EXAMINERS' REPORT

June 2017 examinations

Subject F206 – Banking
Specialist Applications

Introduction

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates using past papers as a revision aid.

The Examiners examine the F206 syllabus and have access to the reading material and references contained in the reading material. The report contains more points than the Examiners will expect from a solution that scores full marks. The list of points is not exhaustive and marks were awarded for alternative solutions as well.

The report is written based on legislative and regulatory context at the date the examination was set. These circumstances may change.

QUESTION 1

Candidates tended to score relatively well on this question, particularly on parts i and iv. Candidates gained the least marks on part v. A surprising number of candidates did not think to discuss the three basic elements of credit models (PD, EAD, LGD), and instead focused on more general challenges to modelling the product.

QuickBank is a retail bank that has recently launched in South Africa. QuickBank operates almost exclusively online, and has limited branch banking. A new customer can open an account with QuickBank through their online application (app) by providing their South African identification number and local address, and sending verification documents electronically. Transactions are carried out through the app that customers can download to their smart phone, or through the company's ATM machines.

i. Describe four advantages to the bank of the chosen business model compared with the traditional branch-banking model.

This question was the best answered of all questions in the paper

- Cost saving – the bank will not need to pay the same levels of rent, employee and other costs of establishing and maintaining branches, and so will save on costs. There is also no legacy cost infrastructure to maintain.
- The bank will benefit from an easier on-boarding process, ongoing customer maintenance and as a result compliance to FICA legislation.
- The lower cost can lead to direct pricing benefits for customers.
- Better data, less paper – the bank will receive all information electronically, and so any data they collect is likely to be higher quality than the data collected via bank tellers in branches – less human error.
- Round-the-clock transactions – customers will be able to transact at all times of day or night as they will not be restricted by branch hours. This is very attractive.
- Less waiting time – customers no longer have to wait in long-queues that are common in branches.
- Direct communication with clients – the bank will be able to communicate with clients directly and instantaneously through the application, and will not have to rely on mail or other types of indirect methods that traditional banks must use. This can be useful for marketing, customer surveys, notices etc.
- Fewer cash transactions – the company will likely attract customers that perform few cash transactions. This results in greater security for company staff and for customers since there would be no exchange of cash other than at ATMs, and therefore no need for the physical security measures that branches require.
- Potentially cater to younger market – the bank's model will suit the younger generation, and therefore they may be able to establish loyalty at an early age and keep customers over many years, compared to traditional branch-banks that can seem slow and cumbersome to younger customers.
- Easy for customers to transact while out of the country since most transactions are carried out electronically. Attractive to customers that travel often.

ii. Discuss the risks that QuickBank faces as a result of their chosen business model.

- Regulatory Risk –
  - Even though capital requirements are fixed by the SARB for all banks, as a new entrant to the market the bank will be subject to more scrutiny and higher capital requirements through the pillar 2 process.

- Credit risk –
  - if the company provides loans to customers, they will have credit risk to consider. As a new company lack of data could result in anti-selection but bureau info can be used to mitigate.

  - Providing credit usually requires the customer to provide a lot of documentation. This may not be practical with the branchless model. Documents will likely be fewer and more difficult to verify, resulting in a portfolio of higher risks.

- Systems Risk – the company's systems could crash and result in customers being unable to transact via the app for a period. This would paralyze the entire bank, and potentially lead to major losses.
  - Different operating systems for the app also have different risks (android vs IOS)

- Employee fraud risk –
  - This risk is less of an issue with the branchless model, since, for example there are no cash transactions involving employees directly.

- Cyber Risks –
  - the bank is at risk of losing customer data through cyber attack.

  - This exacerbated by the business model since all data is electronically provided, and likely to be stored electronically. If data were to be wiped out, the bank would completely lose customer information and would likely go out of business. Cyber threats include:

    - Hacking – hackers could take over the system and demand ransom to return it to normal, steal customer data, destroy the company's platform/servers or other malicious action.

    - Viruses – The company's system could be infected by a virus, which leads to data being deleted, systems crashing, destruction of important hardware etc.

- Fraud – clients may be more likely to commit fraud as there is a higher level of anonymity since all transactions are online and customer details are verified electronically. The customer will never need to produce original documents to a bank employee.

- Operational Risk –
    - The company will need sufficient cash to cater to customer needs via their ATMs.

    - This could be potentially difficult since ATMs have limited capacity. If they have a large client base they may have to consider arranging with other banks to provide ATM access, or to allow customers to carry out cash transactions in other banks' branches.

