
Answers

1 (a) Benefits of own investment as opposed to licensing

Imoni Co may be able to benefit from setting up its own plant as opposed to licensing in a number of ways. Yilandwe wants to attract foreign investment and is willing to offer a number of financial concessions to foreign investors which may not be available to local companies. The company may be able to control the quality of the components more easily, and offer better and targeted training facilities if it has direct control of the labour resources. The company may also be able to maintain the confidentiality of its products, whereas assigning the assembly rights to another company may allow that company to imitate the products more easily. Investing internationally may provide opportunities for risk diversification, especially if Imoni Co's shareholders are not well-diversified internationally themselves. Finally, direct investment may provide Imoni Co with new opportunities in the future, such as follow-on options.

Drawbacks of own investment as opposed to licensing

Direct investment in a new plant will probably require higher, upfront costs from Imoni Co compared to licensing the assembly rights to a local manufacturer. It may be able to utilise these saved costs on other projects. Imoni Co will most likely be exposed to higher risks involved with international investment such as political risks, cultural risks and legal risks. With licensing these risks may be reduced somewhat. The licensee, because it would be a local company, may understand the operational systems of doing business in Yilandwe better. It will therefore be able to get off-the-ground quicker. Imoni Co, on the other hand, will need to become familiar with the local systems and culture, which may take time and make it less efficient initially. Similarly, investing directly in Yilandwe may mean that it costs Imoni Co more to train the staff and possibly require a steeper learning curve from them. However, the scenario does say that the country has a motivated and well-educated labour force and this may mitigate this issue somewhat.

(Note: Credit will be given for alternative, relevant suggestions)

(b) Report on the proposed assembly plant in Yilandwe

This report considers whether or not it would be beneficial for Imoni Co to set up a parts assembly plant in Yilandwe. It takes account of the financial projections, presented in detail in appendices 1 and 2, discusses the assumptions made in arriving at the projections and discusses other non-financial issues which should be considered. The report concludes by giving a reasoned recommendation on the acceptability of the project.

Assumptions made in producing the financial projections

It is assumed that all the estimates such as sales revenue, costs, royalties, initial investment costs, working capital, and costs of capital and inflation figures are accurate. There is considerable uncertainty surrounding the accuracy of these and a small change in them could change the forecasts of the project quite considerably. A number of projections using sensitivity and scenario analysis may aid in the decision making process.

It is assumed that no additional tax is payable in the USA for the profits made during the first two years of the project's life when the company will not pay tax in Yilandwe either. This is especially relevant to year 2 of the project.

No details are provided on whether or not the project ends after four years. This is an assumption which is made, but the project may last beyond four years and therefore may yield a positive net present value. Additionally, even if the project ceases after four years, no details are given about the sale of the land, buildings and machinery. The residual value of these non-current assets could have a considerable bearing on the outcome of the project.

It is assumed that the increase in the transfer price of the parts sent from the USA directly increases the contribution which Imoni Co earns from the transfer. This is probably not an unreasonable assumption. However, it is also assumed that the negotiations with Yilandwe's government will be successful with respect to increasing the transfer price and the royalty fee. Imoni Co needs to assess whether or not this assumption is realistic.

The basis for using a cost of capital of 12% is not clear and an explanation is not provided about whether or not this is an accurate or reasonable figure. The underpinning basis for how it is determined may need further investigation.

Although the scenario states that the project can start almost immediately, in reality this may not be possible and Imoni Co may need to factor in possible delays.

It is assumed that future exchange rates will reflect the differential in inflation rates between the respective countries. However, it is unlikely that the exchange rates will move fully in line with the inflation rate differentials.

Other risks and issues

Investing in Yilandwe may result in significant political risks. The scenario states that the current political party is not very popular in rural areas and that the population remains generally poor. Imoni Co needs to assess how likely it is that the government may change during the time it is operating in Yilandwe and the impact of the change. For example, a new government may renege on the current government's offers and/or bring in new restrictions. Imoni Co will need to decide what to do if this happens.

