EXAMINERS' REPORT

April 2010 Examinations

Subject CA3 — Communications

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

R D Muckart
Chairman of the Board of Examiners

July 2009

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Comments

Question 1

Candidates were asked to draft a memo to the marketing manager explaining whether or not it is possible to target certain lives by introducing new factors and giving these lives better annuity rates. Candidates were expected to focus on three key factors, their inter-relationship and the difference between general population and annuitants.

The main points that the examiners were looking for and some common problems encountered were as follows.

1. *Most candidates had a suitable opening paragraph to the letter. Scripts gained marks for a clear summary of the query, but not where the opening paragraph was lengthy and repetitive or did not refer to the initial query.*

2. *There was no evidence of candidates running out of time and therefore not completing the answer. Credit was given to those candidates who submitted their draft working papers if their main answer referred back to it.*

3. *Candidates reached a variety of different conclusions as to whether or not it was appropriate to market the "enhanced annuities". In practice, a variety of answers was acceptable.*

4. *Poor scripts simply repeated the information provided in the question paper. They did not draw any conclusions from the arguments set out in the memo.*

5. *Many candidates lost marks for not getting to the point indicating that they did not identify the key objectives of the memo.*

6. *A number of candidates used language and tone that would not be appropriate for a marketing manager. These scripts were dumbed down significantly e.g. describing that a product needs to have the right features, price etc.*

7. *A large number of scripts did not come to any conclusion on the single life versus joint life factor i.e. candidates explained that married people buy single life annuities but did not conclude that using single life mortality rates would therefore make the annuities unprofitable.*

8. *Better scripts included a summary of the effect of the three factors, related it back to the query and stated if better annuity rates could be offered to certain customers.*

9. *Poor scripts included exact numbers when stating the profile of the new business e.g. 48.23% were single life annuitants and 49.23% were joint life annuitants.*

10. *Candidates lost marks because of the use of jargon such as anti-selection, cohorts, rating factor, experience, loading for profit etc.*

11. *Poor scripts added too much detail on the expenses factor and lost marks for including irrelevant information.*

12. Good candidates gained marks for pointing out that the impact of mortality outweighs the expense apportionment impact.

13. A number of scripts suffered from poor spelling, grammar and punctuation.

14. The guideline length was 350 to 400 words. Scripts which were below 350 words generally missed out some of the explanation. Scripts which were longer than 400 words often lost marks for including unnecessary repetition or irrelevant detail.

See below for a possible solution. It is not intended to be a model solution. In practice a large number of solutions was acceptable.

To: Sam Smith
From: John Jones
Date: 30 April 2010

Re: Attracting more annuity business

Sam,

Thanks for your email of 20 April about potential opportunities. You have raised a number of ideas worth pursuing:

Single vs married

A number of studies show that on average married people live longer than single people, hence it should be possible to offer single people better annuity rates. It is worth noting that these better rates will only be available to those who are single, and not to those who are married but choose to take a single-life annuity. We have a large amount of single-life business, and much of it is from married people.

Larger premium sizes

You have suggested that we may be able to offer better annuity rates to people with larger premiums due to the lower expenses. There is a wider picture here, with two opposing factors at work:

Firstly, the expenses of larger premium sizes are a smaller proportion of the premium size. Secondly, customers with larger premium sizes tend to be more wealthy, more healthy, and live for longer.

This second point outweighs the first. Therefore, in theory, it would be more appropriate to offer customers with smaller premiums better annuity rates.

Geographic district

Published government statistics give good evidence of shorter lifespans for people living in some areas. Whilst this is true in isolation, in working out how much an annuity rate can be improved, we need to consider two other related factors:

- The government statistics reflect the whole population in their analysis. This will include a large number of people, generally with less wealth, who do not buy annuities. The life-span that we use for annuitants needs to be suitably adjusted.

- We would expect less-wealthy people both to have smaller premium sizes, and to live in areas where people on average have shorter lifespans. Therefore, we need to be careful not to double-count the area effect if we also offer better annuity rates for customers with smaller premiums.

