Institute of Actuaries of India

Subject SA5 – Finance

October 2015 Examinations

INDICATIVE SOLUTIONS

INTRODUCTION:

The indicative solutions provided are very detailed in nature for the benefit of students and the examiners are not expecting the students to provide such in-depth details under examination conditions. However the students are expected to cover all the fundamental principles to demonstrate their understanding of the subject.

Solution 1:

i)

a) The parent company can increase its equity investment in RKL

Advantages:

- No dilution of ownership ;
- control continues with the parent company

Disadvantages:

- More exposure for KIL as it owns the entire stock
- The project risks lie with the KIL and if the project does not go on time, it may have to infuse additional funds
- If the revenue streams are not as expected KIL stands to lose

b) Raise Debt finance either from bank or from multiple investors through bonds

Advantages:

- The upside of profits will lie with the company
- There is a tax advantage since the interest paid is tax deductible
- WACC may reduce

Disadvantages:

- Debt covenants
- Mortgaging assets
- KIL may have to provide corporate guarantees

c) IPO- raise funds from the public

Advantages:

- Dispersion of shareholding
- Better Corporate governance
- Risk borne by many shareholders

Disadvantages:

- If the project does not succeed, the parent company's reputation could be impacted
- Regulatory costs of compliance associated with listed companies

d) Venture Capital

Advantages:

- Informed decision by the investors given their expertise

- Generally better confidence in the project financials as due diligence would be far greater by venture capitalists
- Fewer number of investors
- May get expert advice in the implementation of the project

Disadvantages:

- If the project is not going as per plan, venture capitalists can take over the management
- Stringent covenants for administration
- Could have first right of refusal
- Onerous conditions in case of public issue or stringent exit clauses for them

e) Securitization

- Leveraging the future earnings
- As it is typically debt, the cost could be lower than that of equity
- Since the money is raised through a SPV, the leverage of parent company can be protected
- Default risk on the securitized cash flows is usually borne by investors

Disadvantages:

- The company may have to mitigate the credit risk borne by the investors, for example by providing a cash collateral and/or through over-collateralization
- All-in Costs could be higher than equivalent straight l debt depending upon the quality of cash flows

f) Preference capital with an option to convert to common equity

[12]

ii)

Under this structure, the revenues are securitized through a Special Purpose Vehicle (SPV) by the Originator

Securitization typically involves complete removal of the securitized asset from the balance sheet of the originating institution or company. The asset becomes the "collateral" which supports the payment of interest and principal on the newly created security.

In this case the revenues from the ticket collections, are transferred to the SPV with additional collateral

The SPV issues the bonds to the investors under various tranches.

The revenues are put into an escrow account of the SPV from which the cash flows including the interest and capital gets paid to the investors of these bonds.

The beneficial rights on the future collections are transferred to the investors through the SPV.

Any residual revenues arising out of these cash flows will go back to the originator after discharging all the obligations

[4]

iii)

- RK has to create a SPV to which the future ticket sales and any other revenues from the stadium would be transferred
- RK would have to appoint an investment banker for leading the issuance of the SPV bonds with a prior agreed fee
- The investment banker would need to provide a prospectus with future prospects of revenues, risks and risk mitigates.
- The costs have to be analyzed and suitably factored
- The various tranches of the issue have to be decided with differential security layers having differential yields. For e.g.: the tranche with highest security would have lower yield
- The issue needs to be credit rated to provide confidence to the investors
- A detailed legal document has to be prepared with the rights & responsibilities of the originator, SPV and the prospective investors
- Escrow account has to be created with a bank wherein the receipts would be deposited
- Time lines need to be set for the various steps involved in the issue process

Key Risks & Mitigants:

- Future prospects of the game and maintenance of the quality of the team

  Mitigation is to assess the quality of the players and its current ranking, the possibility of RK spending money to maintain the quality of the team and consistently perform. The past history on the team's performance should give the confidence to the investors

- Quality of the issue & marketability:
  - The issue needs to be credit rated by two independent rating agencies which could give the confidence to the investors
  - Additionally if any guarantees are given by the sponsor or by a third party like a commercial bank, it would enhance the security & confidence

   - The cost of the additional guarantees can be factored in terms of a lower yield to the investors