Imoni Co needs to assess the likelihood that it will be allowed to increase the transfer price of the parts and the royalty fee. Whilst it may be of the opinion that currently Yilandwe may be open to such suggestions, this may depend on the interest the government may get from other companies to invest in Yilandwe. It may consider that agreeing to such demands from Imoni Co may make it obligated to other companies as well.

The financial projections are prepared on the basis that positive cash flows from Yilandwe can be remitted back to the USA. Imoni Co needs to establish that this is indeed the case and that it is likely to continue in the future.

Imoni Co needs to be careful about its ethical stance and its values, and the impact on its reputation, given that a school is being closed in order to provide it with the production facilities needed. Whilst the government is funding some of the transport costs for the children, the disruption this will cause to the children and the fact that after six months the transport costs become the parents' responsibility, may have a large, negative impact on the company's image and may be contrary to the ethical values which the company holds. The possibility of alternative venues should be explored.

Imoni Co needs to take account of cultural risks associated with setting up a business in Yilandwe. The way of doing business in Yilandwe may be very different and the employees may need substantial training to adapt to Imoni Co's way of doing business. On the other hand, the fact that the population is well educated, motivated and keen may make this process easier to achieve.

Imoni Co also needs to consider fiscal and regulatory risks. The company will need to assess the likelihood of changes in tax rates, laws and regulations, and set up strategies to mitigate eventualities which can be predicted. In addition to these, Imoni Co should also consider and mitigate as far as possible, operational risks such as the quality of the components and maintenance of transport links.

Imoni Co should assess and value alternative real options which it may have. For example, it could consider whether licensing the production of the components to a local company may be more financially viable; it could consider alternative countries to Yilandwe, which may offer more benefits; it could consider whether the project can be abandoned if circumstances change against the company; entry into Yilandwe may provide Imoni Co with other business opportunities.

Recommendation

The result from the financial projections is that the project should be accepted because it results in a positive net present value. It is recommended that the financial projections should be considered in conjunction with the assumptions, the issues and risks, and the implications of these, before a final decision is made.

There is considerable scope for further investigation and analysis. It is recommended that sensitivity and scenario analysis be undertaken to take into consideration continuing the project beyond four years and so on. The value of any alternative real options should also be considered and incorporated into the decision.

Consideration must also be given to the issues, risks and factors beyond financial considerations, such as the impact on the ethical stance of the company and the impact on its image, if the school affected is closed to accommodate it.

Report compiled by:

Date:

Appendices

Appendix 1

(All amounts in YR, millions)

Year	0	1	2	3	4
Sales revenue (w2)		18,191	66,775	111,493	60,360
Parts costs (w2)		(5,188)	(19,060)	(31,832)	(17,225)
Variable costs (w2)		(2,921)	(10,720)	(17,901)	(9,693)
Fixed costs		(5,612)	(6,437)	(7,068)	(7,760)
Royalty fee (w3)		(4,324)	(4,813)	(5,130)	(5,468)
Tax allowable depreciation		(4,500)	(4,500)	(4,500)	(4,500)
Taxable profits/(loss)		(4,354)	21,245	45,062	15,714
Tax loss carried forward				(4,354)	
				40,708	
Taxation (40%)		0	0	(16,283)	(6,286)
Add back loss carried fwd				4,354	
Add back depreciation		4,500	4,500	4,500	4,500
Cash flows after tax		146	25,745	33,279	13,928
Working capital	(9,600)	(2,112)	(1,722)	(1,316)	14,750
Land, buildings and machinery	(39,000)				
Cash flows (YR, millions)	(48,600)	(1,966)	24,023	31,963	28,678

(All amounts in \$, 000s)