- Business risk: Marketing and awareness –

    - The lack of a branch network can reduce or limit public trust in Quickbank. As a result of this lack of awareness business risk arises when the bank is unable to meet its running costs due to lack of income.

iii. Outline the mitigating actions QuickBank can take to minimize cyber risks.

- Quick bank could purchase insurance against losses due to certain types of cyber risks, e.g. insurance pays for cost incurred to rectify, for example, the loss incurred as a result of damage by viruses.

- The bank could possibly purchase some business interruption cover as well to protect against transaction income lost if their system is damaged by a cyber attack.

- The company could install firewalls.

- Quickbank should ensure they have an excellent anti-virus software and keep it up to date.

- Quickbank will need to ensure they are regularly identifying new security threats and update their app's security measures as they become available. They will likely need a dedicated team focused on this aspect of cyber security.

- Customers should be regularly encouraged to update the app as new and better security measures and incorporated.

- Customer should be trained on cyber risks such as phishing. I.e. false representation made to represent the bank.

- The bank should ensure appropriate user access rights that limit who is allowed into their system at different levels and who is allowed to access/use customer data.

- Quickbank should have a screening process for everyone given access to company systems.
    - E.g. criminal record disclosure, checking references

- The bank could hire experts to carry out tests on the strength of their system security through penetration testing.

- Customer data should be regularly backed-up and stored in different locations to prevent total loss by one event.

- The bank will need to establish strict protocol for data transmission among employees, e.g. installing safeguards to prevent downloads of mass data.

- Employees should be provided with encrypted means for transferring data.

- Employees should be regularly trained in secure data handling and other system security measures to ensure they are aware and active in preventing and minimizing cyber risks.

- The bank must develop disaster recovery plans which includes the invocation, execution and transition back to business as usual in the event of an actual cyber attack as part of its recovery plans.

QuickBank currently offers small personal loans to customers, for which they can apply after operating an account with QuickBank for a certain period. The take-up of these loans has been relatively low since launching. The Head of Marketing has suggested that they should improve the take up by offering a flexible repayment option. This option would, for a small fee, allow customers the choice to skip a fixed number of their repayments over the loan term. The customer would be required to inform QuickBank through the app a week or more prior to the due date of the instalment they want to skip.

iv. Describe two advantages and two disadvantages to the company of offering such a product feature.

Advantages

- Any added flexibility to a product will make it more attractive to consumers and likely increase the take-up of the product.
- The company will collect additional fees from the loans, potentially without a significant change in losses due to defaults. This should result in higher profits for the company.
- The product feature increases affordability through extended terms.
- The extension of term prior to default does provide an in duplum advantage.

Disadvantages

- Skipping repayments may result in delays in recognizing customers that will default on their loans and therefore delay the implementation of any mitigating actions.
- There will be additional costs of incorporating the new feature into the company’s current app and other systems.
- The feature may end up attracting higher risk customers that are more likely to default, since customers that believe they may need to skip repayments, may be more likely to miss regular repayments.
- The feature may result in increased liquidity risk for the bank in periods when many customers are likely to skip repayments at the same time, for example over holiday

periods (December), at the beginning of the year when demands are higher on customer income (January) or during an economic recession.

- The extension of term may affect the applicability of bureau scores.

v. Describe the challenges of modelling the credit risk of this product feature.

- The company would need to be able to model three components of in terms of the risk associated with this product:
    - The probability of a customer defaulting on its obligation following selection of this option
    - The loss on accounts which elected this option, and subsequently default
    - The exposure of these accounts at the point of default
- Probability of Default
    - Expected to be very different from general personal loans as customers who opt for this feature may be those that are more risky, and less likely to make their contractual obligations
    - One week notice period will exacerbate this risk as the Bank doesn't have much lead time to assess for a deterioration in credit risk. Usually a customer who misses a payment will be flagged as higher risk, but this option may give customers the ability to "miss" a payment without being flagged in arrears
    - The Bank is likely to want to segment these customers out, and then track missed payments / default behaviour as it develops
- Loss Given Default
    - Unlikely to be very different from general personal loans as its unsecured
    - Could potentially be a little higher as customers who opt for this feature may have later resolution of defaults which would impact on recovery rates.
    - Furthermore, customers may not be able to pay the fee for this feature unless the Bank requests that in cash upfront (as opposed to adding it to the outstanding balance)
- Exposure
    - Would be difficult to model as there would need to a be a probability of the customer choosing to opt for this feature, and that cohort of loans would need to be tracked to identify how long they extend for before resuming normal payments. The EAD will be higher as a result of the product change.
    - The Bank may wish to limit the number of such discretionary take ups per year to make this easier to track
    - A potential simplification is to assume no further repayments made once this option is selected for EAD purposes, however, conservative assumptions will have capital implications.

