

SUGGESTED SOLUTIONS

KC2 – Corporate Finance & Risk Management

December 2015

Answer 01

Relevant Learning Outcome/s:

- 4.1.1 Analyse the capital budgeting process (including searching for investments, strategic prioritisation, identifying investment, investment appraisal, authorisation, capital budget, monitoring and review)
- 6.2.1 Assess different tools/strategies to mitigate each of the risks identified above.

Suggested detailed answer

(a)

Option A						
Pros	Cons					
Carries the lowest risk out of all the	No future cash inflows on usage of					
three options	machine. Therefore, relatively low					
	returns of the actual usage of X-ray machines increase in the future					
	macinnes increase in the future					
Cash would be collected upfront at a						
25% mark-up from the Ministry of						
Health						
Cash inflows on the O&M agreement						
for 5 years						

Option B							
Pros	Cons						
Variable income streams correlate to	Riskier than Option A as the O&M						
the actual usage of the machine	warranty would be the						
	responsibility of Gamma						
	No upfront cash - time value of						
	money would decrease. The cost to						
	be paid to the principal ownership						
	would be with Gamma (risks &						
	rewards of machine)						

Option C	
Pros	Cons
Risker than Option A, but less riskier	Warranty/0&M to be done by
than Option B	Gamma during Y ₁ - Y ₃ .
Variable income stream depending	No upfront cash - time value of
on the actual charge of X-ray films,	money would decrease.
plus service from Y ₄ - Y ₅	
The most important advantages of	
BOOT are: utilisation of private	
sector's investment instead of public	
sector's, transferring all the risk to	
the private sector. Transferring of	
technical knowledge is one of the	

most important benefits of this method for developing countries.
Political resistance in using the private sector is less than other methods because the project will be owned by the government eventually.

(6 marks)

(b) X-ray machine USD $35,000 \rightarrow \text{Rs. } 4,900,000$

Freight (0.5%)24,500Insurance (USD750)105,000CIF5,029,500Mark-up (25%)1,257,375Value6,286,875

 \therefore 200 machines \rightarrow Rs. 1,257,375,000

					(R	s. million)
Option A						
Year	0	1	2	3	4	5
Cost of machines	(1,005.90)					
Sale proceeds	1,257.38					
0&M		62.87	64.44	66.05	67.70	69.40
Total cash flows	251.48	62.87	64.44	66.05	67.70	69.40
DF (15%)	1.000	0.869	0.756	0.658	0.572	0.497
PV	251.48	54.63	48.72	43.46	38.73	34.49
NPV	471.50					

Option B					(Rs.	million)
	0	1	2	3	4	5
Cost of machines	(1,005.90)					
Spare parts	(100.59)					
Service				(4.20)	(4.20)	(4.20)
Scan income (Working 01)		262.8	331.13	405.63	486.76	638.87
NCF	(1,106.49)	262.80	331.13	401.43	482.56	634.67
DF (15%)	1.000	0.869	0.756	0.658	0.572	0.497
PV	(1,106.49)	228.37	250.33	264.14	276.02	315.43
NPV	227.81					

Option C	(Rs. million)						
	0	1	2	3	4	5	
Cost of machines	(1,005.90)						
Spare parts	(50.30)						
Service					4.90	4.90	
Scan income (Working 02)		438	578.16	741.97	-	-	
NCF	(1,056.20)	438.00	578.16	741.97	4.90	4.90	
DF (15%)	1.000	0.869	0.756	0.658	0.572	0.497	
PV	(1,056.20)	380.62	437.09	488.22	2.80	2.44	
NPV	254.97						

Working 01 - Scan income								
Year	1	2	3	4	5			
No. of scans per hour per	_	,	_		1.0			
machine	5	6	7	8	10			
No. of scans per day per								
machine	120	144	168	192	240			
No. of scans per year per								
machine	43,800	52,560	61,320	70,080	87,600			
Total no. of scans	8,760,000	10,512,000	12,264,000	14,016,000	17,520,000			
Charge per scan (Rs.)	30.00	31.50	33.08	34.73	36.47			
Income (Rs. million)	262.8	331.13	405.63	486.76	638.87			
Working 02								
Year	1	2	3					
Charge per scan (Rs.)	50	55	60.5					
Income (Rs. million)	438	578.16	741.97					

Option A should be selected as it has the highest NPV.