In summary, there is a good opportunity to offer better annuity rates to single people, with smaller premium sizes, in certain geographic areas.

Please let me know if you would like some further information or analysis done.

Regards

John

Question 2

Candidates were asked to draft a slide presentation to the Board of Directors to:

- *Explain the meaning of net present value (NPV) and internal rate of return (IRR)*
- *Contrast Projects A and B at different interest rates*
- *Comment on the differing impact of a recession on Projects A and B*

The main points that the examiners were looking for and some common problems encountered were as follows:

1. *There was no evidence of candidates running out of time and therefore not completing the answer. Credit was given to those candidates who submitted their draft working papers if their main answer referred back to it.*

2. *Students should spend their time appropriately. They should not spend time drawing boxes around the slides or using a ruler to draw lines on graphs particularly if they have not spent sufficient time planning their answer and identifying key objectives.*

3. *Most scripts had an appropriate first slide with a clear title, date, name of presenter*

4. *Most scripts had an agenda. On better scripts the agenda linked directly to the titles of the following slides.*

5. *Some candidates put full-length narrative sentences on the slides. This was not appropriate to the slide format and tended to make slides over-busy.*

6. *Some candidates showed the impact on the NPV and IRR with and without a recession on the same graph.*

7. *Poor candidates used different types of graphs to demonstrate the impact of interest rate changes and a recession instead of using the same type of graph which would have made it easier to draw out a comparison.*

8. *Better scripts included a variety of formats on different slides that illustrated the points they were making in clear way. For example, a couple of different graphs and a table, or a graph and a diagram. They also provided comment(s) on the points they were trying to illustrate on the slide.*

9. *Where scripts included a table, marks were gained for how clearly it brought out the messages. Large tables of data were unlikely to bring out the key messages clearly. A number of scripts failed to gain marks if they repeated the table from the exam paper.*

10. *Where scripts included a graph, marks were gained for the appropriate labelling of axes.*

11. *A few candidates used formulae in the presentation which was not helpful.*

12. *Better scripts described the cashflows at the start of the presentation.*

13. *Candidates were expected to assess the information provided and choose the parts that were relevant for the audience. For instance, many scripts contained a single slide on assumptions.*

14. *Good scripts commented on how the NPV and IRR compared against the cost of raising capital.*

15. *Some candidates started the presentation with two separate slides defining NPV and IRR. It would have been better to set the scene first before introducing NPV and IRR.*

16. *Some candidates seemed to think that only three discount rates could be used in the presentation. A number of candidates noted that there would definitely be a recession instead of saying that if there was a recession, there could be a 10% reduction in income and that in practice it could be different.*

17. *Most scripts gained marks for having a closing slide. The better scripts include a brief summary of the key messages and the opportunity to ask questions.*

18. *Most scripts gained full marks for having up to 10 slides.*

19. *Candidates were not asked to provide a script to accompany the presentation.*

See below for a possible solution. It is not intended to be a model solution. In practice a wide range of solutions was acceptable.

1

PRESENTATION TO BOARD OF DIRECTORS OF COMPANY X

PROJECT A vs PROJECT B

John Smith
Consulting Actuary 30 April 2010

2

AGENDA

- Introduction
- Definitions – Methods of comparison
- Illustrative returns
- Project comparisons
- Impact of recession
- Summary