- In order to estimate the above with any certainty, the Bank would need to have relevant data available.

    - Unlikely to have sufficient data available as this is still a new product, and so the Bank may struggle to estimate these parameters using internal data

    - Could potentially use an expert judgement approach to adjust the existing risk parameters for expected behaviour of this product

    - Alternatively, the Bank could look to use the same parameters as the existing customers, and adjust for the additional risk via a model overlay, while experience develops.

QUESTION 2

In general, this question was poorly answered. Several of the candidates scored very little marks in part i. Most gained some marks in part ii but did not put down enough points to gain significant marks. Very few candidates were able to calculate and meaningfully discuss appropriate ratios from the information given. Only 1 candidate exhibited a clear pass for this question.

i. Define the impairment charge and briefly describe the elements that contribute to its calculation.

Bad Debt Charge = Change in provisions over the financial year + write-offs in the year – any post write-off recoveries *[post write off is optional given different application by banks]*.

Post write-off recoveries: this is the additional cash collected from customers after the debt has been written off financially.

Write-offs: these are accounts or balances that are essentially derecognised for accounted purposes (closed off the books) on the general assumption that little of the remaining balance will be collected.

Change in provisions: this is the total movement in provisions over the financial year.

This is comprised of:

- New provisions raised during the year for new bad debts
- or arrears or provision model adjustments
- Less provisions released due to accounts curing or being written off or due to provision model adjustments
- Plus any overlays created (less any overlays released)

You are the Head of Credit for the total combined Mortgage portfolio of Green Bank. A new Chief Financial Officer has recently been appointed to your portfolio. He has generated the set of comparative numbers below based on published financials of other banks' combined Mortgage portfolios:

Bank	**Green**	**Red**	**Grey**
Total Exposure at Year-End (R'bn)	350	245	650
Impairment Charge in Financial Year (R'm)	5100	2310	5800
Impairment Charge As Percentage Of Book	1.46%	0.94%	0.89%
Annual Default Rate in Financial Year (obtained from SARB Returns)	4.1%	4.0%	4.3%
Annual Default Rate in prior Financial Year (obtained from SARB Returns)	3.9%	3.8%	4.2%

Non-Performing Loans at Year-End (R'bn)	7.1	12	35
Written-off Book size at Year-End (R'm)	287	113	280
Write-Off Recoveries in Financial Year (R'm)	7	4	9.5
Book growth in Financial Year	3.0%	2.8%	3.1%
Weighted average client rate	10.54%	10.63%	10.45%

He has questioned why the results are so different yet the default rates on the different portfolios are fairly similar. He has asked you to interrogate the results and explain possible reasons for the differences. In addition, he requested advice on operational or reporting changes which would make the financials more comparable to peers and, in particular, that would make the bad debt charges more aligned.

ii. Outline the points you will make to the CFO.

There are several ratios that are worth calculating in order to try to understand what the numbers tell us on the book. As a result of calculating some or all of these ratios several inferences can be made.

Formulae worth noting / stating in order to understand how they have been calculated:

Implied LGD = Impairment Charge / Annual Default Rate

NPL's As Percentage of Book = NPL Balances / Total Exposure At Year End

NPL's As Percentage of Annual Defaults = NPL Exposures At Year End / (Total Exposures x Annual Default Rate)

	Green Bank	Red Bank	Grey Bank
Implied LGD	35.5%	23.6%	20.8%
NPL's As Percentage Of Book	2.0%	4.9%	5.4%
NPL's As Percentage Of Annual Defaults	49.5%	122.4%	125.2%
Residual Book As Percentage Of Total Book	0.08%	0.05%	0.04%
Residual Recoveries As Percentage Of Total Book	0.002%	0.002%	0.001%
Residual Recoveries As Percentage Of Residual Book	2.44%	3.55%	3.40%

Firstly an important point to note is that there is no specific mention of the type of Mortgage book this is:

- Does it relate to Retail or Commercial or both?
- There is also no mention of what percentage of the Green Bank portfolio sits within each of these portfolios
- Likewise there is no mention of the mixes for the competitor portfolios either.
- So how comparable these portfolios are is debatable as it would be ideal to have the information at that granular a level. The recommendations and comparisons will be far more valuable and relevant in that case.
- The channel through which the banks distribute will impact the results.
- Given that this is a mortgage portfolio the loan to value composition for the different banks may vary resulting in different outcomes

Assuming that the portfolios and their relative mixes (between Retail and Commercial) are largely aligned the following can be inferred on the portfolios.

