

Actuarial Society of South Africa

EXAMINATION

May 2022

Subject N211 — Communications

EXAMINERS' REPORT

This subject report has been written with the aim of helping candidates. This report summarises the main points that the examiners were looking for and some common problems encountered.

GENERAL COMMENTS

Students continue to make basic errors in this Communication exam. The examiners remained surprised by errors that are highlighted by Word or PowerPoint that the candidates do not correct before final submission. It is a consistent and seemingly widespread problem that persists. It displays carelessness and indifference by the candidates.

Another general problem that is encountered is that of formatting. Firstly, students seem to believe they can just ignore proper formatting for emails (question 1) or PowerPoint questions (question 2) or letters (prior exam questions). Secondly, some students seem to not know how to format currency (R) or use multiple different formats for Rands (or other currency) in the same solution they provide. These basic issues persist and again display carelessness to the examiners.

QUESTION 1

This question was poorly answered by many students. Only a few students attempted to calculate the repayments for the fixed rate bond, and most of them were unable to even get to the correct payment. Hardly any students even attempted to calculate the tiered interest payments. The examiners were looking for students to calculate 3 different repayments for the tiered rate bond, one for each different interest rate tranche, and one for the fixed rate bond. However, even without calculating repayments, there were a lot of marks left on the table by students who didn’t read the question properly. Very few students attempted to bring in all the relevant information that was provided in the question.

A surprisingly high number of students couldn’t properly explain the principles of a mortgage bond. Too little attention was paid to the all-important principle of interest on reducing balance, which is central to an explanation about how bonds work, even though the question emphasised the importance of this explaining this principle and its consequences.

Students also didn’t seem to understand terminology used for mortgage bonds. Numerous students used the term ‘premium’ when talking about mortgage repayments. This concerningly illustrates how little knowledge some students have of basic financial matters at this stage of their actuarial studies.

Question 1 - Sample Solution

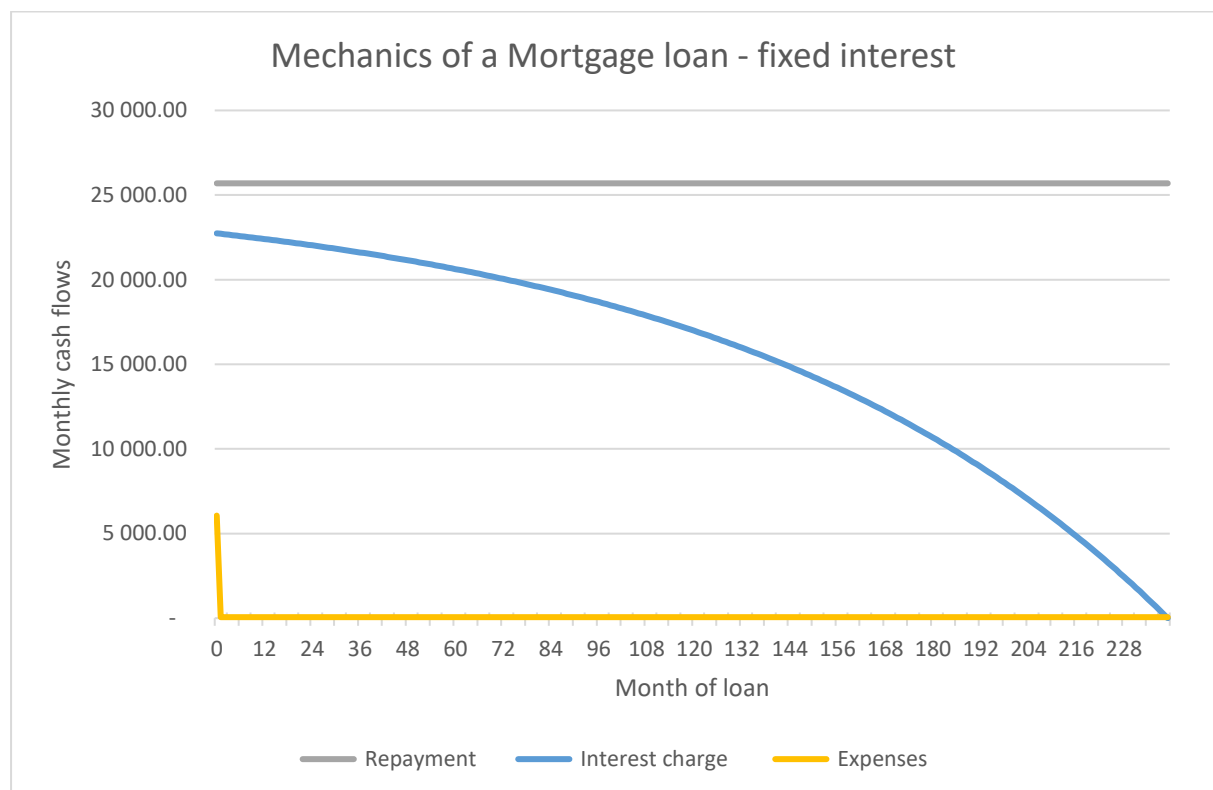
From: Adam Engel <adam.engel@actconsulting.co.za> <day/date/time>
To: Thabo Ndlovu <ThaboN@gmail.com>
Cc
Subject: Mortgage bonds and interest rates

