
Answers

1 The case study could be answered in various ways. The points made below should, therefore, be regarded as indicative.

(a) Suggested price

This part should include a net present value (NPV) calculation. The price paid for the licence should not exceed the net present value of the future cash flows if the wealth of shareholders is to be kept intact.

The NPV calculations set out below rest on the following key assumptions:

1. The cost of each cell site will be AN\$225,000 (i.e. the middle of the range stated in the case study).
2. The offices and other buildings will be sold for AN\$850,000 (i.e. the middle of the range stated in the case study) and will be sold in the sixth year.
3. The market share of those in the income range AN\$50,000+ that is retained by Geryon plc is 40% (i.e. the most likely figure) in the final two years of the licence.
4. No investment in new technology will be required (i.e. the Technical Director's judgement is correct).
5. All international phone calls are made by customers in the income range AN\$50,000+.
6. There will be no benefits accruing after the five-year period of the licence.

	NPV calculations					
	2003	2004	2005	2006	2007	2008
	AN\$000's	AN\$000's	AN\$000's	AN\$000's	AN\$000's	AN\$000's
Rental charges	2,960·0	6,628·8	18,232·4	31,888·0	42,156·0	
Airtime charge	7,418·4	70,904·7	470,622·7	1,440,023·3	1,992,830·3	
	<u>10,378·4</u>	<u>77,533·5</u>	<u>488,855·1</u>	<u>1,471,911·3</u>	<u>2,034,986·3</u>	
Cell sites	(1,800·0)					
Phones	(22,200·0)	(49,716·0)	(136,743·0)	(239,160·0)	(316,170·0)	
Buildings	(950·0)					850·0
Marketing (10% sales)	(1,037·8)	(7,753·4)	(48,885·6)	(147,191·1)	(203,498·6)	
Variable costs (40% sales)	(4,151·4)	(31,013·4)	(195,542·0)	(588,764·5)	(813,994·5)	
Fixed costs	(2,000·0)	(4,100·0)	(12,800·0)	(23,000·0)	(30,800·0)	
Working capital	(830·3)	(5,372·4)	(32,905·7)	(78,644·5)	(45,046·0)	162,798·9
	<u>(32,969·5)</u>	<u>(97,955·2)</u>	<u>(426,876·3)</u>	<u>(1,076,760·1)</u>	<u>(1,409,509·1)</u>	<u>163,648·9</u>
Net cash flows	(22,591·1)	(20,421·7)	61,978·8	395,151·2	625,477·2	163,648·9
Disc. rate 12%	0·89	0·80	0·71	0·64	0·57	0·51
PV	(20,106·1)	(16,337·4)	44,004·9	252,896·8	356,522·0	83,460·9
NPV	<u>700,441·1</u>					

The NPV figure above represents the maximum amount that should be paid. Candidates may suggest a lower price supported by reasons. However, if the views of investment analysts are to be believed, a figure close to the NPV figure may have to be paid for the bid to stand a chance of success.

Workings

The workings necessary for the above NPV analysis will include the following:

1. The predicted population numbers falling within each income range are:

Population within each income range					
	2003	2004	2005	2006	2007
Income range (AN\$)					
50,000+	200,000	240,000	300,000	360,000	400,000
30,000 – 49,999	520,000	580,000	640,000	700,000	780,000
<30,000	1,280,000	1,180,000	1,060,000	940,000	820,000

2. The predicted population numbers owning a cellular telephone are:

Population owning a cellular telephone falling within each income range (000's)					
	2003	2004	2005	2006	2007
Income range (AN\$)					
50,000+	36,000 (18% x 200,000)	91,200 (38% x 240,000)	171,000 (57% x 300,000)	306,000 (85% x 360,000)	368,000 (92% x 400,000)
30,000 – 49,999	52,000 (10% x 520,000)	104,400 (18% x 580,000)	230,400 (36% x 640,000)	392,000 (56% x 700,000)	546,000 (70% x 780,000)
<30,000	102,400 (8% x 1,280,000)	141,600 (12% x 1,180,000)	265,000 (25% x 1,060,000)	376,000 (40% x 940,000)	410,000 (50% x 820,000)