- Credit risk:
   - The above should largely mitigate the credit risk
   - In addition the amount of future ticket sales that would be securitized would be higher than the amount for which bonds are issued giving a natural cushion against any kind of reduction in ticket revenues [over-collateralization]
   - The higher the coverage ratio, the lower the yield to be offered

- Risk of under subscription & the yield offered may not be attractive to the investors with different risk appetites
   - If we have only one tranche with highest security, there is a risk that the issue may not attract enough investors who have higher risk appetite
   - It would be better to have three to four tranches each being subordinate to the higher secured tranche. These tranches can carry different levels of credit risk [collateralized debt obligations].
   - Typically lowest tranche may be subscribed by the guarantors/ hedge fund kind of investors to provide the security

- Legal & regulatory risks:
   - Appropriate documentation is required in case any changes happen on regulatory front with retrospective effect
- Cash Flow problems for RK:
   - As the future ticket sales will go into an escrow account of the SPV, RK may face cash flow problems. In order to mitigate this , they need to negotiate with banks for some credit lines
   - Besides, RK can also explore the possibility of renting stadium for other purposes like concerts etc. during off-season to improve its cash flows

[12]

iv)

- Mrs J being the owner of one of the franchises and also being part of the administration of the apex body will have natural conflicts of interest as any decisions influenced by her as the administrator may benefit her franchisee more
- She may be privy to insider information on all key strategic decisions the council can take
- She may influence any kind of contractual terms between the board & owners of the franchisee such a way that it may benefit her as an owner of one of the franchisees

Options available:

- The best option is not to take the position if she wants to retain the control of the franchisee
- The other alternative is to transfer her ownership in RK to some other body
- She can refrain from participating in those meetings ,where any decisions that are taken concerning the league so that she can maintain neutrality
- Disclosures regarding her interests in the franchise all the time and how she is maintaining the arms-length distance between her role as an administrator and as the owner of one of the franchisees

[6]

v)

- KIL is cash rich and if it acquires this company, it may better utilize the surplus cash
- It is a horizontal merger as it is the in the same line of business thus having better scale of economies
- The prospective company is an oil rich country, it may give access to cheaper crude oil thus possibly reducing the cost of production leading to improvement in margins
- Can have access to additional market and also complementary resources
- May lead to better efficiencies as any kind of surplus staff/ resources in the parent company may be put to better utilization in the acquired company
- Tax advantages
- If the developing country is giving any concessions on investments in that country, KIL can take advantage of those incentives to improve its gross margins
- If the acquired company has any debt, the interest paid could be tax deductible
- KIL may have strategic advantage vis-à-vis its competitors since it may have access to other markets as this proposed acquisition maybe opening new markets and also access to more assured raw material
- With improvement in operating margins , better EPS hence consequently increase in market capitalization
- Since the take -over strengthens KIL's position, it can better bargain for funds with banks etc., at better rates of interest which will help her reduce her interest costs

[8]

vi)

The theoretical rationale for the reaction of the shareholders is provided by the Free Cash flow Theory.

This theory implies that managers of firms with unused borrowing power and large free Cash flows are more likely to over-pay for acquisitions because of the lack of appropriate alternative opportunities for investing the unused funds.

In this case KIL which is cash-rich, is probably comparing two potential investments:

[a] the target company in the developing country

[b] Other available internal low-return [or even negative- return] projects

In this situation, the acquisition is likely to emerge as the better alternative even at a fairly high price.
The shareholders opposing the acquisition probably believe that the best solution in this context is to return the excess cash to the shareholders either by way of enhanced dividends or by way of share-buybacks.

