SUGGESTED SOLUTIONS

KC2 – Corporate Finance & Risk Management

December 2019

Answer 01

Relevant Learning Outcomes/s: 1.2.2/2.2.1/2.1.1/6.2.2
Study text reference: 71/102/105-109/66/67/627/634-638/630-634

(a)   The finance manager is of the view that the economic slowdown is the root cause for the current situation. However when we look at the behaviour of some of the key ratios it seems that this is due to some issues other than economic slowdown.

For example the demand for non-essential goods such as electrical items, will drastically come down in an economic slowdown as people will have no adequate liquidity to spend on such goods. Therefore the sales should ideally come down.   But the sales have increased by 40% when compared with the last year.

Therefore it is vital to look at some other ratios to figure out what has gone wrong. Refer ratio analysis done in the current year and comparable ratios for last year. **(Working 1)**

Highlights from ratio analysis

01.   Inventory levels have gone up by 92%
02.   Trade receivables have gone up by 109%
03.   Sales increased by 40%
04.   Finance cost has increased by 40%
05.   Overdraft has increased by 102%
06.   Stated capital has not increased
07.   Current ratio has deteriorated
08.   Quick ratio has deteriorated
09.   The GP has come down and NP has come down despite the increase in sales

The above behaviour is a clear indication of overtrading. In other words the company has not managed its capital base to operate at higher levels of sales. Instead it has used short term financing such as bank overdrafts and trade payables to manage working capital, leading to lower profitability.

This is supported by zero increase of stated capital or long term loans.

Therefore disagree with the finance manager's viewpoint that the recent economic slowdown is the key reason. There could have been some impact from economic slowdown, but the key reason is overtrading.

Working 1	2019		2018	
Inventory days	52	Days	39	Days
Receivables collection period	45	Days	30	Days
Payables payment period	53	Days	33	Days
Current ratio	1.15	Times	1.28	Times
Quick ratio	0.58	Times	0.61	Times
Sales/Net working capital	30.53	Times	26.73	Times
GP ratio	13%		17%	
PBT ratio	7%		10%	
Inventory turnover ratio	7.07	Times	9.28	Times
Receivables turnover ratio	8.13	Times	12.15	Times
Non-current assets increase	7%			
Inventory increase	92%			
Trade receivables increase	109%			
Trade payables increase	138%			
OD increase	102%			

(b) **Overdraft facility**

As explained above, the reason for the current situation is resulting from a mismatch of investment and financing. MBI has used short term financing for long term investment which is not sustainable. Increasing the OD facility would have an impact on the bottom line of the company. Therefore this action is not recommended.

What is recommended is either equity capital infusion or a long term loan arranged at lower interest rates.

Trade payables should be settled through trade receivables. Temporarily the company can look for a factoring option as well.

Altering the reorder quantity (ROQ)

Annual inventory management cost under the current method and the proposed method is given below. It seems that the proposed method has an inventory cost of Rs. 1,816,667 which is above the cost calculated using the EOQ model.

The optimal order size is calculated based on the EOQ model. EOQ based optimal order quantity is set at 80,623 units, which ends up with lowest cost compared to the proposed method. Therefore the optimal order size would be more appropriate.

	Proposed method	Current method	EOQ
Order quantity	75,000	100,000	80,623
Number of orders	8.67	6.5	8.06
Ordering cost per order (Rs.)	100,000	100,000	100,000
Total ordering costs (Rs.)	866,667	650,000	806,222
Holding cost			
Weekly demand	12,500	12,500	12,500
Buffer stock	10,000	10,000	10,000
Average inventory	37,500	50,000	40,311.50
Total holding cost (Rs.)	950,000	1,200,000	1,006,230
Total cost (Rs.)	**1,816,667**	**1,850,000**	**1,812,452**

Managing trade payables with a lead payment

This is not a working capital management technique rather a risk management technique against unseen foreign exchange movements. There are three possible options to consider with the information provided.