Hi Thabo

When we last saw one another, you shared the great news that you and Michelle have decided it’s time to buy your own house. As you are a bit uncertain about how mortgage bonds work, I’ve prepared a short explanation for you. You also asked me to explain how banks set interest rates, the effect of variable interest rates, the advantages of each option and to check that the repayments quoted by the bank are correct. Your bond amount is R2 500 000, and the term is for 20 years.

How mortgage bonds work

The most important thing to understand is that each repayment is made up of three elements: interest on the outstanding balance, the monthly fee of R60 and a capital element used to reduce the outstanding balance. When the loan first starts, the bulk of the repayment goes to interest and only a small amount goes to reducing the outstanding balance. As this outstanding balance reduces, so less of the repayment is required for interest, leaving an ever-increasing amount that goes toward redeeming the outstanding balance.



In the graph above, the blue line shows the reducing interest charge and the increasing gap between the grey and the blue line represents the capital redemption. For example, in the first month, the interest is just over R22 700, while the capital redemption is only about R3 000. By

the time you reach the halfway point of the loan term, the interest component falls to R17 000, and the monthly capital redemption is R8 700.

How banks set interest rates

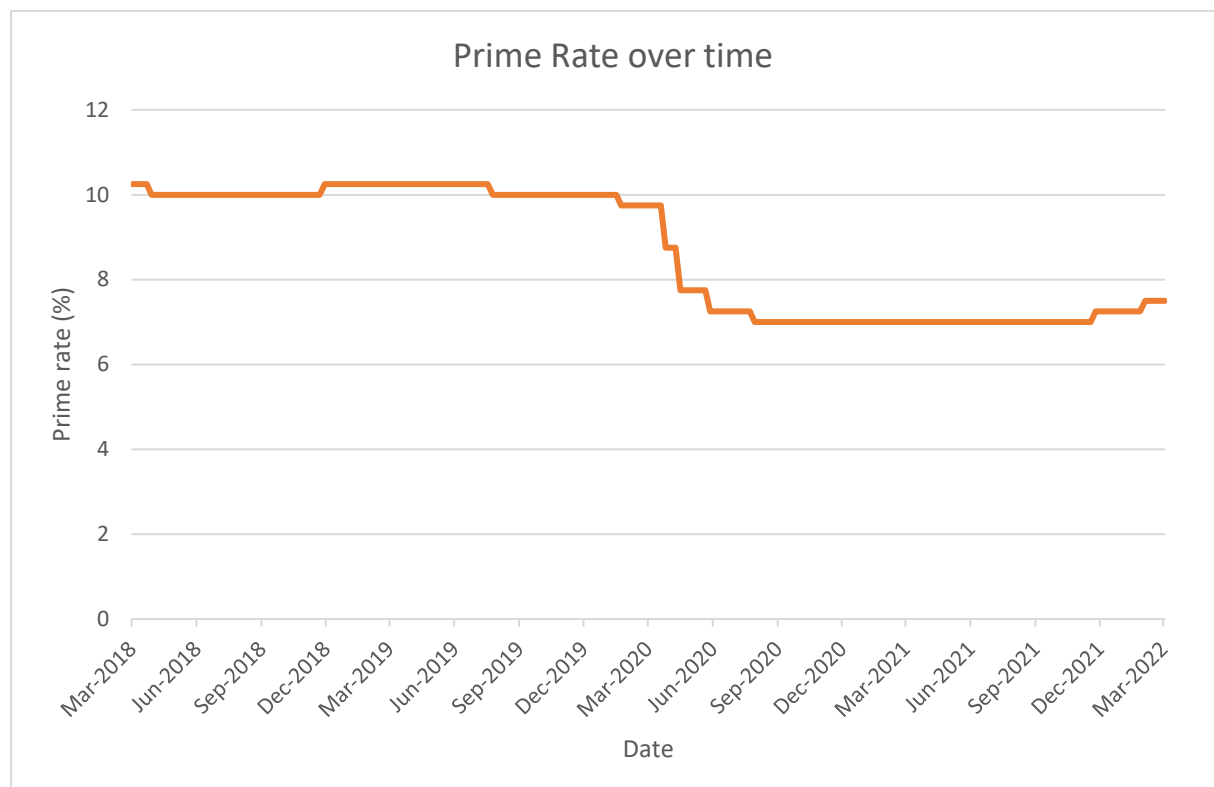
The prime lending rate (commonly called just the prime rate) represents the minimum interest rate that banks are prepared to offer to their most creditworthy clients. Currently, the prime rate is sitting at 7.50% pa.