[3]

vii)

- A brief description of how the board operates including the decisions which are to be taken by the board and the decisions which are delegated to the management team
- The names of the Chairperson, Vice-Chairperson, Chief Executive, Senior Independent Director
- and the Chairpersons of the Audit Committee, Remuneration Committee and Nomination Committee
- The number of meetings of the Board and those of the sub-committees including the attendance record of the directors
- The names of the non-executive directors whom the Board deems to be "independent" with reasons , where necessary
- The other significant commitments of the Chairperson
- The performance criteria applicable for evaluating the performance of the Board, the Committees and the Directors
- The steps taken by the board to ensure that all directors particularly the non-executive directors to develop an understanding of the views of the major shareholders of the company
- An explanation from the directors about their responsibility for preparing the accounts and a statement by the auditors about their reporting responsibilities
- A description of the working of the audit committee in discharging its responsibilities
- A statement by the Board that it has conducted a review of the effectiveness of the group's system of internal controls
- Where there is no internal audit function, the reasons for the absence of such a function
- Where the board does not accept the audit committee recommendation on the appointment, reappointment, or removal of an external auditor , a statement from the audit committee explaining the rationale of its recommendation and the reasons as to why the Board took a different position
- An explanation of how, if the auditor provides non-audit services , the auditor's objectivity and independence is maintained
- A statement from the directors that the consolidated entity is a "going concern" with supporting assumptions or qualifications, as may be necessary

- A description of the work of the nomination committee including the process it has used in relation to Board Appointments
- A description of the work of the remuneration committee

[10]
[55 Marks]

Solution 2:
Amount of capital required should reflect the nature, scale and complexity of risk undertaken/planned in the near future. Given the operation will be new, the company should always hold maximum of regulatory capital or economic capital. Economic Capital (EC) is a method of measuring the minimum amount of capital appropriate for a reporting entity to support its overall business operations in consideration of its size and risk profile. EC limits the amount of risk a company can take. It requires a company with a higher amount of risk to hold a higher amount of capital. Capital provides a cushion to a company against insolvency. EC is intended to be a minimum regulatory capital standard and not necessarily the full amount of capital that an insurer would want to hold to meet its safety and competitive objectives.
A bottom-up approach for estimating risk capital begins with the risks in each of the assets/line of business that the company owns/writes and aggregates them to establish the riskiness for the division and then again for the entire company. One approach to determining the level of economic capital needed for a line of business is to use the Value at Risk (VaR) methodology. This will assess the required level of capital needed to withstand possible losses over a specified time interval with a pre-determined confidence level. VaR represents the capital needed to cushion against unexpected losses, operating risks and market risks, i.e. the risk capital. These are then aggregated across the business to determine the total amount of capital required, for example, the formula could be applied separately to the general, life and pensions arms of a composite insurer. We need to determine the dependency structure amongst different risks which are modelled under Bottom –up approach which is then used to aggregate the capital required for the enterprise. One of the ways to aggregate different risk is use of correlation matrix. Correlation matrix assume that different risk interact in same manner for all values .However, we have seen that different risk tend to interact differently at extreme values.

Summarize, steps followed are:

1. Risk Identification – We can use tools like risk register. We should do this exercise across the company and for each division.
2. Risk classification – Risk identified in different division are now bucketed in same buckets.
3. Risk distribution – We have to assume distribution for each risk and their parameters
4. Risk modeling – We run the asset and liability models for various values of risk distribution to get a loss distribution. We pick the capital required value using the relevant risk measure (VaR or TVaR).

5. Risk aggregation – Risk are then aggregated using appropriate method for e.g... Correlation matrix

Challenges faced are as follows:

1. Establishing models for the various risk classes (e.g. market, credit, operational) in order to determine the VaR is difficult
2. The choice of period (holding period) over which to model these risks is a difficult one. Do you chose a short period to capture the short-term effects of market risks or a longer one to allow credit risks to properly manifest themselves fully?
3. Allowing for the effects of diversification -simply aggregating these different risks misses the fact that they are correlated with each other – extreme events might cause associated losses across all risk classes.
4. If only the risks at lower (bottom) levels are aggregated then risks generated at the higher levels – particularly the operational risk of senior management – may be missed.
5. Judgement is required – there is no single right answer

[12]

ii)

Key points to be included in the report are as follows:

1. Issues / Factors to be considered by the domestic company in this context will include:

a. The prospective overseas customers' requirements for credit rating of the insurer. Personal lines business are not typically ratings sensitive while customers in Commercial lines segment may be concerned about the credit quality of the insurer.

b. whether the regulatory capital requirements for writing insurance is tied to credit rating

c. Whether the business plan for the new overseas company envisages issuing rated debt. Unless the debt is to be separately secured. The overseas company will need to use its capital to rate the debt and in effect obtain a financial strength rating.