Money market hedge
Forward market hedge
Lead payment

The summary of the results of each of the method is given below. (Refer **Working 2**)

LKR

Money market hedge: 47,343,980
Forward market hedge: 45,500,000
Lead payment: 48,172,500

We would not recommend the lead payment due to its resulting in the highest LKR cost.

Therefore the forward market hedge is considered most suitable.

Working 2

Money market rates available to MBI	Borrowing rate per annum	Deposit rate per annum
LKR interest rate	14.1%	8.4%
USD interest rate	4.0%	3.50%

	Buying rate	Selling rate
Spot rate: 1 USD=	Rs. 178	Rs. 180
6-month forward rate: 1 USD=	Rs. 180	Rs. 182
Money market hedge		
How much USD to be deposited now		
USD Bi-annual rate	1.75%	
Target deposit in USD (in 6 months)	250,000	
Amount to be deposited now in USD	245,700	
Cost of such amount in LKR	44,226,044	
LKR loan value in 6 months	**47,343,980**	
Forward market hedge		
Forward rate	182	
Cost in LKR	**45,500,000**	
Lead payment		
Obtain a loan now	45,000,000	
Value in 6 months	**48,172,500**	

Answer 02

Relevant Learning Outcomes/s: 2.3/5.2.1/4.1.2
Study text reference: 230/234-236/449-452/327-342/329

(a)   CAPM formula

Expected return (Ke)	=	Rf + β (rm – rf)	
	=	9% + 1.15 (15% – 9%)	
	=	15.9%	
Investment	=	5 million x Rs. 75 x 1.012	
	=	Rs. 379.5 million	
Expected profit	=	Rs. 60.34 million	
Expected net sales proceeds	=	Rs. 439.84 million	
Gross sales proceed	=	439.84 = 445.18 million	
		0.988	

Expected share price = Rs. 445.18 million/5 million = Rs. 89.04 per share

(b)

Dessi Coco

	Rs. million		
	Current business (Sri Lanka)	**South Africa**	**Total**
Turnover	10,000	1,500	11,500
Profit before tax	3,500	300	3,800
Tax	(490)	(30)	(520)
Profit after tax	3,010	270	3,280
Dividends (40%)	1,204	108	1,312

Value of the business	=	1,312,000,000
		0.159
	=	Rs. 8,251,572,327
Value per share	=	Rs. 8,251,572,327
		90,000,000
	= Rs. 91.68	

(c)   Value per share based on (b) above is Rs. 91.68. The value per share of Rs. 91.68 is greater than Mr. Perera's expected value per share of Rs. 89.04. Since there is a benefit of Rs. 2.64 per share, it is beneficial for Mr. Perera to retain his shares.

(d)

	Y_0	$Y_1 - Y_7$
Investment (Rs.)	(1,100,000)	
Electricity bill savings (Rs.)		240,000
Operation and maintenance charge (Rs.)		(11,000)
		229,000
Annuity 8% (1 – 10)		6.710
PV of CFs		1,536,590
Projected NPV		Rs. 436,590

The projects' discounted payback is around 6.3

Alternatively, if a student has used a discount rate of 9%, marks should be given accordingly.

The investment in the solar roof top is financially feasible.

Solar is relatively expensive due to limited sun hours. Hence investing in a good quality solar panel, location of the house, solar irradiation levels etc. will play a vital role. This also reduces the carbon foot print.

Answer 03

(a)

MEMO

From: Consultant

To: Mr. Jerad and Gayan

Subject: Analysis of exit timeline

This memo attempts to evaluate two options and provides the best option to maximize wealth.

Option 01: Dispose of the investment immediately and receive the proceeds over a period of 18 months.

Option 02: Value the business in 3 years post diversification and stabilization, and dispose of the investment then (i.e. 3 years from now)

Option 01: Dispose of the investment immediately and receive the proceeds over a period of 18 months.

The value of UEL needs to be calculated based on the free cash flow method as given below. This option gives a present value of Rs. 871.26 million.