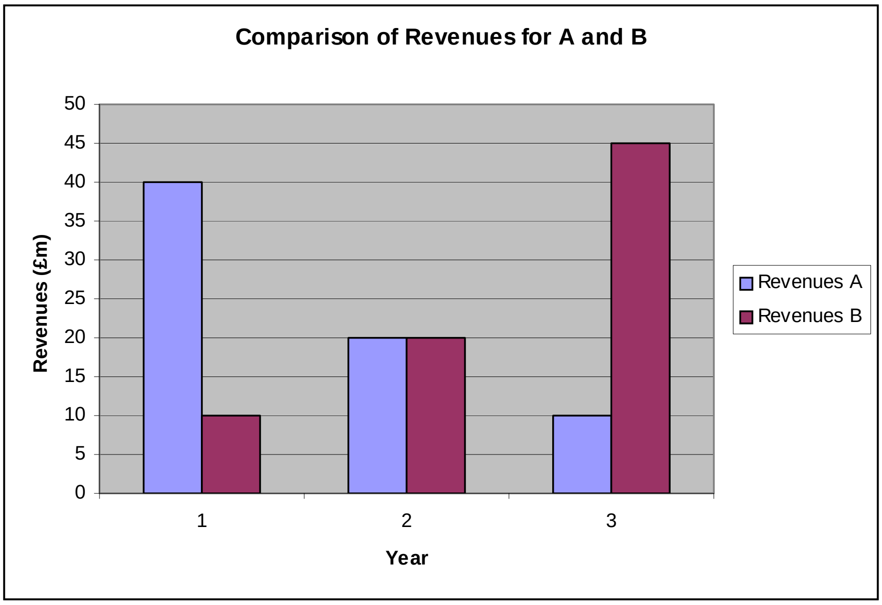
3

Introduction

- 2 Projects being considered for investment
- Same initial outlay of £55m
- A has total expected revenues of £70m over next 3 years, weighted towards the start
- B has total expected revenues of £75m over next 3 years, weighted towards the end

4

Introduction – Comparison of Expected Revenues



- Key question: should we invest in either A or B?

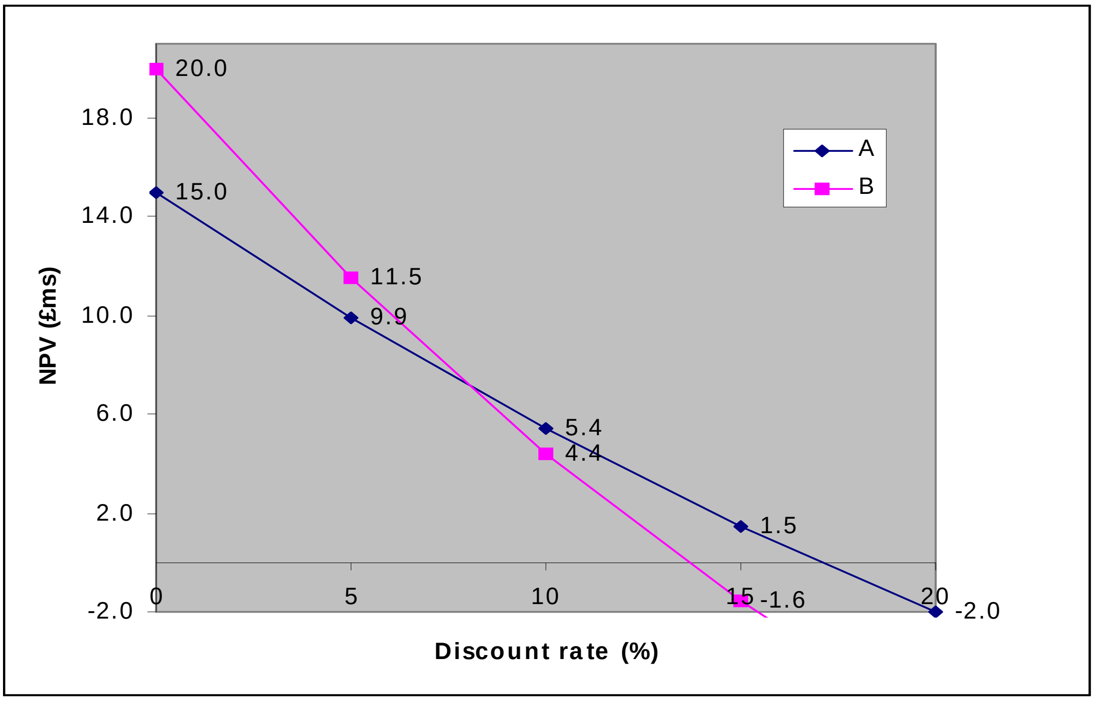
5
Definitions – Methods of Comparison

- Comparing A & B to see if worth vesting in if profitable enough
- Two measures we can use: Net Present Value (NPV) and Internal Rate of Return (IRR)