Year	0	1	2	3	4
Exchange rate	101.4	120.1	133.7	142.5	151.9
Remittable flows	(479,290)	(16,370)	179,678	224,302	188,795
Contribution (parts sales) (\$120 + inflation per unit)		18,540	61,108	95,723	48,622
Royalty (w3)		36,000	36,000	36,000	36,000
Tax on contribution and royalty (20%)		(10,908)	(19,422)	(26,345)	(16,924)
Cash flows	(479,290)	27,262	257,364	329,680	256,493
Discount factors (12%)	1	0.893	0.797	0.712	0.636
Present values	(479,290)	24,345	205,119	234,732	163,130

Net present value project before considering the impact of the lost contribution and redundancy is approximately \$148.0 million.

Lost contribution and redundancy cost

The lost contribution and redundancy costs are small compared to the net present value and would therefore have a minimal impact of reducing the net present value by \$0.1 million approximately.

(Note: Full credit will be given if the assumption is made that the amounts are in \$ 000s instead of \$.)

Appendix 2: Workings

W1: Unit prices and costs including inflation

Year	1	2	3	4
Selling price (€)	735	772	803	835
Parts (\$)	288	297	306	315
Variable costs (YR)	19,471	22,333	24,522	26,925

W2: Sales revenue and costs

In YR millions

Year	1	2	3	4
Sales revenue	150 x 735 x 165 = 18,191	480 x 772 x 180.2 = 66,775	730 x 803 x 190.2 = 111,493	360 x 835 x 200.8 = 60,360
Parts costs	150 x 288 x 120.1 = 5,188	480 x 297 x 133.7 = 19,060	730 x 306 x 142.5 = 31,832	360 x 315 x 151.9 = 17,225
Variable costs	150 x 19,471 = 2,921	480 x 22,333 = 10,720	730 x 24,522 = 17,901	360 x 26,925 = 9,693

W3: Royalty fee

\$20 million x 1.8 = \$36 million

This is then converted into YR at the YR/\$ rate for each year: 120.1, 133.7, 142.5 and 151.9 for years 1 to 4 respectively.

(Note: Credit will be given for alternative, relevant approaches to the calculations, and to the discussion of the assumptions, risks and issues)

- 2 (a) A dark pool network allows shares to be traded anonymously, away from public scrutiny. No information on the trade order is revealed prior to it taking place. The price and size of the order are only revealed once the trade has taken place. Two main reasons are given for dark pool networks: first they prevent the risk of other traders moving the share price up or down; and second they often result in reduced costs because trades normally take place at the mid-price between the bid and offer; and because broker-dealers try and use their own private pools, and thereby saving exchange fees.

Chawan Co's holding in Oden Co is 27 million shares out of a total of 600 million shares, or 4.5%. If Chawan Co sold such a large holding all at once, the price of Oden Co shares may fall temporarily and significantly, and Chawan Co may not receive the value based on the current price. By utilising a dark pool network, Chawan Co may be able to keep the price of the share largely intact, and possibly save transaction costs.

Although the criticism against dark pool systems is that they prevent market efficiency by not revealing bid-offer prices before the trade, proponents argue that in fact market efficiency is maintained because a large sale of shares will not move the price down artificially and temporarily.

(b) Ratio calculations

Focus on investor and profitability ratios

Oden Co	2012	2013	2014	2015
Operating profit/sales revenue		16.2%	15.2%	10.4%
Operating profit/capital employed		22.5%	20.4%	12.7%
Earnings per share		\$0.27	\$0.24	\$0.12
Price to earnings ratio		9.3	10.0	18.3
Gearing ratio (debt/(debt + equity))		37.6%	36.9%	37.1%
Interest cover (operating profit/finance costs)		9.5	7.5	3.5
Dividend yield	7.1%	7.2%	8.3%	6.8%

Travel and leisure (T&L) sector

Price to earnings ratio	11.9	12.2	13.0	13.8
Dividend yield	6.6%	6.6%	6.7%	6.4%

Other calculations

Oden Co, sales revenue annual growth rate average between 2013 and 2015 = $(1,185/1,342)^{1/2} - 1 = -6.0\%$.
Between 2014 and 2015 = $(1,185 - 1,335)/1,335 = -11.2\%$.