The impairment charge of the Green Bank is significantly higher than that of the other two banks.

- This is unexpected at face value as the default rates are very similar, as well as the post write-off recovery rates.
- All else being equal this means that either the LGD's differ significantly or something in the banks write-off or provisioning policies changed in the last year.

Some possible changes that took place in the prior year that could have impacted the impairment charge are as follows:

- A significant change in provisioning methodology resulting in coverage ratios changing (either upwards for the Green Bank or downwards for one or both of the other two banks).
- This could be due to changes in definitions of arrears / NPL or an error of sorts was found resulting in a large change (again could be upwards for Green bank or downwards for the other banks).
- A once off creation of an overlay for the Green bank or an overlay release with one of the other two banks may have occurred
- A special write-off may have occurred in the Green bank for a specific tranche of mortgages (perhaps in a specific area or of a specific nature) – over and above the usual flow of write-offs. Presumably these accounts were not correctly provided for initially.
- It is possible that the banks altered write-off policy (one or more of them) – either Green bank shortened their write-off policy of the other two banks extended theirs.

It is worth noting that the default rates quoted are not identified as numbers or balance weighted. For the purposes of the calculations made one should assume they are balance weighted as this is most relevant when looking at the impairment charge.

Write-off

One can see that the NPL's as a percentage of the book differs significantly between the Green bank and the other two banks. This is not expected as the annual default rates are very similar (which implies that a similar value of exposures gets relegated into NPL per annum). This would lead one to believe that the banks have different write-off strategies on their portfolios. It seems as if:

- Green Bank has a 6 month write-off policy or thereabouts
- The Red and Grey Banks have write-off policies that extend beyond 12 months

This means that the Green bank realises its potential losses much earlier in the financials than the other two banks (from a final write-off point of view – however provisions should have been raised to cover these expected losses at the point of default).

The Green Bank could look to change its write-off policy to align it more with competitors to make some of the financials more comparable. However this would result in lower write-offs in the year in which the policy change is made and as such would cause the bad debt charge to be a little lower in that financial year relative to peers (it is a cosmetic change).

Such a change would however increase the risk to the bank over time given the lower level of conservatism.

There may be differences in the definition of default applied by the different banks even though there are certain guidelines under Basel III and associated disclosure requirements.

One can estimate an implied LGD if one assumes that the financials and policies of the 3 banks have been consistent over recent time. The implied LGD of the Green bank is particularly high while the others look largely in line with each other. This means that at the time of default the bank loses significantly more than the other banks. This could be as a result of the following:

- Proportionately more accounts that default are new accounts and hence have a higher LTV at the time of default
- The Green bank may be writing much higher LTV business (for instance doing 108% mortgages) which would result in a higher LGD at default
- The Green bank may be writing loans in areas where property values have been increasing in value at a slower rate or are decreasing relative to where the competitor banks are writing business
- The Green bank may also specifically be making losses on larger properties (which on a balance weighted view will result in a higher implied LGD). This could be especially amplified if the bank has a few large corporate exposures and lands up realising a couple of big write-offs in this part of the portfolio
- The Green bank has a very short write-off policy. This may imply that the bank performs foreclosures very early on the process. Since the post-write-off recoveries are low this shows that the properties are in all likelihood sold before the loan goes into write-off
- This may also indicate that the recovery process is poor.

Before formalising any recommendations (from an operational standpoint) the analytics team should look to do a full investigation into the LGD's experienced to understanding where the exact problems are in terms of the losses experienced. Classing the losses by industry, type of property, original LTV, broad property size and regional rating will assist with formalising the correct amendment to the strategy. However that said the below recommendations to improve the LGD (and hence the impairment charge) would hold true given specific outcomes of the analytics:

<u>At Inception:</u>

- Look to write loans with lower LTV's at inception (higher deposits)
- Look to write more loans in areas where property values are more stable relative to others, or require higher deposits in areas where property values are more volatile.