The bank will then add a variable margin over prime rate according to your credit profile and the probability of default on the loan. In your case, that’s margin is 3% to get the base rate of your tiered bond, and a further 0.5% if you opt for a fixed repayment.

What happens when the prime rate changes?

If the prime rate changes, it will change the base rate on your tiered loan, and the bank will calculate a new repayment amount to pay off the outstanding balance within the original loan term. If you opt for the fixed repayment, your rate is set for the first five years, and it will only change at the 5th anniversary (and each 5-year term thereafter) if the prime rate is then different to what it is now.

The prime rate can vary quite substantially over a 20-year term. Below is a graph of the prime rate over just the last four years.



The consensus forecast for the prime rate is 8.00% by July 2022 and 8.25% by December 2022, driven by higher inflation and supply chain stresses as the Covid-19 pandemic eases. This implies that the base rate on the tiered structure could rise to 11.25% by year end.

Checking the repayments and advantages

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I have calculated that the repayment under the fixed rate option should be R25 691.68 for the next five years, including initial and monthly fees. The fixed rate option provides certainty as to what the repayments will be for the next five years to help with budgeting.

For the tiered option, if interest rates do not change, the repayments should be as follows:

Outstanding balance	Estimated months	Repayment
Above R2 000 000	103	R24 862.38
Between R1 500 000 and R2 000 000	52	R24 583.03
Below R1 500 000	85	R24 396.38

The advantage of the tiered option is that you expect to pay less every month and will benefit even further once the loan is in its 9th year.

You should get professional advice from a financial planner to decide which option to take.

Thabo, I hope this helps you understand the financial implications of this decision. Good luck in your house hunting, and I look forward to seeing you and Michelle settling in.

Cheers buddy!

Adam

[740 words]

QUESTION 2

The examination required the candidates to draft a presentation to be presented to fellow trustees. The presentation was required to improve the trustees’ understanding of bitcoin, assess bitcoin’s suitability as an investment for the trust and make a recommendation for the trustees to consider. In the assessment the candidate was expected to communicate the investment needs of the trust, compare a bitcoin investment to other investments, namely gold and the US dollar as well as draw attention to the relative volatility of bitcoin to that of the returns of the current investment portfolio.

The information needed was presented to the candidates in the form of excerpts from relevant documents, such as the trust’s investment mandate and an article from an investment analyst.

The information presented made a clear case that bitcoin investment was not suitable for the trust due to the trust’s low risk tolerance, need for regular income and inflation linked growth.