Oden Co, average financing cost

2013: $23/(365 + 88) = 5.1\%$
2014: $27/(368 + 90) = 5.9\%$
2015: $35/(360 + 98) = 7.6\%$

Share price changes

	2012–2013	2013–2014	2014–2015
Oden Co	19.0%	-4.0%	-8.3%
T&L sector	15.8%	-2.3%	12.1%

Oden Co			
Return to shareholders (RTS)	2013	2014	2015
Dividend yield	7.2%	8.3%	6.8%
Share price gain	19.0%	-4.0%	-8.3%
Total	26.2%	4.3%	-1.5%
Average: 9.7%			
Required return (based on capital asset pricing model (CAPM))	13.0%	13.6%	16.0%
Average: 14.2%			
T&L sector (RTS)	2013	2014	2015
Dividend yield	6.6%	6.7%	6.4%
Share price gain	15.8%	-2.3%	12.1%
Total	22.4%	4.4%	18.5%
Average: 15.1%			
Required return (based on CAPM)	12.4%	13.0%	13.6%
Average: 13.0%			

(Note: The averages for Oden Co, RTS and for the T&L sector, RTS are the simple averages of the three years: 2013 to 2015)

Discussion

The following discussion compares the performance of Oden Co over time, to the T&L sector and against expectations, in terms of it being a sound investment. It also considers the wider aspects which Chawan Co should take account of and the further information which the company should consider before coming to a final decision.

In terms of Oden Co's performance between 2013 and 2015, it is clear from the calculations above, that the company is experiencing considerable financial difficulties. Profit margins have fallen and so has the earnings per share (EPS). Whereas the amount of gearing appears fairly stable, the interest cover has deteriorated. The reason for this is that borrowing costs have increased from an average of 5.1% to an average of 7.6% over the three years. The share price has decreased over the three years as well and in the last year so has the dividend yield. This would indicate that the company is unable to maintain adequate returns for its investors (please also see below).

Although Oden Co has tried to maintain a dividend yield which is higher than the sector average, its price to earnings (PE) ratio has been lower than the sector average between 2013 and 2014. It does increase significantly in 2015, but this is because of the large fall in the EPS, rather than an increase in the share price. This could be an indication that there is less confidence in the future prospects of Oden Co, compared to the rest of the T&L sector. This is further corroborated by the higher dividend yield which may indicate that the company has fewer value-creating projects planned in the future. Finally, whereas the T&L sector's average share price seems to have recovered strongly in 2015, following a small fall in 2014, Oden Co's share price has not followed suit and the decline has gathered pace in 2015. It would seem that Oden Co is a poor performer within its sector.

This view is further strengthened by comparing the actual returns to the required returns based on the capital asset pricing model (CAPM). Both the company and the T&L sector produced returns exceeding the required return in 2013 and Oden Co experienced a similar decline to the sector in 2014. However, in 2015, the T&L sector appears to have recovered but Oden Co's performance has worsened. This has resulted in Oden Co's actual average returns being significantly below the required returns between 2012 and 2015.

Taking the above into account, the initial recommendation is for Chawan Co to dispose of its investment in Oden Co. However, there are three important caveats which should be considered before the final decision is made.

The first caveat is that Chawan Co should look at the balance of its portfolio of investments. A sale of \$58 million worth of equity shares within a portfolio total of \$360 million may cause the portfolio to become unbalanced, and for unsystematic risk to be introduced into the portfolio. Presumably, the purpose of maintaining a balanced portfolio is to virtually eliminate unsystematic risk by ensuring that it is well diversified. Chawan Co may want to re-invest the proceeds from the sale of Oden Co (if it decides to proceed with the disposal) in other equity shares within the same sector to ensure that the portfolio remains balanced and diversified.