- There may also be specific types of property (complexes, farmland) where the bank is taking specifically large amount of losses and it may be worth cutting these portions out specifically. This may be related to specific industries too.
- These changes will however take a while to improve the financials of the bank as the current back book will still be exposed to the prior risk appetite for a few years to come.

After Default:

- Look at making use of different auction houses / estate agents to sell foreclosed properties in order to see if they perform better than the ones already in use now.
- Specifically the bank could either look to extend its write-off policy or allow the property to be foreclosed after the financial write-off has occurred (to allow more time to obtain a better price for the property).
- Since the written off amount for the Green bank is a larger percentage of the original mortgage there is an opportunity to try to make more successful collections post write-off either by outsourcing or up skilling internal collections capabilities.

The CFO has reviewed your suggestions and wishes to diversify the product offering by introducing a Credit Life product. The CFO believes this will improve the financials as it will allow the portfolio to generate more revenue and specifically generate additional profits. The Bank already has an insurance licence through one of its subsidiaries.

iii. Explain the considerations you would take into account to provide the Credit Life product to the bank's customers.

To start off with one needs to decide what types of risk events to cover. Some typical examples are as follows:

- Death (accidental and / or natural)
- Disability (permanent or temporary)
- Unemployment (over a defined period – perhaps a maximum period of 2 years over the life of the loan)

One needs to determine the type of payout that would be made to the mortgage holder for specific risk events. For example:

- Upon death / permanent disability the full outstanding balance of the mortgage may be payable. Another option would be to cover the shortfall between the sale of the property and the value of the mortgage (to ensure that the estate is not left with any debt).
    - This would result in a smaller premium being payable by the customer on a month to month basis however the customer is less covered in this instance. Any beneficiaries to the estate would receive significantly less in this instance (as the property would be sold first and only the remaining loss would be covered).

    - There would be a serious reputational risk here that the property is foreclosed after the primary breadwinner passes away leaving the remaining family homeless (or even worse after the primary breadwinner becomes permanently disabled).
- Upon temporary disability or unemployment the instalment of the bond may be payable (potentially for a pre-defined maximum period). Thereafter if the mortgage holder is still unemployed and starts going into arrears, the bank may then institute normal legal and collections proceedings.

The period of cover must be determined. Cover may only be in place for a period of for example 5 years (as after 5 years the potential remaining debt after the sale of the property may be zero). If this level of cover was selected premiums would only be payable for this reduced period of cover.

- This level of cover would have to be carefully explained to the customer to ensure that they understand that the cover ends after a certain period.

A list of exclusions and waiting periods for different events needs to be defined. For example:

- Suicide may always be an exclusion
- Pre-existing medical conditions may require a for instance a 2 year waiting period
- Instalments due may not be covered for retrenchment if the client is retrenched within the first say 6 months

The bank must also decide whether or not to make taking the insurance compulsory (if this is allowed from a legislative and TCF point of view), and if the client will be given the option to self insure (and cede the policy to the bank in that event). In all likelihood it will have to be optional to take the cover with the bank.

An additional consideration is how this cover might differ should the mortgage be a joint mortgage.

Depending on the level of cover provided the relative premium will differ and the relative collection or payment method will differ too.

- The premium due could be a flat premium payable monthly (or could be collected as a single bullet once a year).
- It could be expressed as a percentage of the outstanding balance (and could either be included within the interest rate charge itself or could be separately disclosed and collected upon).
- Since the level of risk decreases as the loan is repaid the premium is probably better suited to being expressed as a percentage of the outstanding balance (as opposed to paying a flat premium over the period of cover).
    - The risk with a flat premium over the entire lifetime of the loan is that the premium is too small initially to cover the risk and too large down the line (hence there is a risk of early termination of the policy [due to early loan settlement]).

The profitability of the product will be a key consideration.

- The bank may secure a commission or fee from the insurer in the group for provide this distribution channel to the insurer.
- However, the bank will also require the insurer to meet its profit margins,
- It may be possible that the bank can provide a more cost efficient solution to customers by not using its own insurer.
- The sales practices discussed below are therefore are particular importance when using the bank as the distribution channel for this product.

The systems and processes (contracting, sales process) currently in place need to be analysed to see if they could handle this additional product and to ensure that any required changes or development work is sized and factored into the total costs of launching this bolt on product.

Staff will also need some level of additional training and will need to have the correct accreditation to make any sales.

In particular staff who sell the products will need to meet the FAIS requirements.

Legislation must be checked to ensure that any regulatory minimum or maximum levels of cover are provided for such a product. One must also check to see if there are any regulatory caps on the levels of the premiums that can be charged for the cover (to make sure it is worthwhile launching this add on).