(15 marks)

(c) Securitization is the transformation of illiquid assets into a security. It involves taking a relatively illiquid asset, or a group of assets, and transforming it into a more identifiable, secure and liquid security through financial engineering. This improves economic efficiency and enhances liquidity. Conceptually, asset securitisation converts regular and classifiable cash flows from a diversified portfolio of illiquid present or future receivables. Thus, securitisation serves, as a refinancing mechanism to diversify external sources of asset funding and to transfer specific risk exposures asset securitisation would offer an interesting funding alternative to traditional channels of external finance captive to a pernicious bankbased financial system.

Securitization transactions often issue pass-through securities whose repayment obligations effectively match the repayment characteristics of the underlying assets (promotes managing and matching asset/liability profiles). Asset securitisation is one operational means of risk management, which allows issuers to reallocate, commodities and transfer different types of risks (e.g. credit risk, interest rate risk, liquidity risk or pricing risk) to capital market investors in return for some fair market price. While banks and other financial institutions view securitisation as an expedient means to evade inconsistent regulatory capital charges for credit exposures of similar risk ("optimisation of regulatory capital"), non-financial entities would employ securitisation primarily for the liquidity management of existing trade receivables. Securitization arises from the flexibility available in transforming cash flows and risks of the collateral pool into those of the securities issued on the pool. For example, creative use of credit enhancements allows relatively poor-quality receivables to be transformed into some tranches of high credit quality and other tranches of low credit quality. Similarly, it is possible to carve out long-term, non-revolving securities from short-term, revolving credit card receivables. Accordingly, securitization of assets can lower risk, enhance liquidity, and reduce cost of funds.

(4 marks)

(Total: 25 marks)

Answer 02

Relevant Learning Outcome/s:

- 5.2.1 Evaluate business valuation techniques (asset based, earnings based, proxy PE base, cash flow based) for a specific merger or acquisition or divestment.
- 1.1.1 Discuss appropriate strategic objectives, both financial and non-financial, for different types of organisations (profit maximisation, wealth miximisation, value for money, balanced scorecard) and how these objectives can assist in meeting the corporate goals of such organisations.
- 2.2.1 Evaluate working capital requirements and investment decisions using working capital cycle and permanent and temporary working capital estimations.
- 2.2.2 Evaluate the appropriateness of different working capital financing policies.

Suggested detailed answer

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(a) (i) Economic Value Added (EVA) = NOPAT - (Invested capital * WACC)
= 26,640 - (63,000*0.133)
= 26,640 - 8,379
= 18,261
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WACC =
$$30,000 * 0.2 + 33,000 * 0.1 * (1-0.28)$$

 $63,000 * 63,000$
= $0.48 * 0.2 + 0.52 * 0.072$
= $0.096 + 0.037$
= 0.133
= 13.30%

Note: Answers, which considered the book value of debts as Rs. 70,000, also gained two marks.

Alternatively

$$MVA = 30.000 - 20.000 = 10.000$$

(6 marks)

(ii) Destroyers of shareholder value

Creating shareholder value is a fundamental requirement for all companies. Therefore, most of the leading companies adopt a mantra of shareholder value to meet the increasing expectations of shareholders.

Fundamentals and valuation metrics are used in traditional and value-based approaches to equity securities analysis. In the traditional realm, growth rates, margins, return on equity, multiples, and the fundamental stock return are at the core. However, the traditional approach has a number of limitations. Focus is now moving away from classic attempts to model earnings based returns and assessments based on growth expectations, cash flow return on invested capital, and risk. In response to the changing concerns of institutional investors, equity analysts at securities firms are also revising their approaches to value analysis, such as EVA and MVA.