The second caveat is that Chawan Co may want to look into the rumours of a takeover bid of Oden Co and assess how realistic it is that this will happen. If there is a realistic chance that such a bid may happen soon, Chawan Co may want to hold onto its investment in Oden Co for the present time. This is because takeover bids are made at a premium and the return to Chawan Co may increase if Oden Co is sold during the takeover.

The third caveat is that Chawan Co may want to consider Oden Co's future prospects. The calculations above are based on past performance between 2012 and 2015 and indicate an increasingly poor performance. However, the economy is beginning to recover, albeit slowly and erratically. Chawan Co may want to consider how well placed Oden Co is to take advantage of the improving conditions compared to other companies in the same industrial sector.

If Chawan Co decides that none of the caveats materially affect Oden Co's poor performance and position, then it should dispose of its investment in Oden Co.

- 3 (a) A management buy-out (MBO) involves the purchase of a business by the management team running that business. Hence, an MBO of Okazu Co would involve the takeover of that company from Bento Co by Okazu Co's current management team. However, a management buy-in (MBI) involves purchasing a business by a management team brought in from outside the business.

The benefits of a MBO relative to a MBI to Okazu Co are that the existing management is likely to have detailed knowledge of the business and its operations. Therefore they will not need to learn about the business and its operations in a way which a new external management team may need to. It is also possible that a MBO will cause less disruption and resistance from the employees when compared to a MBI. If Bento Co wants to continue doing business with the new company after it has been disposed of, it may find it easier to work with the management team which it is more familiar with. The internal management team may be more focused and have better knowledge of where costs can be reduced and sales revenue increased, in order to increase the overall value of the company.

The drawbacks of a MBO relative to a MBI to Okazu Co may be that the existing management may lack new ideas to rejuvenate the business. A new management team, through their skills and experience acquired elsewhere, may bring fresh ideas into the business. It may be that the external management team already has the requisite level of finance in place to move quickly and more decisively, whereas the existing management team may not have the financial arrangements in place yet. It is also possible that the management of Bento Co and Okazu Co have had disagreements in the past and the two teams may not be able to work together in the future if they need to. It may be that a MBI is the only way forward for Okazu Co to succeed in the future.

- (b) Annuity (8%, 4 years) = 3.312

Annuity payable per year on loan = $\$30,000,000 / 3.312 = \$9,057,971$

Interest payable on convertible loan, per year = $\$20,000,000 \times 6\% = \$1,200,000$

Annual interest on 8% bond

(All amounts in \$ 000s)

Year end	1	2	3	4
Opening loan balance	30,000	23,342	16,151	8,385
Interest at 8%	2,400	1,867	1,292	671
Annuity	(9,058)	(9,058)	(9,058)	(9,058)
Closing loan balance	<u>23,342</u>	<u>16,151</u>	<u>8,385</u>	<u>(2)*</u>

*The loan outstanding in year 4 should be zero. The small negative figure is due to rounding.

Estimate of profit and retained earnings after MBO

(All amounts in \$ 000s)

Year end	1	2	3	4
Operating profit	13,542	15,032	16,686	18,521
Finance costs	<u>3,600</u>	<u>3,067</u>	<u>2,492</u>	<u>1,871</u>
Profit before tax	9,942	11,965	14,194	16,650
Taxation	<u>1,988</u>	<u>2,393</u>	<u>2,839</u>	<u>3,330</u>
Profit for the year	7,954	9,572	11,355	13,320
Dividends	<u>1,989</u>	<u>2,393</u>	<u>2,839</u>	<u>3,330</u>
Retained earnings	<u>5,965</u>	<u>7,179</u>	<u>8,516</u>	<u>9,990</u>

Estimate of gearing

(All amounts in \$ 000s)

Year end	1	2	3	4
Book value of equity	15,965 *	23,144	31,660	41,650
Book value of debt	43,342	36,151	28,385	20,000
Gearing	73%	61%	47%	32%
Covenant	75%	60%	50%	40%
Covenant breached?	No	Yes	No	No

*The book value of equity consists of the sum of the 5,000,000 equity shares which Dofu Co and Okazu Co's senior management will each invest in the new company (total 10,000,000), issued at their nominal value of \$1 each, and the retained earnings from year 1. In subsequent years the book value of equity is increased by the retained earnings from that year.

