.

We should request that the management company confirm its long term strategy both for investing and for its own growth. XYZ has grown rapidly over the past five years. XYZ is moving from niche player to mainstream. Its depth of expertise, research systems and market reach might not be keeping up with its growth.

The fall off in performance appears at first glance to have been a sudden event. Past performance statistics should be analysed to see whether this is true. If true then it may be the result of some discrete event. For example key staff may have left. Alternatively the funds may have taken a strategic investment decision which has not performed well. For example, they may have invested heavily in the wrong industry grouping and in the wrong country.

Conversely, it is highly unlikely that the past above average performance can be put down to dumb luck. The performance continued for too long. For example, smaller managers are able to invest by stock-picking. Larger managers need to buy such large quantities of shares that they often concentrate on industry sector selection.

Past returns should be analysed over the pension fund's total investment term. The pension fund has benefited from four very good years and it could be that over the five year period they remain to be above average. If so then the pension fund might be happier to take a longer term view of the manager, leave the funds with the manager and review the performance in a further 6 to 12 months time.

If funds are to be moved then consideration should be given to the cost of the switch and whether it is possible to switch assets rather than crystallise the assets and then reinvest with the new manager. Moving funds will almost inevitably cost a significant amount of money and may leave the fund temporarily invested in cash rather than shares. However, if it is felt that future performance will continue to be below average then the cost of the move is likely to be recouped in a relatively short time frame.

- (ii) The strength of the management company with respect to the specialist fund must be assessed in terms of personnel, research capability, global reach and strategy.

A number of other potential managers who offer similarly focused funds should be reviewed to see whether they have significantly better (after charges) performance. If so then there exists a prima facie case to move the moneys.

Consider any extra costs in having 1 fund with one manager and the rest elsewhere both in terms of actual fees and in the time needed to track and review more than one investment house.

Is the fourth one just lagging behind the others for whatever reason and will turn down shortly.

What different strategy has been employed so far to avoid the poor performance seen by the other funds.

Assuming that the management company's strength in this area is acceptable and that there exists no other manager who would appear to be superior then there is no obvious reason for change and particularly while the performance remains to be above average.

- (iii) Index tracking funds generally track a price index with dividend income being distributed or reinvested (net of charges).

Charges tend to be much less and perhaps one-half of the equivalent actively managed funds. Hence, an index-tracking fund has a small advantage over an actively managed fund when comparing net (of costs) investment performance.

Performance tables often show index tracking funds have regularly outperformed the active managers when charges are taken into account.

A difficulty exists in the choice of the index to track. Perhaps the markets the pension fund wishes to invest in are not serviced by an index tracking fund.

Also someone needs to manage the investment allocation between the index tracking funds.

Q7 Relatively well done in general

- 8 (i) The important point in the agreement is the stated level of underperformance that will be tolerated in pursuit of the target outperformance.

The investment manager would need to consider:

- if the target level of outperformance and the constraint on underperformance are mutually consistent and both consistent with his "house style",
- conditions in the agreement influencing the achievement of out and underperformance
- what extra steps are involved in constructing the portfolio to recognise this additional constraint e.g. greater diversification, greater quantitative analysis of the portfolio's characteristics;
- how much extra work is involved and are the right resources available to do it,
- are there explicit penalties in the contract if this underperformance constraint is breached;
- are extra investment management fees necessary/possible to cover the extra work resulting from this additional constraint,
- does it make commercial sense to accept the mandate for fund B's portfolio - could this lead to further business .

- will other clients be encouraged to impose similar constraints
- (ii) The mandate provides for a target of “modest” outperformance relative to a benchmark. Typically for bond portfolios, this would mean an outperformance target of the order of 1% p.a., to be achieved over rolling three year periods. By contrast, an outperformance of 13% over 18 months (i.e. 8.5% p.a.) is extraordinary.

A typical underperformance constraint which would be consistent with the above outperformance constraint would be, underperformance relative to the benchmark no greater than 3% in rolling 12 months periods.

The level of outperformance observed suggests the portfolio is constructed with risk levels that are inconsistent with this underperformance constraint. The following investigations would be necessary to identify if this was the case:

- carry out a performance attribution analysis;
- look at the degree of diversification in the portfolio
- analyse the degree of bias in the portfolio to particular characteristics;
- perform simulations to see how the portfolio would have performed in alternative investment market conditions;
- check to see if there have been personnel/process changes at the investment manager;
- check to see what has happened to the portfolio (both performance and construction) since the last report to the trustees
- speak to the manager to see what controls he claims to have in place for the purpose of observing the downside constraint and validate these claims;
- consider the procedures operated by other managers with mandates containing similar downside constraints.

Q8 Quite a wide spread of marks here but few candidates discussed the practical and commercial aspects of the decision as to whether or not to accept the mandate.