- NPV = value of a project at a certain rate of return (the "discount rate"
- If NPV > 0….profitable
- However, NPV is sensitive to the discount rates used

- Internal Rate of Return (IRR) = discount rate at which NPV = 0
- If IRR > cost of borrowing…profitable

6
Illustrative returns



Notes: Higher discount rate = lower NPV (& vice versa)
: A has IRR = 17.1%; B = 13.6%
: B more sensitive to changes in discount rate

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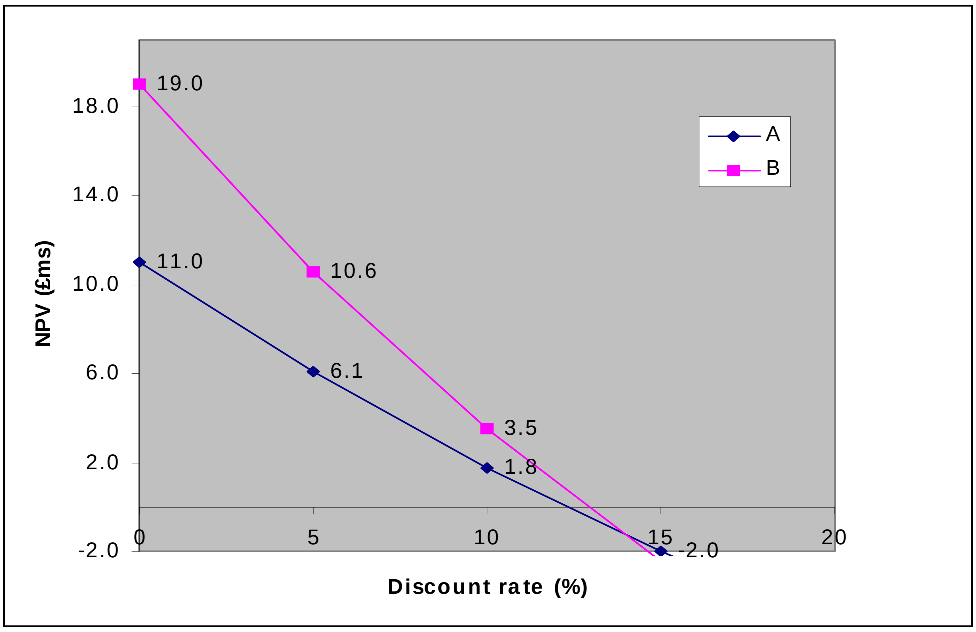
Project Comparisons

Project with higher NPV = more profitable

But, whether A or B gives higher NPV depends on discount rate used, eg

- A yields a profit when discount rate less than 17% (so profitable at 5%, 10% and 15%)...
- ...and is more profitable than B if discount rate greater than 8%
- B yields a profit when discount rate less than 14% (so profitable at 5%, 10% but not 15%).
- ...and is more profitable than A if discount rate less than 8%
- Crossover-point at discount rate of around 8%.

8
Impact of recession – Assume 10% fall in sales in Y1



Notes: Both A & B less profitable – neither now profitable at 15% discount rate
: Project B more profitable in most scenarios
: A affected proportionately more in a recession as revenues weighted towards the start
: A has IRR = 12.3%; B = 12.8%

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Summary

- Which of A or B is the more profitable depends on the discount rate used
- …since A and B have different revenue profiles
- A is impacted more if there is a recession, in which case B has higher profitability

BUT…
- Results sensitive to assumptions made
- Also consider Company X's cost of borrowing compared to IRR

ANY QUESTIONS?