The gearing covenant is forecast to be breached in the second year only, and by a marginal amount. It is forecast to be met in all the other years. It is unlikely that Dofu Co will be too concerned about the covenant breach.

- (c) **Net asset valuation**

Based on the net asset valuation method, the value of the new company is approximately:

$1.3 \times \$40,800,000 + \$12,300,000 - \$7,900,000 \text{ approx.} = \$57,440,000$

Dividend valuation model

Year	Dividend (\$000s)	DF (12%)	PV (\$000s)
1	1,989	0.893	1,776
2	2,393	0.797	1,907
3	2,839	0.712	2,021
4	3,330	0.636	2,118
Total			<u>7,822</u>

Annual dividend growth rate, years 1 to 4 = $(3,330/1,989)^{1/3} - 1 = 18.7\%$

Annual dividend growth rate after year 4 = 7.5% [40% x 18.7%]

Value of dividends after year 4 = $(\$3,330,000 \times 1.075)/(0.12 - 0.075) \times 0.636 = \$50,594,000$ approximately

Based on the dividend valuation model, the value of new company is approximately:

$\$7,822,000 + \$50,594,000 = \$58,416,000$

The \$60 million asked for by Bento Co is higher than the current value of the new company's net assets and the value of the company based on the present value of future dividends based on the dividend valuation model. Although the future potential of the company represented by the dividend valuation model, rather than the current value of the assets, is probably a better estimate of the potential of the company, the price of \$60 million seems excessive.

Nevertheless, both the management team and Dofu Co are expected to receive substantial dividends during the first four years and Dofu Co's 8% bond loan will be repaid within four years.

Furthermore, the dividend valuation model can produce a large variation in results if the model's variables are changed by even a small amount. Therefore, the basis for estimating the variables should be examined carefully to judge their reasonableness, and sensitivity analysis applied to the model to demonstrate the impact of the changes in the variables. The value of the future potential of the new company should also be estimated using alternative valuation methods including free cash flows and price-earnings methods.

It is therefore recommended that the MBO should not be rejected at the outset but should be considered further. It is also recommended that the management team and Dofu Co try to negotiate the sale price with Bento Co.

(Note: Credit will be given for alternative, relevant discussion for parts (a) and (c))

4 (a) Borrowing period is 6 months (11 months – 5 months)

Current borrowing cost = $\$34,000,000 \times 6 \text{ months}/12 \text{ months} \times 4.3\% = \$731,000$

Borrowing cost if interest rates increase by 80 basis points (0.8%) = $\$34,000,000 \times 6/12 \times 5.1\% = \$867,000$

Additional cost = $\$136,000$ [$\$34,000,000 \times 6/12 \times 0.8\%$]

Using futures to hedge

Need to hedge against a rise in interest rates, therefore go short in the futures market.

Borrowing period is 6 months

No. of contracts needed = $\$34,000,000/\$1,000,000 \times 6 \text{ months}/3 \text{ months} = 68$ contracts.

Basis

Current price (on 1 June 2015) – futures price = total basis

$(100 - 3.6) - 95.84 = 0.56$

Unexpired basis (at beginning of November) = $2/7 \times 0.56 = 0.16$

Assume that interest rates increase by 0.8% (80 basis points) to 4.4%

Expected futures price = $100 - 4.4 - 0.16 = 95.44$

Gain on the futures market = $(95.84 - 95.44) \times \$25 \times 68 = \$68,000$

Net additional cost = $(\$136,000 - \$68,000) = \$68,000$

Using options on futures to hedge

Need to hedge against a rise in interest rates, therefore buy put options. As before, 68 put option contracts are needed ($\$34,000,000/\$1,000,000 \times 6 \text{ months}/3 \text{ months}$).