		2019/20	2020/21	2021/22	2022/23	2023/24
		Rs. '000				
Net finance costs		565,500	610,000	595,565	570,765	450,676
Loss on biological assets		15,333	8,500	5,500	4,500	2,000
Depreciation and amortisation		73,500	77,175	81,034	85,085	89,340
Investment in fixed assets		(127,600)	(140,360)	(154,396)	(169,836)	(186,819)
Replanting cost		(126,000)	(132,300)	(138,915)	(145,861)	(153,154)
Change in working capital		(133,750)	(143,113)	(153,130)	(163,850)	(175,319)
Net change in investment, WC, Depreciation/ amortisation		**266,983**	**279,903**	**235,657**	**180,805**	**26,724**
Earnings after interest before tax	178,924	**187,870**	**197,264**	**205,154**	**213,360**	**221,895**
Tax expense		(52,604)	(55,234)	(57,443)	(59,741)	(62,131)
FCF		402,250	421,932	383,368	334,424	186,488
Terminal value						2,134,253
		402,250	421,932	383,368	334,424	2,320,741
Discounting factor WACC at 12%	1	0.893	0.797	0.712	0.636	0.567
PV		359,209	336,280	272,958	212,694	1,315,860
PV of the company	2,497,001					
Investment in Subsidiaries	1,500,000	On the assumption that the BV and the NRV of investment in subsidiary remain same				
	3,997,001					
Less: Value of debt	-3,125,736					
Value of the company	871,265					

The share ownership for Jerad and Gayan is limited to 60%. Therefore the total value attributable to them is calculated below, which amounts to Rs. 522.76 million with further Rs. 156.83 million added as a premium, totaling to Rs. 679.59 million.

Ownership				Price with 30%	Premium 30%
		Rs. '000			
Jerad De Silva	40%	348,506			
Gayan De Silva	20%	174,253	522,759	679,587	156,828
Mahen Zoysa	30%	261,379			
Secretary to the Treasury	10%	87,127			
		871,265			

The impact arising from the payment terms set by the buyer is evaluated below.

	Note	Today	6 m	12 m	18 m
			1/3	1/3	1/3
				Rs. '000	
Proceeds			226,529	226,529	226,529
Discounting factor - Bi annual rate	7.94%		0.926	0.858	0.795
NPV		584,471	209,875	194,445	180,150

Effective rate = 16.5%
$(1+r)^n - 1$ = 0.165
$(1+r)^2$ = 1.165
$1 + r$ = 1.07935
r = 7.94%

Therefore the actual NPV is limited to Rs. 584.47 million.

Note: Personal discounting has been carried out at the market rate of return which is 16.5%.

Option 02: Value the business in 3 years post diversification and stabilization, and dispose of the investment then

The number of new shares to be issued will be calculated as shown below. Accordingly 11.538 million shares will have to be issued at Rs. 52 per share.

Shareholding structure	
Equity capital (Rs.)	**600,000,000**
Price per share (Rs.)	52
No. of new shares issued to the investor	11,538,462

This act would dilute the ownership of both Jerad and Gayan as given below.

	Before	No. of shares	After the share issue	No. of shares
Jerad De Silva	40%	16,000,000	31%	16,000,000
Gayan De Silva	20%	8,000,000	16%	8,000,000
Mahen Zoysa	30%	12,000,000	23%	12,000,000
Secretary to the Treasury	10%	4,000,000	8%	4,000,000
New shareholder			22%	11,538,462
	100%	**40,000,000**	**100%**	**51,538,462**

The new investment would let UEL achieve the initial forecast as presented in the pre-seen. The proposal is to list the company after three years. Therefore the subsequent valuation would happen 3 years from now by considering future cash flows as follows.

Year ended 31 March		2020	2021	2022	2023	2024
					Rs. '000	
Net change in investment, WC, Dep/ amortisation					180,805	26,724
Profit before income tax					325,240	553,015
Tax expense					(91,067)	(154,844)
FCF					414,977	424,895
Terminal value						6,373,419
					414,977	6,798,314
Discounting factor at WACC 12%					0.893	0.797
					370,575	5,418,256
PV of the company				5,788,831		
Add: investment in subsidiary				1,500,000		
Less: Value of debt				-2,813,000		
				4,475,831		
	47%			2,103,640		
PV of the share discounted at 16.5% Y3 value				0.632		
				1,329,500.75		

An additional point to consider is that proposed proceeds will be calculated, 3 years from now. Both Jerad and Gayan's portions have been discounted at the market rate of return.

