

EXAMINATIONS

September 2001

Subject 201 — Communications

EXAMINERS' REPORT

Candidates were asked to draft a memo to a senior manager in their company commenting on the maturity payment from two alternative structures. This report summarises the main points that the examiners were looking for and some common problems encountered.

1. The candidate was asked to draft a memo. A number of scripts lost marks because they were set out as a letter rather than as a memo.
2. Most scripts managed to avoid incorporating jargon. However some used words such as “volatility”, “stochastic” and “liabilities” which were unlikely to be understood by the senior manager. A number of scripts used the expression 1.05^5 , which again was unlikely to be understood by a non-mathematician.
3. Some scripts included tables or graphs. These were helpful where they were used to draw out the main messages. Candidates lost marks where tables were used without drawing out the meaning.
4. Some candidates phrased their answer to state that the senior managers calculations were wrong or misleading. Greater marks were obtained by candidates who were more tactful in acknowledging that the manager’s calculations were correct, and then going on to demonstrate the other relevant factors.
5. Most scripts referred back to the managers query, with a £10,000 investment and a £14,000 payment. Scripts lost marks where they used a different initial investment, or did not make reference to the manger’s calculation of £14,000.
6. A number of scripts lost marks because the main purpose of the letter was devalued by the focus on minor points or irrelevancies, such as consideration of the index being used. Candidates also lost marks where the memo was focussed around suggesting further work was required, rather than answering the question.
7. Most candidates made good use of headings and paragraphs. However some candidates lost marks because their headings were not relevant to the text that followed. Poor spelling, grammar and punctuation were also penalised.
8. A number of candidates produced a final section headed “summary” or “conclusion” which was neither of these. In some cases the summary contained new material. Some summaries were too long (nearer to a page than a paragraph), whilst some were too short containing just one or two sentences about the opportunity to ask further questions.
9. Most candidates gained marks for giving the manager the opportunity to ask further questions.
10. The technical content of this question was relatively straightforward, and most candidates had understood the technical points. However, some scripts lost marks because they did not explain that the average of 5% can be consistent with a fluctuating rate of growth each year. Scripts that described the 5% as an expected rate of return also lost marks.

11. The guideline length was 500-600 words. Scripts which were below 500 words generally missed out some of the explanation. Scripts which were longer than 600 often lost marks for including unnecessary repetition or irrelevant detail.

A possible memo is attached. It does not cover all the possible points, and is not intended to be a model solution. In practice a wide range of solutions was acceptable.

To: XXXXX, Senior Manager, XXXX department
From: YYYYY, Actuary, XXXX department
Date: ZZZZZ

Re: Maturity payments for new Lump Sum Investment Product

I refer to your memo of 1 September 2001 querying the payments under the proposed options A and B for the new Lump Sum Investment product. This note explains how the maturity payments are calculated. It then considers the impact of unsteady rates of growth in the index.

Amounts payable assuming steady growth of 5% each year

Option A

After 5 years, this pays out 100% of the amount invested, plus a further 8% of the amount invested for every year that the index at the anniversary exceeds the index at the previous anniversary by at least 4%.

On the basis of 5% growth in the index each year, there would be an 8% gain for each of the 5 years, and thus £14,000 would be paid out, as you have correctly calculated.

Option B

After 5 years this pays out the amount invested increased by the ratio of the index at maturity to the index at the start date.

On the basis of 5% growth, and assuming a starting index of 100, the index at the 5th anniversary would be 128 (calculated as $100 \times 1.05 \times 1.05$ etc.). The maturity payment would be $£10,000 \times 128 / 100 = £12,800$.

Comparing the amounts payable

As you have correctly surmised, if the index grows at 5% each year, option A gives a higher amount payable, by some considerable amount.

However, this is based on an assumption of exactly 5% growth each year. Whereas the company standard assumption is for average growth of 5% - so that any individual year could have higher or lower growth.

Impact of unsteady growth

In practice, we can be certain that the index will not grow at a steady rate, but will fluctuate. The size and timing of these fluctuations will have a big impact on the amounts payable to customers under option A, as shown below.

For example, if the index were to grow by 8% for each of the first 2 years, and then 3% for the remaining 3 years, this would be consistent with an average growth rate of 5%. The amount payable under option B would be unaffected by this pattern of growth rates. However, the index growth would only exceed the 4% in 2 years, and so the amount payable under option A would be only £11,600.

The index growth could exceed the 4% by anything between 1 and 5 years, and still give a 5% overall average growth rate. The amounts payable under each of these scenarios is:

Number of years where the index growth exceeds 4%	Maturity amount for Option A	Maturity amount for Option B
1	£10,800	£12,800
2	£11,600	£12,800
3	£12,400	£12,800
4	£13,200	£12,800
5	£14,000	£12,800

Conclusion

It is true to say that assuming 5% growth every year in the index, Option A will give a higher payout than Option B. However, allowing for the fact that the rate of growth in the index will change, the amounts payable under options A and B are broadly comparable. Option B will pay out more if the index growth exceeds 4% by 3 or fewer years.

If you would like any further analysis, please contact me on ext. xxxx.

Regards,

name