Assume that interest rates increase by 0.8% (80 basis points) to 4.4%

Exercise price	95.50	96.00
Futures price	95.44	95.44
Exercise ?	Yes	Yes
Gain in basis points	6	56
Gain on options		
6 x \$25 x 68	\$10,200	
56 x \$25 x 68		\$95,200
Premium		
30.4 x \$25 x 68	\$51,680	
50.8 x \$25 x 68		\$86,360
Option benefit/(cost)	\$(41,480)	\$8,840
Net additional cost		
(\$136,000 + \$41,480)	\$177,480	
(\$136,000 – \$8,840)		\$127,160

Using a collar on options to hedge

Buy put options at 95.50 for 0.304 and sell call at 96.00 for 0.223
 Net premium payable = 0.081

Assume that interest rates increase by 0.8% (80 basis points) to 4.4%

	Buy put	Sell call
Exercise price	95.50	96.00
Futures price	95.44	95.44
Exercise?*	Yes	No

(*The put option is exercised, since by exercising the option, the option holder has the right to sell the instrument at 95.50 instead of the market price of 95.44 and gain 6 basis points per contract. The call option is not exercised, since by not exercising the option, the option holder can buy the instrument at a lower market price of 95.44 instead of the higher option exercise price of 96.00)

Gain on options	
6 x \$25 x 68	\$10,200
Premium payable	
8.1 x \$25 x 68	\$13,770
Net cost of the collar	\$3,570
Net additional cost	
(\$136,000 + \$3,570)	\$139,570

Based on the assumption that interest rates increase by 80 basis points in the next five months, the futures hedge would lower the additional cost by the greatest amount and is significantly better than either of the options hedge or the collar hedge. In addition to this, futures fix the amount which Daikon Co is likely to pay, assuming that there is no basis risk. The benefits accruing from the options are lower, with the 95.50 option and the collar option actually increasing the overall cost. In each case, this is due to the high premium costs. However, if interest rates do not increase and actually reduce, then the options (and to some extent the collar) provide more flexibility because they do not have to be exercised when interest rates move in the company's favour. But the movement will need to be significant before the cost of the premium is covered.

On that basis, on balance, it is recommended that hedging using futures is the best choice as they will probably provide the most benefit to Daikon Co.

However, it is recommended that the points made in part (b) are also considered before a final conclusion is made.

(b) Mark-to-market: Daily settlements

2 June: 8 basis points (95.76 – 95.84) x \$25 x 50 contracts = \$10,000 loss

3 June: 10 basis points (95.66 – 95.76) x \$25 x 50 contracts + 5 basis points (95.61 – 95.66) x \$25 x 30 contracts = \$16,250 loss

[Alternatively: 15 basis points (95.61 – 95.76) x \$25 x 30 contracts + 10 basis points (95.66 – 95.76) x \$25 x 20 contracts = \$16,250 loss]

4 June: 8 basis points (95.74 – 95.66) x \$25 x 20 contracts = \$4,000 profit

Both mark-to-market and margins are used by markets to reduce (eliminate) the risk of non-payment by purchasers of the derivative products if prices move against them.

Mark-to-market closes all the open deals at the end of each day at that day's settlement price, and opens them again at the start of the following day. The notional profit or loss on the deals is then calculated and the margin account is adjusted accordingly on a daily basis. The impact on Daikon Co is that if losses are made, then the company may have to deposit extra funds with its broker if the margin account falls below the maintenance margin level. This may affect the company's ability to plan adequately and ensure it has enough funds for other activities. On the other hand, extra cash accruing from the notional profits can be withdrawn from the broker account if needed.