Candidates generally do very well at presenting information as it is given in the question. They perform much more poorly where they are required to relate different aspects of the information to each other. For example, candidates performed poorly at communicating investment features of bitcoin as they related to the investment needs of the trust. A second example is the comparison of the volatility of returns of the current balanced fund and a bitcoin investment. In this comparison some candidates compared metrics that are not comparable such as the return on one and the price of the other, as this is what was provided in the question. Using different scales on separate graphs also doesn’t lend itself to an easy comparison of the two investments for the audience.

The technical assessment of the presentation was made over 7 themes – introduction, trust requirements, features of bitcoin, past performance, alternatives, analysis of suitability and recommendations. High marks were generally achieved over the first 3 themes and the alternatives. The candidates’ performance on the past performance and analysis of suitability themes separated the successful candidates from the unsuccessful.

Most candidates made sensible recommendations to not invest in bitcoin. If the recommendation contradicted their assessment through the presentation this was considered a fatal flaw resulting in automatic failure. A concession was made to not automatically fail those who recommended a very small investment could be made though many of these students failed anyway due to other reasons.

The better candidates were able to link the purpose in the introduction, through the content presented to a conclusion that addresses the purpose. The weaker candidates present a concluding slide that seemed random and not sufficiently related to the purpose or audience of the presentation.

Question 2 - Sample Solution

The Opportunity
..... Or Not



Bitcoin

To: The MillieMonero Trust
By: Andile Mabasa, Actuary
Date: 12 May 2022

Agenda

- Introduction
- Fund’s Requirements
- Investment Features of Bitcoin
- Past Performance
- Alternative Investments
- Analysis of Suitability
- Recommendation
- Questions

Introduction

Why this presentation?

- Opportunity raised by trustee
- In the media
- Potential for higher returns
- Alternative asset
- Diversification
- Reduced portfolio risk

What is Bitcoin?

- Decentralised digital currency
- No central bank or single administrator
- Over a user-to-user network
- No need for intermediaries
- Cryptography used to verify transactions
- Transactions recorded in a public distributed ledger called a blockchain.

Fund’s Requirements

Purpose:
Generate income to meet the costs of supporting Millie for her whole life

Cashflow

- Income
- Real Growth (> CPI)

Term

- > 30 years

Risk

- Very small chance of not meeting income

Liquidity

- Low need

Investment Features of Bitcoin

Cashflow

- Capital growth
- Unclear relationship with inflation

Term

- Long

Costs

- Low

Diversification

- Returns uncorrelated to other assets

Risk

- Very volatile market price

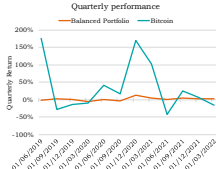
Liquidity

- Highly liquid

Regulatory position

- Uncertain

Past Performance



- Portfolio return over 3 years = 7% pa
- Bitcoin return over 3 years = 112% pa
- Largest quarterly increase in asset price: 177% for Bitcoin, 13% for Portfolio
- Largest quarterly fall in asset price: 41% for Bitcoin, 6% for Portfolio
- Bitcoin achieved a higher return than the portfolio over the 3 years
- Portfolio has lower volatility in investment returns over the 3 years
- Past investment return performance does not imply the same future investment performance

Alternatives to Bitcoin

Gold

- Lower volatility of returns
- Lower returns
- Immediately available for cash
- Short or long term
- Real returns in the long term
- Short term returns correlated to geopolitical risk

US Dollar

- Lower volatility of returns
- Lower returns
- Immediately available for cash
- Short or long term
- Real returns in the long term
- Short term returns correlated to country risk

Analysis of suitability

Feature	Requirement	Bitcoin	Meets Requirement
Type of return	Income & Capital	Capital	✗
Real growth	Yes	Unclear	✗
Risk of income reduction / capital loss	Very low	Very high	✗
Term	Long	Long	✓
Liquidity	Low	High	✗

Bitcoin is an unsuitable match for the requirements of the fund

Recommendation

Bitcoin

- has provided very high returns in the past
- provides opportunity for diversification

But

- has highly volatile returns
- faces uncertain regulatory future
- alternatives exist for diversification
- mismatches the requirements of the fund

Therefore is not suitable as an investment for the fund



Questions

Any questions?

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Thank you for attending



END OF EXAMINERS’ REPORT