In (ii) few candidates seemed to express surprise about the quite extraordinary returns from a bond portfolio.

9 You would need to consider your remit. The Board will have established a set of rules and regulations of investment. It is likely that the life office will have constrained you to invest the bulk of the fund in UK Gilts of a relatively long term to maturity to go some way towards matching the term and currency of the liabilities. However, a minority of the fund is likely to be able to be invested in fixed interest securities which have different attributes including:

- (a) Foreign currency denominated;
- (b) Short term to maturity;

- (c) Corporate bonds; and
- (d) Asset backed securities.

Hence if the money given to you for new investment are large when compared with the size of the fund then it will likely be necessary for you to invest the bulk of the money in a range of long dated UK Gilts. Conversely if the money available for investment are relatively modest then it may be suitable to invest the whole of the amount in a single security in order to build up a potentially tradeable holding in that security and in order to streamline internal administration.

You are concerned with increasing inflation in the UK and the likelihood that short term interest rates might rise as a consequence. You believe that the Government operating through the Bank of England will act swiftly to raise base rates to a level which investors will believe will dampen the inflationary pressures in the relatively near term. You therefore believe that medium term and longer term interest rates in the UK should stay broadly unchanged or might even fall if the majority of investors believe that the risk of inflation has been reduced in the future. Hence you favour investment in the longer term securities at this point.

[ALTERNATIVE ARGUMENTS AS REGARD TO THE FUTURE OF INTEREST RATES ARE ACCEPTABLE IF THEY ARE CONSISTENT. E.G. If you are less certain of the Bank of England's abilities to convince the markets that inflation is under control then all else equal you will likely favour investments in securities which are either not UK denominated or delay investment until interest rates have risen.]

The UK Gilts and the US Treasury Bonds can be treated as being riskless investments at least with regard to credit risk. The corporate bond and CMO alternatives do include exposure to payment delay and payment default risk. It will be necessary to analyse this risk prior to investment. As an alternative to a full analysis of the risk it may be agreed policy at the life office that you may accept the credit rating of a recognised credit agency for the purposes of determining and pricing credit risk. If a full analysis of the risk is to be conducted then it will be useful to consider the quality of the earning stream supporting the payments and the quality of the security (eg. Fixed or floating charge and the likely asset value) in the event of a default.

The spreads between government and corporate securities narrow and widen from time to time. There are many reasons for this including supply and demand forces and the market's view of the strength of the economy. It is useful to check to see whether the spread of the corporate bonds and CMO's under consideration is fairly priced with regard to other corporate bonds and other similar asset backed securities. It is useful to check to see that the spread is reasonable when compared with medium term trends of spread. These investigations may point to the relative cheapness/ dearth of the stock at the present time.

UK Gilts and US Treasury Bonds are highly marketable instruments. The eurobond is listed on a recognised exchange and is likely to be tradeable. Marketability may be desirable for trading, reallocation of the portfolio and also

for the purposes of marking the portfolio to market from time to time as many institutional investors wish to do. The unlisted bond is not likely to be easily traded and hence cannot be accurately marked to market. The CMO may or may not be listed. This feature would need to be checked.

The UK Gilts, US Treasury Bonds and Corporate Bonds are all likely to offer fixed rate interest and principal repaid in full on a set date in the future. Hence the comparison of yield to maturity, term, frequency of coupon etc. is quite straight-forward. One complication does arise however with the US Treasury Bond as it is denominated in US dollars. Unless the life office has matching US dollar denominated liabilities then it will be necessary for the investment manager to consider the likely exchange rate over the term of the anticipated holding of the security in order to assess which bond is priced most attractively.

Once a number of specific CMO's have been identified then they need to be analysed for prepayment risk in addition to the other risks. A CMO is backed by a pool of residential or commercial mortgages. These mortgages might typically provide for early repayment. If repaid early then the principal repayment may be passed through to the CMO holder. The potential for uncertain and early principal repayment increases reinvestment risk and should be taken into account when considering matching and duration analysis.

The tax treatment of the chosen investments must be considered. It must be confirmed that withholding tax does not apply or at least can be reclaimed. It is likely that the fund will be taxed at the savings rate for both income and realised capital gains from Gilts. Other realised capital gains in excess of indexation allowances will be taxed at 23%. Income and realised capital gains in respect of pension business can be considered as being effectively free from tax. Hence it is likely that the life assurance fund is broadly indifferent between income and capital gains. Hence, it is possible that a yield analysis of the various potential investments might favour relatively high coupon stocks as these stocks may be less attractive to other types of investors.

Q9 Most scored marks here but very few scored highly. In the main answers centred on the aspects surrounding the security, liquidity, margin over gilts etc. There was little discussion about the asset/liability, economic and taxation considerations and the points about how new money would relate to the existing portfolio were also often missed.