Conclusion:

Option 1 would end up with a positive NPV of Rs. 584.47 million whereas the Option 2 would result in a positive NPV of Rs. 1,329.5 million. Based on financial evaluations it is advisable to go ahead with the proposed diversification initiative and get their share value realised at a point 3 years from now. It will get both Jerad and Gayan an incremental NPV of approximately Rs. 745.03 million.

Working

WACC and levered beta

WACC calculation

Capital structure

	Rs.ʻ000	%	**Cost**	**WACC**
Equity	3,698,100	54%	12.17%	6.60%
Loans	3,125,736	46%	11.32%	5.19%
	6,823,836			**11.8%**

<div align="right">Approximately   12%</div>

Aggregate cost of debt

	Rs.ʻ000	**Composition**	**Cost before tax**	**Tax**	**Cost after tax**
Debentures	1,420,000	45.4%	14.63%	72%	4.78%
Term loans	1,250,000	40%	17%	72%	4.89%
Distress loan	200,000	6.4%	5%	72%	0.23%
Leases	255,736	8.2%	24%	72%	1.41%
Total	**3,125,736**				**11.32%**

Cost of equity			
	Debt	**Equity**	
UEL Debt to equity ratio	3,125,736	3,698,100	6,823,836
	46%	54%	
Target company			
TT PLC company Debt to equity	65%	35%	
Beta		0.55	

Levered beta
Unlevered beta = Levered Beta / ((1 + (1 – Tax rate) * (Debt / Equity))

$$\frac{0.55}{(1+(1-0.28)*(65/35))}$$

$$\frac{0.55}{2.34}$$

= 0.24

Levered beta = Unlevered beta * ((1 + (1 – Tax rate) * (Debt / Equity))
  (0.24*((1+(1-0.28)*(45/55))))
Unlevered beta = 0.38

Risk free rate	9.5%
Market rate	16.5%
Risk premium	7%
Required rate of return	12.17%
Approximately	12.2%

Terminal value calculation	Rs. ʻ000
Option 1	
Year 2024 FCF	186,488
2024/25 FCF	192,083
Growth	3%
WACC	12.00%
TV	2,134,253

Terminal value calculation	Rs. ʻ000
Option 2	
Year 2024 FCF	424,895
2024/25 FCF	446,139
Growth	5%
WACC	12.00%
TV	6,373,419

FCF Working	**Note**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**
		Rs.ʻ000				
Additions	10% increase	(127,600)	(140,360)	(154,396)	(169,836)	(186,819)
Replanting cost	5% increase	(126,000)	(132,300)	(138,915)	(145,861)	(153,154)
Depreciation and amortisation	5% increase	73,500	77,175	81,034	85,085	89,340
Change in working capital	7% increase	(133,750)	(143,113)	(153,130)	(163,850)	(175,319)
		(313,850)	(338,598)	(365,408)	(394,460)	(425,952)

(b) (i)

Relevance of the note on Dragon Air (DA) to UEL

DA had tried to hedge one of its prime inputs that was being used in providing airline service. The market price of oil seemed to be volatile and on the higher side. They had managed to keep it low by using forward contracts through negotiation. Similar to this ABC consultants is now providing some food for thought.

- One of the main inputs that a plantation company would heavily use is fertilisers. Management should explore the volatility in prices and its ability to hedge, if they can predict the price movements in the future.

- On the other hand UEL can focus on the price volatility of tea that is being sold overseas. In the event UEL is anticipating large variations in price, they can negotiate forward contracts to hedge the risk of an unplanned price drop.

(ii)   **The interpretation of the *profit recorded from a long position***

DA had been able to gain an amount equal to 0.4 million USD by keeping a long position in a covered hedge arrangement. This means that the price had gone up by the end of April as DA predicted. The quantum of increase can be calculated as given below.

Savings from 1 gallon: 400,000/2,000,000 = 0.2 USD.