d. Regulator inexperience in terms of risks that the company will bring to their books in that territory

e. moving into overseas business is a risk. Current management is unlikely to have any relevant experience. New management will be hired and new processes put in place. This creates operational risks which may hinder the ability to secure the minimum credit rating

f. All other companies either have AA or higher ratings in the market

g. Domestic company “Humara vaada “is rated A- and may limit its ability to provide guarantee or collateral for writing business in Thailand under 'Khun Thai'

h. Regulator might be worried of the economic cycle which will make raising capital more expensive in future

i. Attract more foreign investment in Thailand from financially sound global insurers

j. Regulator wants to discourage hostile takeover by making capital requirement more onerous and therefore is insisting on a minimum credit rating

Approach the company should use to secure the rating of AA

a. Parent company could guarantee the performance of the local Thai company or provide collateral for all large deals in commercial insurance

b. Decrease the amount of current debt or planned debt in the business plan submitted to regulator for domestic or foreign company

c. It could change the composition of its planned book of business for Thai operation

d. Increase amount of liquid assets both in domestic and Thai company

f. It could change its exposure to lesser risky mix of assets it invest into- conservative investment policy

g. Reduce operational risk by collaborating in form of joint venture with another financial company operating in Thailand. Additionally, they can adopt the newer technology to eliminate or reduce operational risk

h. Make use of credit default swaps in both domestic and foreign market

i. Buy more reinsurance in domestic and foreign market

j. Limit the amount of business that they will write in risky products for few years

k. Raise equity or preference share capital in domestic market and use it subscribe equity capital in Thai company.

[10]

iii)

Some of the steps taken for validating the models will be as follows:

a. Perform scenario analysis and stress testing of the model

b. Internal validation – I will conduct interview with all the key stakeholders to understand if they understand the complexity of ERM model and the way it responds to different risk and the interactions between risks

c. Quantitative Methods -The use of statistical processes to evidence the goodness of fit of key aspects of the model to past data. The use of sensitivity analysis to changes in key assumptions to test the stability of the model.

d. Data Quality - The model is only as good as the data upon which it is based. The data must be reviewed in order to assess the appropriateness of the population of data employed, the accuracy of the data and the completeness of the data.

e. Assumption review – I will like to undertake complete review of the assumption including documentation supporting the derivation/reasonability of the assumptions. This will help to understand where judgements has been used.

f. Model Output – I will like to understand the model output that is shared with the management and compare it with what comes out directly from the model to explore if there are any adjustments made in between.

[7]

iv)

Value at Risk (VaR) is the maximum loss which is not exceeded with a given high probability (a given confidence coefficient like 99.5%) over a given time period.

Tail value at risk (TVaR), also known as tail conditional expectation (TCE) or conditional tail expectation (CTE), is a risk measure associated with the more general value at risk. It quantifies the expected value of the loss given that an event outside a given probability level has occurred.

Key differences between them are as follows:

1. TVAR considers the losses beyond VaR and it helps to understand how worse the losses can be in the tail.
2. TVaR is a coherent risk measure, so it facilitates the aggregation of TVaR values arising from distinct parts of an organization to determine the overall TVaR.
3. TVaR is more sensitive to choice of distribution as it focusses only on tail part of the distribution

The impact of using TVaR in Khun Thai for Humara Vada insurance will be that the capital requirement in Khun Thai will be higher or more onerous and it may lower the return on capital for Humara Vada.

[6]

v)

Some of the courses of action available to Humara Vaada are as follows:

1. Assurance of not raising further debt to furnish existing debt obligation.
2. Re- looking at mix of business sold by Khun Thai and reducing the new business pertaining to the loss making lines of business
3. Re-pricing some of the loss making lines of business to reflect current loss experience

4. Strengthening and increasing UW discipline
5. Buying credit insurance to cover the risk of the lenders
6. Adding the clause into existing debt to convert into equity at a future date
7. Raising additional equity from existing/new shareholders
8. Restricting dividend payout to shareholders for a defined period
9. Changing the mix within each particular class of business, which may have a diversifying effect (e.g. improving geographic spread)
10. Changing the mix between the various classes of business, again to diversify across classes with low correlations.

[10]
[45marks]

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