The capital

There may also be additional reporting requirements as a result of selling this additional product, as well as some level of provisioning and possibly capital requirements.

It would be worthwhile to view some competitor contracts to review their benefits, risk events covered, exclusions and the premium levels charged to ensure some level of alignment and competitiveness is achieved.

An overarching consideration is the principle of TCF (treating customers fairly) which is a big consideration in the banking industry currently. Especially with credit life cover which has often been “miss-sold” and “over-priced” across the financial services industry. So the bank will need to ensure that the staff selling the product (and product materials produced) comprehensively describe the benefits and what is covered by the policy, and also ensure that the product is priced fairly.

QUESTION 3

A general application question based on a very topical part of the syllabus – capital structure. Most candidates did not score well on this question. In general not enough points were discussed. For the first part, many candidates advocated a detailed discounted cash flow calculation approach and therefore missed some of the practical market considerations.

You are the actuary responsible for capital markets execution of a large South African Banking Group. The debt capital markets team has reviewed a white paper issued jointly by National Treasury and the South African Reserve Bank on strengthening South Africa's resolution framework for financial institutions. This paper outlines the proposed manner in which banks may be resolved when they are no longer viable. In particular, it considers the hierarchy of claims by creditors in the event that a bank is resolved. They have identified a new type of capital instrument that may be introduced into the market with the following characteristics:
:

Loss After Capital Instrument (LACI)	
Characteristic	**Description**
Tenor	Greater than 1 year
Seniority	Senior to Tier 2 capital
Call option	None
Coupon	Floating rate 3m Jibar + spread
Distribution	Half yearly
Bail-in	Instrument to be bailed in when the issuer enters resolution
Resolution	At the election of the South African Reserve Bank
Conversion	Nominal to be converted into equity at the average share price 2 months prior to resolution

i. Explain how you would set price guidance for this product.

Overall market comparisons

The first step in setting price guidance is to consider where the bond would price compared to other issuances in the market.

As this is a new product, comparable pricing will not be available in the market.

The question states that the issuance will be for a banking group. Bank groups issue capital instruments but do not generally issue senior debt to the market as they do not conduct banking operations.

If the bond is issued at the holding company level, pricing needs to be compared to other holding company issuances. The bond will price cheaper than where the group's Tier 2 capital issuances price at.

If the bond is issued at the operating company level, the pricing needs to be compared to other operating company issuances. The bond will price between the operating company's Tier 2 capital issuance price and the senior debt issuance price.

The bank may wish to test with potential investors where they believe the product will price as a reference point.

The bond pricing will reflect the credit risk, market liquidity, tenor and frictions associated with the bond.

Tenor

The tenor of the bond will determine the liquidity premium required by the market. This is obtained from the floating rate liquidity premium curve.

The liquidity premium curve can be constructed from the bank's asset swap rates. That is to consider the spread per tenor net of credit cost. The bank's ALM or equivalent team will provide the best estimate of liquidity premium.

Market liquidity

Market liquidity will be restricted for this instrument as no such instrument is in issue yet. Once more banks issue this type of instrument market liquidity would improve.

As a new style quasi capital instrument, the market will require significant education on the characteristics of the instrument as well as the rationale why the bank wishes to introduce the instrument to the market.

Similar instruments are required elsewhere in the world under the Total Loss Absorbing Capacity resolution requirements.

Credit risk

Credit risk will consider the likelihood of default on the instrument, in effect the probability of resolution given that the instrument will be converted before default.

The credit risk will also consider the loss given default or loss given resolution for this instrument. The loss given resolution will depend on the value of the conversion option.

The credit risk is different from Tier 2 instruments as the loss given resolution is predetermined based on the conversion terms specified versus the discretion applied by the resolution authority or curator. This discretion applied as all Tier 2 instruments issued in South Africa currently have write-off instead of conversion clauses.

It is possible that the compensation afforded to an instrument that is written off in resolution will be greater than the value of the conversion option.

Frictions

This price guidance would include additional premium as this is an inauguration issue. This is required as investors need to do additional research and modelling in order to appraise the investment.

In addition the market will not be familiar with the conversion option. Fundamentally the investor is selling an American put option to the bank with term equal to the term of the bond and strike at the unknown average share price two month prior to resolution.

The unknown average share price will require investors to take a conservative view. In addition the election given to the SARB will add further uncertainty. These frictions will require an increase in the price guidance.