Economic Value Added (EVA) is the difference between the company's net operating profits after taxes and the cost of capital employed in generating those profits in a financial year. If EVA is positive, the company creates shareholder wealth and if EVA is negative then the shareholders' wealth is destroyed. EVA is a better measure of performance as it includes various aspects in calculating value than other performance measures such as ROI, ROE, EPS, etc.

Another performance measure that can be used in conjunction with EVA is MVA. MVA is defined as the difference between the total market value of debt and equity of a company and its invested capital. MVA is also equal to the market's estimate of the NPV of all future EVA. MVA indicates how much a company has created or destroyed in terms of shareholder capital. Successful companies will generate a positive MVA.

(4 marks)

(iii)

	Rs. '000
Profit after tax for 2016	24,840
Retain (60%)	14,904
Dividend (40%)	9,936
10% to employees	993.6

Alternatively

	Rs. '000
Profit after tax for 2016	24,840
Retain (60%)	14,904
Dividend (40%)	9,936
Dividend to employees (<u>9,936</u> * 10) 110	903.2

(3 marks)

(b) (i) Summary

	Working capital investment policy						
	Conservative	Moderate	Aggressive				
Current assets	34,000	29,000	19,800				
Fixed assets	25,000	25,000	25,000				
Total assets	59,000	54,000	44,800				
Current liabilities	18,000	18,000	18,000				
Estimated sales	94,500	87,900	76,500				
EBIT	9,400	8,700	7,700				
Current ratio	1.889	1.611	1.1				
Rate of return on total assets	0.1593	0.1611	0.1719				
Net working capital position	16,000	11,000	1,800				
Current assets to fixed assets	1.36	1.16	0.79				

The net working capital or current ratio indicates the risk element while the rate of return shows the return (measure of return).

At the conservative level, risk is low but so is the return. Similarly, at the aggressive level risk is high but so is the return. The company should decide on the suitable level to operate by looking at the risk appetite of the owners and the market return.

(7 marks)

(ii) Importance of Supply Chain Finance

Many companies lag when it comes to their forecast and demand management capabilities. As a result, they have excess inventory leading to excessive costs and their service levels are lower than desired. They also suffer from an inability to adapt quickly enough to changes in supply chain demand, and poorly defined and inconsistent processes.

The key concept behind supply chain finance (SCF) is to provide suppliers with access to advantageous financing facilities by leveraging the buyer's stronger credit rating.

Forward-thinking companies are increasingly turning to outsourcing to improve the performance and cost management of their supply chains. This approach can help companies prepare for new economic realities by enabling them to respond to near-term cost pressures, while adopting intelligent long-term approaches that support the entire business far into the future. It forces many companies to better manage liquidity and strengthen their balance sheet. SCF can often be an attractive way for companies to improve their working capital position. Thus, the buyer can benefit from longer supplier payment terms and a reliable, financially robust supply chain.

(5 marks)

(Total: 25 marks)

Answer 03

Relevant Learning Outcome/s:

- 2.4.1 Discuss debt financing methods available (including bank loans, bonds, debentures, securitizations, commercial papers, debt sweeteners (convertibles and warrants), senior vs junior debt and international bonds.
- 2.4.2 Assess the value (interest yields) of undated bond/irredeemable debt and the value (yield to maturity) of dated bond/redeemable debt.
- 6.2.2 Assess various types of financial derivatives (including forward contracts future swaps and options)
- 2.3 Equity financing
- 5.2.3 Recommend appropriate valuation and terms, taking into account financial and strategic implications for a specific merger or acquisition or divestment.
- 3.1.1 Discuss different dividend policies, taking into account factors such as cliental effect, leverage and capital requirements, solvency ratios, tax considerations and Company Act pre-requirements.

Suggested detailed answer

- (a) (i) When a loan is obtained in foreign currency, a company should calculate the reporting currency equivalent cost of the debt. There are a few elements that would impact the real cost of debt in rupees in the given scenario.
 - > USD interest rate
 - Repayment period and pattern
 - **Exchange rates**

Therefore application of the local currency denominated loan cost would not be appropriate when calculating the real cost of debt.

