Faculty of Actuaries **Institute of Actuaries**

EXAMINATIONS

September 2000

Subject 401 — UK Fellowship Investment

Paper Two

EXAMINERS' REPORT

1 The company might consider the following types of bonds:

- UK Corporate Bonds
- Local Authority Bonds
- Foreign Bonds
- Eurobonds
- Bonds Issued In Overseas Bond Markets
- Asset Backed Securities

UK Corporate Bonds

UK companies issue to domestic lenders a wide range of bonds including mortgage debentures, debentures and unsecured loans. These bonds are listed on the London Stock Exchange and traded using a competing market making system with prices disseminated on SEAQ. UK corporate bonds are, generally speaking, much less liquid than UK government bonds because the amount in issue is much smaller, dealing costs are higher and the average daily turnover is much smaller. The credit quality - the promise to pay interest and repay capital when due - of these bonds varies greatly from one company to another. It is important to examine interest and capital cover for such issues as well as the prospects for the company and the industry.

Local Authority Bonds

Local authorities raise money through local taxes and from central government grants. The money is used to fund capital projects at local level. There are two types of local authority bonds:

1. Short-dated negotiable bonds (referred to as Local Authority Bonds) and

2. County and corporation stocks.

The first of these are usually issued for terms of one year but terms of up to five years are possible. The second category is more akin to UK government bonds because of their term and coupon characteristics.

Despite the fact that most local authority bonds are quoted, marketability tends to much poorer than UK government bonds mainly because of the small size of issues. Credit quality would be better than many UK corporate bond issues.

Foreign Bonds (Bulldog Bonds)

Bulldog bonds are issued in the UK by overseas borrowers. The bonds are denominated in Sterling. In terms of coupon and term these bonds tend to be similar to UK government gilts but the credit quality and marketability would, as a general rule, be a lot lower. The credit quality range stretches from that of supra-national bodies like the World Bank to issues by governments of countries where political stability is not a given and issues by corporates of poor credit ratings. The marketability of most of bulldogs is hampered by the small size in issue. The larger bulldog issues tend to be more marketable than UK corporate debentures.

Eurobonds

Eurobonds are debt securities issued internationally by a syndicate of banks which underwrite the issue and sell it to their clients. The marketability of some of these issues is comparable with that of UK government bonds.

Overseas Bond Markets

In descending order of size the US, Japan, Germany and the UK are the largest government bond markets in the world. In terms of strips markets, the UK is the largest followed by France & the UK. Japan and German tend not to offer maturities beyond 10 years while France and the UK offer maturities that extend up to 30 years.

Interest conventions & frequency of coupon payment (semi-annual/annual pay bonds) vary from market to market. The way in which yields are quoted also vary from market to market. The problem with this group of bonds is that they are denominated in the currency of the issuing government and represent an asset liability mismatch for the company.

Asset Backed Securities

Asset backed securities arise from the securitisation of revenue streams owned by the borrower. The income from a pool of assets (like a group of mortgages originated by a bank) is repackaged as repayments on an issue of bonds which are then sold in the market. Collateralised mortgage obligations (CMOs) and Mortgage Backed Securities (MBSs) are perhaps the best known types of asset backed securities.

MBSs arise from the securitisation of a pool of residential mortgages. Investors in MBSs are sold units in the pool and can sell on their investment afterwards in a secondary market. In the US, the mortgages in the pool are usually fixed-rate mortgages and are guaranteed by a government agency so there is a very very low risk of default. When interest rates fall many borrowers refinance their mortgages at lower interest rates. This gives rise to pre-payment risk on MBSs.

The significant feature of CMOs is that they are an attempt to manage the prepayment risk from a pool of mortgages by splitting the bonds that are issued into different classes. Each class receives interest at the rate specified for the pool of mortgages but entitlement to capital repayment is ranked across the classes. Let's say there were three classes. The class with the highest rank would receive all capital repayments until it was repaid. The middle ranking class is next to be repaid until it is fully repaid. The bottom ranking class is the last to be repaid. Variations on the approach define maximum and minimum rates of repayment in each class thus further reducing prepayment risk.

Securitised mortgage repayments can be structures so as to include interest only (IO) and principal only (PO) securities. Payments on the IO version cease when the mortgage is repaid so the total amount of money an investor will receive is significantly more uncertain than usual. On the PO, if the prepayments are earlier than assumed when the PO is priced, it becomes more valuable than expected and vice versa. These types of asset backed securities are very risky investments.

Liability Matching

The liabilities of a general insurer transacting the classes of business outlined in the question are very short with little or no inflation risk. Most claims will be settled within a period of months. Claim outgo is quite uncertain so liquidity is very important.