Pricing approaches

The spread will be constructed as that of a debt instruments plus a convertible option that is substantially out of the money.

Given the lack of market liquidity and the inaugural nature of the bond, the actual price guidance may have very little reference to market consistent pricing principles.

More important will be the objective of the issuance. The questions highlights that this follows a regulatory review. As a result the bank will be forced to issue this instrument. Irrespective of price guidance the bank will be required to issue and therefore will be a price taker. If the requirements for other capital requirements remain the same, the bank will be exposed to less market liquidity, increasing the price guidance.

The bank may nevertheless apply a risk based pricing approach as well.

Based on the approach the bank will consider its prospective business plans and model contingent components of the income statement. That is to say construct a simplified model office to test the impact of potential earnings volatility on the potential loss to the investor.

The losses generated by the model will then be used to construct the payoff profile to the investor. The uncertainty regarding the conversion strike will require a number of scenarios to be tested.

Conclusion: The price guidance will incorporate these considerations.

ii. Outline the steps you would take before issuing this bond.

Business rationale

Before the governance process commences a clear business case will be required to support the bond issuance. This will most like focus include the following:

1) The regulatory requirements that compel the bank to issue the bond.
2) The revision of the bank's risk appetite framework as a result.
3) The size of the issuance required
4) The future issuance that will be required based on the business plans of the bank
5) Alternative solutions and why they were discarded
6) Peer comparisons on both a local and international basis
7) The opportunity the issuance affords the bank
8) The costs and benefits associated with the issuance.

Product approval

This is a new bond. As a result it will require a new product approval process with approval required by:

1) Treasury to ensure the bond meets the capital and funding policies in place
2) Market risk to ensure that the interest rate risk in the banking book can incorporate this instrument
3) Financial and product control to ensure that the bond is correctly accounted for and that the accounting process can be managed by existing systems
4) Operations to ensure that the coupons and redemption monies can be paid at the correct time.
5) Legal to ensure that the JSE and other regulatory requirements are met

ALCO approval

- The group's asset and liability committee or similar forum may most likely need to approve the bond issuance given that this has been developed in line with expected new regulations.
- The groups board committee will also be required to approve the bond issuance for the same reason.

QUESTION 4

Parts i and iii were relatively well answered with many candidates scoring above the overall pass criteria. Part ii, although a relatively straight-forward question, was poorly answered. Few candidates stated the products that would be available to customers. Although many were able to recognize the general points e.g. "systems" few were able to discuss each point sufficiently to gain the marks available.

You are an Actuary working in one of the smaller retail banks within the South African banking industry. The bank currently only offers unsecured Personal Loans and Credit Cards to retail customers. Market share information is provided in the table below. The bank currently relies solely on wholesale funding to fund these assets. In order to improve profitability you have been tasked by the CEO with launching a cash investments division within the bank to offer retail customers products that will encourage deposits to be placed with the bank.

	Market Share	
Product	**Exposure**	**Number of clients**
Credit Card	7%	8%
Personal Loans	15%	14%

i. Explain why the bank may wish to change its funding sources.

There are a few potential reasons to move away from wholesale funding:

- Retail deposits are typically a lot more stable / sticky than wholesale funding (wholesale funding can typically be withdrawn much quicker).
- Retail deposits typically cost less than wholesale funding.
- The bank can potentially improve its liquidity position by acquiring additional funding that may be more suited to its asset profile.
- The bank will be able to match its asset and liability profiles better.

The bank needs to determine its funding requirements so that it launches products that specifically fulfil these needs:

- From a statutory perspective the bank needs to meet the new LCR and NSFR requirements.
- Both sets of requirements have higher costs for wholesale funding that retail funding and encourages this change in funding source.
- This would allow the bank to get the most leverage with respect to launching the division.

ii. Discuss the considerations you would make when determining which types of products to launch in the market.

There are several types of product that may be available to retail customers:

- Putting money into the credit card (credit balances)
- Several term deposit type products
- Several types of notice deposits
- Overnight deposits (savings accounts) and Money Market products

The bank needs to consider any system constraints or requirements in launching such products (and the costs thereof).

- Will the current systems be able to handle these types of products or not.
- If not, how much system development is required in order to run the products or would new systems need to be acquired.
- This consideration would be both from the point of view of acquisition to the back end running and maintenance of the products.
- For instance it is possible that term deposits could be run off the loan system.
- Allowing credit cards to go into credit could be a quick win (with relatively little cost requirements).
- Standard savings products may require more development and possibly even the purchase of systems to run these products.