(3 marks)

(ii) The suggested rupee equivalent cost of debt would be as follows:

Annual installment formula to use

$$P = \frac{r(PV)}{1 - (1+r)^{-n}}$$

P = Payment $PV = Present\ Value$

 $r = rate \ per \ period$ $n = number \ of \ periods$

Base value: USD 600,000 Interest rate: 5.75%

Period: 6 years (equal installment)

Therefore the fixed installment = USD 121,065

Approximate NPV of loan schedule (Rs.)

Year	2008	2009	2010	2011	2012	2013	2014	2015
Loan value (USD)	600,000							
Interest	000,000							
during grace								
period		(34,500)						
periou		(34,300)						
Installment			(121,065)	(121,065)	(121,065)	(121,065)	(121,065)	(121,065)
	600,000	(34,500)	(121,065)	(121,065)	(121,065)	(121,065)	(121,065)	(121,065)
Exchange rate	109	115	122	129	137	145	153	162
Loan value								
(Rs. million)	65.40	(3.97)	(14.77)	(15.62)	(16.59)	(17.55)	(18.52)	(19.61)
DF (10%)	1.000	0.909	0.826	0.751	0.683	0.621	0.564	0.513
PV	65.40	(3.61)	(12.20)	(11.73)	(11.33)	(10.90)	(10.45)	(10.06)
NPV at 10%	(4.87)							
Loan value								
(Rs. million)	65.40	(3.97)	(14.77)	(15.62)	(16.59)	(17.55)	(18.52)	(19.61)
DF (15%)	1.000	0.869	0.756	0.658	0.572	0.497	0.432	0.376
PV	6E 40	(2.45)	(11 17)	(10.20)	(0.40)	(0.72)	(0,00)	(7.27)
	65.40	(3.45)	(11.17)	(10.28)	(9.49)	(8.72)	(8.00)	(7.37)
NPV at 15%	6.92							

= 12.06%

Therefore the suggested cost of the USD loan, which they should have applied in the initial phase of the WACC calculation, is 12% (rupees equivalent).

Alternatively,

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Interest = LIBOR + 1.5%
= 4.25 + 1.5
= 5.75%
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Effect of exchange rate

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162 = 109 \times (1 + r)^{7}
r = 5.8\%
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Average exchange rate increase of 5.8%

:. LKR depreciated rate of 5.8% annually.

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\therefore effective rate k_d = 1.0575 \times 1.058 - 1
= 1.1189 - 1
= 11.89%
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(8 marks)

(b)

(i) <u>Currency SWAP agreement</u>

TSEL should have opted to go for a currency SWAP as detailed due to the reason that most of the settlements take place in Euros.

They could get into a currency agreement whereby the payment will be in Euros. In return, USD inflows would be built up, which can be used to serve the loan to a certain level and minimise any exchange losses.

The initial agreement will be signed in the notional principal in both currencies as below.

Initial loan value USD 600,000

50% exposure USD 300,000 - Notional USD principal Equivalent Euro value EUR 214,286 - Notional Euro principal

The cash flows will be in the following manner:

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Notional principal in Euros	214,286						
TSEL will pay in Euros at 4% per annum		8,571	8,571	8,571	8,571	8,571	8,571 + 214,286
Notional principal in USD	300,000						
TSEL will receive in USD at 5.75% per annum		17,250	17,250	17,250	17,250	17,250	17,250 + 300,000

(5 marks)

(ii) It is important for TSEL to monitor the mark-to-market value due to a several reasons.

If the exchange rates deviate significantly between the USD and Euro (from the base rate), it would have a material impact on the income statement on either side due to the exchange gain or loss when the cash flows are revalued at the spot rate for each payment. Also, at the maturity of the agreement, the settlement process would be subject to exchange rate exposure. Therefore, it is important to keep a track on the mark- to-market value and take prompt action.

In the event TSEL is not in a position to meet obligations due to certain reasons, they may go for an "unwinding swap". It requires the settling party to factor future payments into their present value and settle them using an appropriate exchange rate (net payment). Generally, unwinding a SWAP is an expensive affair under normal circumstances.

(5 marks)

(c) The nature of equity capital is such that they are the real owners of the company who take risks and rewards equally. When the business is making a loss, they are also responsible for the loss and should equally participate in the loss absorption.