Some of the bonds mentioned above would be totally unsuitable because of their lack of liquidity. Only the very large issues from the high credit quality borrowers in the corporate, foreign and eurobond markets would be suitable in terms of liquidity. Local authority bonds tend to be very illiquid and by and large unsuitable. Few if any mortgage backed securities would be suitable as a match for the liabilities. Overseas bonds add an unwarranted element of currency risk and are likely to be unsuitable as a match for the liabilities.

New Skills

The investment department would need to acquire new skills in the area of credit quality evaluation if it were decided to move outside the UK Government bond market which is characterised by high levels of liquidity, fiscal privileges, low dealing costs and the ultimate in credit quality.

Possible Approach

In view of their lack of liquidity, holdings in these types of bonds could not be traded actively. However, given the extend of the free reserves, it might be possible to hold a portfolio of bonds issued by the high credit quality borrowers and giving a high running yield.

2 Dear Chairman,

RE: XYZ ASSET MANAGEMENT

You have asked me to review the investment management capabilities of XYZ Asset Management. Before preparing the full report and analysis, I am writing to outline the areas I shall investigate and analyse and the reasons why.

1. Past performance

While I understand that the trustees are not unhappy with the performance achieved by XYZ for the Scheme, it is nevertheless important to analyse it in detail.

We would look at:

- Past performance relative to the appropriate benchmark — in your case this is the CAPS median. We tend to favour looking at comparative rolling 3 year returns as a good indicator of fund management ability, and would compare this with other large investment managers.

- In additional we would look at the volatility of performance relative to the CAPS median achieved by XYZ — this is a good indicator of the risk profile of XYZ. Again we would show how XYZ compares with other large investment managers.

- In-house volatility — we would look at the dispersion of returns achieved by XYZ for portfolio with similar mandates to your own scheme … ideally one would wish for a small dispersion thus implying XYZ manages its portfolios consistently.

- Attribution analysis — we would analyse where XYZ's performance or underperformance relative to its benchmark comes from i.e. asset allocation, sector allocation, stock selection etc., and how this compares with XYZ's stated investment philosophy.

- Portfolio style analysis — XYZ proposes to operate a growth style in its portfolio construction. It is important to analyse the makeup of your scheme's stock portfolios to make sure there is a bias towards such stocks i.e. typically growth stocks have low dividend yields or high price to book ratios and high expected earnings. We can also look at how the UK and US equity portfolio performances compare with the established growth indices for these markets.

2. Client relationship

The quality and speed of delivery of the quarterly investment reports is a good indication of the efficiency of the XYZ's mid and back office. Given the size of your scheme's assets, your relationship should be at XYZ's executive board level.

3. People

The importance of the senior people who work for XYZ is self-evident. Our research will examine:

- The quality of senior people — their experience, track record and commitment to the business.

- Depth of resources — the number of investment staff involved for each major sector, systems at their disposal, the dependence on any "star" fund managers.

- Continuity of staff — this is a critical determinant of success. It is important to examine whether the investment fund managers who have achieved the returns for the scheme are still in XYZ, and if not, what changes have been made. We will also examine ho XYZ plans to retain key staff.

4. Investment process

The firm should have a clear process of how it expects to outperform the competition/benchmark. We will analyse this process in detail, looking at how research is carried out, buy and sell disciplines and how asset allocation is determined. It is important to try to evaluate the consistency of the process so that the exploitation of market inefficiencies is repeatable. We will also relate this process to the performance attribution analysis carried out. The decision structure will also be analysed in terms of its ability to enable making fast effective decisions.

5. Business management

XYZ has grown funds and attracted new clients over the past few years. We will examine this growth in detail and also how they have planned for and coped with this growth, specifically looking at:

- Investment in new capacity — hiring new staff ahead of the new business or improving the technology and systems to allow fund managers to cover more clients.

- Maintaining the quality of staff/not impairing the investment process by having more people involved.

- Solving the liquidity problem of growth — this could affect the firm's ability to buy/sell stocks and may require adjusting the investment process.

This full analysis will obviously generate a lot of information about XYZ. The key points about our review are that:

- Performance statistics should be used to gain a better understanding of the investment style of XYZ.

- The quality of XYZ as an investment organisation reflects a combination of factors the most important of which are the quality of the investment process and the quality of the people.

6. Preparedness for future developments

We need to investigate XYZ's ability to cope with the Year 2000 change, and also its plans (if any) to change the way it manages European assets in the new Euro zone.

I look forward to presenting you with the full review.

Yours sincerely,