Each time a market-traded derivative product is opened, the purchaser needs to deposit a margin (initial margin) with the broker, which consists of funds to be kept with the broker while the position is open. As stated above, this amount may change daily and would affect Daikon Co's ability to plan for its cash requirements, but also open positions require that funds are tied up to support these positions and cannot be used for other purposes by the company.

The value of an option prior to expiry consists of time value, and may also consist of intrinsic value if the option is in-the-money. If an option is exercised prior to expiry, Daikon Co will only receive the intrinsic value attached to the option but not the time value. If the option is sold instead, whether it is in-the-money or out-of-the-money, Daikon Co will receive a higher value for it due to the time value. Unless options have other features, like dividends, attached to them, which are not reflected in the option value, they would not normally be exercised prior to expiry.

		<i>Marks</i>
1	(a) Benefits	2–3
	Drawbacks	2–3
	Max	<u>5</u>
(b)	(i) Sales revenue	3
	Parts costs	3
	Variable costs	2
	Fixed costs	1
	Royalty fee	1
	Tax payable in Yilandwe	3
	Working capital	2
	Remittable flows (\$)	1
	Contribution from parts (\$)	2
	Tax on parts' contribution and royalty	1
	Impact of lost contribution and redundancy	1
	NPV of project	1
		<u>21</u>
	(ii) Up to 2 marks per assumption discussed	Max 9
2–3 marks per issue/risk discussed	Max 11	
	Max <u>17</u>	
 Note: For (b)(ii), where points can be made either as assumptions or as issues, marks will be allocated to either area as relevant.		
(iii) Reasoned recommendation		<u>3</u>
 Professional marks for part (b)		
Report format		1
Structure and presentation of the report		3
		<u>4</u>
	Total	<u>50</u>
2	(a) Explanation of a dark pool network	3–4
	Explanation of why Chawan Co may want to use one	1–2
	Max	<u>5</u>
(b)	Profitability ratios	1–2
	Investor ratios	3–4
	Other ratios	1–2
	Trends and other calculations	3–4
		Max <u>10</u>
 Note: Maximum 7 marks if only ratio calculations provided		
Discussion of company performance over time		2–3
Discussion of company performance against competitors		2–3
Discussion of actual returns against expected returns		1–2
Discussion of need to maintain portfolio and alternative investments		1–2
Discussion of future trends and expectations		1–2
Discussion of takeover rumour and action as a result		1–2
Other relevant discussion/commentary		1–2
	Max	<u>10</u>
	Total	<u>25</u>

		<i>Marks</i>
3	(a) Distinguishing between an MBI and MBO	1–2
	Discussing the relative benefits and drawbacks between the two	3–4
	Max	<u>5</u>
(b)	Amount of annual annuity of 8% bond	1
	Annual split between interest and capital repayment of 8% bond	2
	Operating profit for first four years	1
	Finance costs	2
	Tax payable for the first four years	1
	Dividend payable for the first four years	1
	Book values of debt and of equity in years 1 to 4	2
	Gearing levels and concluding comment	2
		<u>12</u>
(c)	Company value based on net asset valuation method	1
	Company value based on the dividend valuation method	3
	Discussion (1 to 2 marks per point)	4
		<u>8</u>
	Total	<u>25</u>
4	(a) Additional interest cost	1
	Recommendation to go short if futures are used and purchase puts if options are used	1
	Calculation of number of contracts and remaining basis	2
	Futures contracts calculation	1
	Options contracts calculations	4
	Collar on options calculations	4
	Supporting comments and conclusion	2–3
		Max
(b)	Mark-to-market calculations (1 mark each for 2, 3 and 4 June)	3
	Impact of the daily mark-to-market	2–3
	Impact of the margin requirements	2–3
	Impact of the options sold instead of being exercised	2–3
	Max	<u>10</u>
Note: Maximum of 7 marks if no mark-to-market calculations provided		
	Total	<u>25</u>