This means that the price had actually gone up to USD 2.3 by end of April 2019. But they had been able to purchase at 2.1 USD per gallon.

Had the forward contract not been made, DA would have spent 0.4 million USD more in buying 2 million gallons of oil.

(iii)   **Meaning of commodity market risk mitigation with the help of futures market**

One of the other places to hedge commodity market is the "Commodity Futures Market". Unlike forward contracts the futures market is a regulated market, with more liquidity. Most commodities could be hedged using the futures market examples being oil, meat and gold. ABC consultants may be referring UEL to look to the futures market, to hedge its price, similar to other such commodities on the assumption that tea is also a commodity that can be hedged, as with any other commodity.

(iv)   **The possibility of using tea futures in hedging commodity price risks for the next 5 years.**

The possibility of hedging tea as a commodity is limited due to many reasons. Firstly, we have not seen tea being traded in futures similar to coffee or cocoa. There could be many reasons, but one important reason may be that tea is a product that is highly segmented. Building up an index for tea would be a challenging task. Also the taste of tea is not within the control of the manufacturer entirely, as the product taste may vary due to many reasons, especially the weather. There is no large and popular futures market for tea at the moment. Also it would be impossible to hedge the commodity price risk for five years, even with forward contracts.

(c)

Change in interest rates – The opinion of economists on this subject matter would vary but the broadly accepted logic is that reduced interest rates would discourage money lending and that it would rather encourage consumption.

However it's doubtful if this expected move would benefit UEL, as the company sells low value consumable products already, and also plans to sell electricity, which is also similar in nature.

However there could be some relevance as summarized below.

01.   The new investor would find it encouraging to come forward with equity investment while the lending rates are low. The impact on 600 million at 3% is about 18 million per year
02.   The cost of debt may come down if the trend is going to set in the long run, and the company is able to renegotiate bank interest rates. The company operated with approximately 3 billion worth of debt in year 2019.
03.   This will also have a positive effect on OD interest costs. It is important to mention that total interest costs of UEL are on the higher side (Rs. 500 million in year 2019).

The lower levels of interest rates would indicate a more stable macro business environment, in addition to all of the above.

Inflation rate

Less volatile inflation forecasts imply that budgets prepared for future years would stand without risk of variation. UEL should however, discuss with the future investor, the achievability of budgets.

Conversely the company would be restricted in its ability to alter prices and thereby improve profitability. However, the nature of the product is such that no excessive profits can be charged unless there is significant value addition. Therefore the company has little flexibility here too.

This is advantageous to both Jerad and Gayan, as they could predict better value for money in the event they try to liquidate their assets in 3-4 years from now.

The company would not be really worried about capital expenditure as they will fall due immediately.

Taxation

This is a significant element to consider before making a decision regarding the new investment in a hydro plant which would put UEL in a tight position due to the reasons given below.

It will lead the company into a liquidity trap with higher operating leverage. Unfortunately the future sales will be dependent on government policy decisions (i.e. unit rates could be decided by the government).

Most importantly, the possibility of higher taxes would negatively impact predicted NPV forecasts.

(d)

The shape of the yield curve as presented by the economist is named as "Normal Upward Sloping Yield Curve". This is the most common type of yield curve. However, the predictability is low as we move forward on the time horizon. The reasons given below spell out the shape of the yield curve.

Liquidity preference theory: Investors have a natural preference for more liquid assets. Therefore they need extra compensation in the form of enhanced yield if they are to invest in longer term.

On the other hand when we look at the table it's clear that the yields offered by CBSL 1 month ago compared to 6 months ago are much lower. This is a result of Expectation theory.

Expectation theory suggests that the shape of the yield curve reflects the expectation of future interest rates. Hence, if the yield curve becomes steeper, this would indicate that interest rates are likely to rise, whereas if the yield curve becomes less steep, this would indicate that interest rates are likely to decline.

In theory, the slope would not trend downwards even if the interest rates are expected to fall simply due to Liquidity Preference Theory.

Conclusion

The yield curve does not show a deep slope. This means that interest rates are expected to fall.

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