Therefore Joe cannot agree on the following:

- Requesting for the same amount invested, as there is an impairment of the investment
- Interest for the holding period as equity holders do not deserve interest but dividends

(4 marks)

(d) Valuation methods

Asset based valuation methods

Net Assets Basis Valuation	
	2016
On going concern basis	
Total Assets	949,940
Liabilities	430,737
Net assets (Rs,000)	519,203
Number of shares	5,500,000
Value per share (Rs.)	94.40

Discounted cash flow (DCF) method (first 4-year cash flows)

					(Rs. '000)
	NOCF	Tax (28%)	NOCF after tax	DF (12%)	PV
2016/17	40,219	(11,261)	28,958	0.893	25,859
2017/18	50,273	(14,077)	36,197	0.797	28,849
2018/19	62,842	(17,596)	45,246	0.712	32,215
2019/20	67,241	(18,827)	48,413	0.636	30,791
					117,714

Year 2020/21 onwards cash flows

2020/21 71,948 (20,145) 51,802

PV in perpetuity

2020/21 71,948 (20,145) 51,802

Applying the growth model 51,802/(0.12 – 0.07)

= 1,036,045

1,036,045 * 0.636 **658,925**

Total 776,638.70

PV of loan payment (Rs. '000) (Working 01) (206,067.54)

PV of tax benefit (Rs. '000) (Working 02) 12,605.19

Total 583,176,353.33

No of shares 5,500,000.00

Value per share 106.03

Working 01 - PV of loan payment (Rs. million)			
		DF (12%)	PV
2016/17	67.83	0.893	(61)
2017/18	67.83	0.797	(54)
2018/19	67.83	0.712	(48)
2019/20	67.83	0.636	(43)
			(206.07)

Working 02 - PV of tax benefit (Rs. million)				
	Interest	Tax (28%)	DF (12%)	PV
2016/17	20.83	5.8324	0.893	5.21
2017/18	17.83	4.9924	0.797	3.98
2018/19	12.83	3.5924	0.712	2.56
2019/20	4.83	1.3524	0.636	0.86
				12.61

Summary of values

	Value per share (Rs.)
Net book value basis	94.40
DCF method	106.03

The above summary shows that Joe should negotiate within a price range of Rs. 94.40 to Rs. 106.03.

(10 marks)

(e) The following synergies can be expected by BOBR once acquired

Additional operational cash flows

	Year 1
Operating cash flows	Rs. '000
Additional sales income	12,000
Cost savings	5,000
Staff lay-off savings	<u>1,400</u>
	18,400
Tax (28%)	(5,152)
Annual post tax cash flow	13,248

Additional non-recurring cash flows

				Rs. '000
	Year 0	Year 1	Year 2	Year 3
Director fees		(1,728)	(1,728)	(1,728)
Data processing termination				
fee				
Termination cost	(2,000)			
Net cash flows	(2,000)	(1,728)	(1,728)	(1,728)
DF (12%)	1.000	0.893	0.797	0.712
PV	(2,000)	(1,543)	(1,377)	(1,230)

Total cost benefit analysis

	Rs. '000
NPV of non-recurring cash flows	(6,151)
Present value of recurring cash flows	110,400
NPV before merger plan	<u>583,176</u>
Total NPV	687,425
Number of shares in issue	5,500,000
Value per share (Rs.)	124.99

The best price that BOBR would come up with would be Rs. 124.99 per share. Therefore, anything more quoted by Joe would not be materialised from a rational perspective.

(10 marks)

- (f) There are two main types of returns a shareholder can expect:
 - Dividends
 - Capital gain

A profitable and growing company may postpone dividends due to several reasons. The most common and widely visible reason is to fund business expansion into more profitable business lines.

How that would benefit shareholders is answered by the increasing stock price resulting from positive NPV projects. This will allow shareholders to sell shares in the market place and materialise the profit.

Therefore, zero dividend stocks should not be a cause for concern to shareholders unless such money is mismanaged by the top management of the company.

(5 marks)

(Total: 50 marks)

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