The bank also needs to decide how it will go about launching the products.

- Does it start with products that are simple to understand or start with more complex variants?
- Does the bank look to differentiate itself in the market by launching novel products or does it go with the standard suite for now (to get itself into the market first).

As a small player in the banking market, there will be at least a perceived higher level of risk in placing deposits within the institution.

- As a result it is likely that the products would have to be more favourably priced relative to peers within the market. This means that the relative benefit of launching these products will be slightly less than the benefit obtained by competitor banks.

- That said however the relative cost of wholesale funding could be higher for this bank and as such there may still be a larger benefit for them even relative to their peers.

- Specifically the market risk rating of the company will dictate how much relative benefit the company may see.

The costs of training staff on these products, and any associated product material will need to be taken into consideration. Marketing of the products and the cost thereof should be considered especially if products marketed are non-standard (hence require more training materials to explain the product and its functionality).

A challenge the bank may have is attracting a different type of customer to bank with them. As the bank is currently predominantly known as a lender (and not a deposit taking bank) the current client base (aside from the card base potentially) will not necessarily provide many deposits. So the bank will need to alter its marketing strategy to attract a different customer mix.

- There will be some added benefits to attracting different clients as this would allow the possibility of some level of cross sell into a new base of customers with respect to the current product offering.
- There may be a specific set of demographics already on the books of the bank which have more of an affinity for a specific deposit product. This may influence the decision of which product to develop first.

The bank will have to consider if there are any legal, including FAIS, or regulatory reporting and other requirements of offering the different investment products (so for instance sales staff will not only have to be trained on the products but they may also require specific compliance training to allow them to sell investment products).

The banking licence may also need to be adjusted to allow the bank to take deposits if it had not registered as a deposit taking institution before, and capital requirements of the bank are likely to change too.

Two years after the launch of these products the bank's market share is as follows:

Product Name	**Market Share**		
	Exposure	**Number of clients**	**Credit Balances**
Credit Card	8%	10%	5%
Personal Loans	15%	15%	
Overnight Savings			4.5%
32 day notice account			0.5%
2 year fixed deposit			0.1%

iii. You have been tasked with identifying reasons why the market share of these products is so different.

If one assumes that all the products were launched at the same time then one would typically expect the market shares of the different types of products to grow at a reasonably similar rate (all else being equal). It is possible however that differences may occur due to the different demographic of clientele that the bank has attracted both in the past and currently (as a result of the new products offered).

It would be worth doing a pricing comparison between the banks products and other competitor products that are similar (or the same) in nature. This review would be in respect of both servicing fees as well as interest rates offered. If the banks pricing is out of line with competitors then the pricing may need to be reviewed.

- For instance this might explain why the market share of longer dated deposits is far out of line with shorter dated deposits if the relative pricing in the market is out of line.
- Likewise considering the client number market share of the Credit Card portfolio one might expect to have a higher share of the deposit balances too. Since the credit exposure and client number market shares are 8% and 10% respectively one would expect the deposit balances on the cards to be higher than 5%.

It is worth comparing the relative market shares and total rand values sitting within each of these products to the ideal liability mix that is required as a bank. Although the bank may not have a large market share in the longer dated deposits the bank may not actually require them for matching its funding requirements.

It is worth noting that the deposits requiring notice of sorts are clearly less popular and this might be due to market perceptions around the bank. All else being equal it seems that clients are less comfortable committing funds to the bank for a longer period. The bank is likely to have to offer an additional premium to encourage investment with the bank relative to peers.

The banks needs to check the marketing spend and training on these products to ensure that the level of advertising is the same across all products and to ensure that those tasked with selling the products can do so with equal proficiency. If there is any misalignment here this would need to be rectified in order to change the mix of the products held.

It is also worth checking the level of ease with which these products can be obtained (for example perhaps savings products can be obtained over the phone and perhaps term deposits can only be obtained within a branch).

- If there are limitations on how and where the products can be obtained then this may be the cause for the differences in market share and ideally all products should be available on all platforms.

The bank should explore its current platforms available for selling / managing these investment products and compare these to their peers. It is possible that the current platforms for this bank are less "user friendly" or are unavailable. This too may influence the sales volumes and market shares.

It is worth investigating the demographics of the customers currently making use of the banks products (credit and debit products) and to analyse how much cross sell of products has occurred versus how many new customers the bank has acquired as a result of this new product set.