3. The expected market share for the company is:

Expected market share (population 000's)					
	2003	2004	2005	2006	2007
	000's	000's	000's	000's	000's
Income range					
AN\$50,000+	7,200 (20% x 36,000)	31,920 (35% x 91,200)	94,050 (55% x 171,000)	183,600 (60% x 306,000)	220,800 (60% x 368,000)
AN\$30,000 – 49,999	15,600 (30% x 52,000)	41,760 (40% x 104,400)	149,760 (65% x 230,400)	294,000 (75% x 392,000)	464,100 (85% x 546,000)
<AN\$30,000	51,200 (50% x 102,400)	92,040 (65% x 141,600)	212,000 (80% x 265,000)	319,600 (85% x 376,000)	369,000 (90% x 410,000)

4. The cost of cellular telephones are:

2003	2004	2005	2006	2007
AN\$000's	AN\$000's	AN\$000's	AN\$000's	AN\$000's
22,200 [AN\$300 x (7,200 + 15,600 + 51,200)]	49,716.0 [AN\$300 x (31,920 + 41,760 + 92,040)]	136,743.0 [AN\$300 x (94,050 + 149,760 + 212,000)]	239,160 [AN\$300 x (183,600 + 294,000 + 319,600)]	316,170 [AN\$300 x (220,800 + 464,100 + 369,000)]

5. Fixed costs are calculated as follows:

2003	2004	2005	2006	2007
AN\$000's	AN\$000's	AN\$000's	AN\$000's	AN\$000's
2,000·0	4,100·0 [AN\$2,000 + (AN\$300 x 7)]	12,800·0 [AN\$2,000 + (AN\$300 x 36)]	23,000 [AN\$2,000 + (AN\$300 x 70)]	30,800 [AN\$2,000 + (AN\$300 x 96)]

6. Predicted airtime income is:

	2003	2004	2005	2006	2007
	AN\$000's	AN\$000's	AN\$000's	AN\$000's	AN\$000's
Income range					
AN\$50,000+ Local	2,462·4 (1,200 x 0·95 x 7,200 x AN\$0·30)	19,764·9 (2,400 x 0·86 x 31,920 x AN\$0·30)	127,249·7 (5,500 x 0·82 x 94,050 x AN\$0·30)	343,754·3 (7,900 x 0·79 x 183,600 x AN\$0·30)	423,339·8 (8,300 x 0·77 220,800 x AN\$0·30)
AN\$50,000+ International	1,080·0 (1,200 x 0·05 x 7,200 x AN\$2·50)	26,812·8 (2,400 x 0·14 x 31,920 x AN\$2·50)	232,773·8 (5,500 x 0·18 x 94,050 x AN\$2·50)	761,481·0 (7,900 x 0·21 x 183,600 x AN\$2·50)	1,053,768·0 (8,300 x 0·23 x 220,800 x AN\$2·50)
AN\$30,000 – 49,999	2,340·0 (500 x 15,600 x AN\$0·30)	11,901·6 (950 x 41,760 x AN\$0·30)	62,899·2 (1,400 x 149,760 x AN\$0·30)	229,320·0 (2,600 x 294,000 x AN\$0·30)	382,882·5 (2,750 x 464,100 x AN\$0·30)
<AN\$30,000	1,536·0 (100 x 51,200 x AN\$0·30)	12,425·4 (450 x 92,040 x AN\$0·30)	47,700 (750 x 212,000 x AN\$0·30)	105,468·0 (1,100 x 319,600 x AN\$0·30)	132,840·0 (1,200 x 369,000 x AN\$0·30)
Total	7,418·4	70,904·7	470,622·7	1,440,023·3	1,992,830·3

7. Predicted rental income:

	2003	2004	2005	2006	2007
	AN\$000's	AN\$000's	AN\$000's	AN\$000's	AN\$000's
Income range					
AN\$50,000+	288·0 (AN\$40 x 7,200)	1,276·8 (AN\$40 x 31,920)	3,762·0 (AN\$40 x 94,050)	7,344·0 (AN\$40 x 183,600)	8,832·0 (AN\$40 x 220,800)
AN\$30,000 – 49,999	624·0 (AN\$40 x 15,600)	1,670·4 (AN\$40 x 41,760)	5,990·4 (AN\$40 x 149,760)	11,760·0 (AN\$40 x 294,000)	18,564·0 (AN\$40 x 464,100)
AN\$ < 30,000	2,048·0 (AN\$40 x 51,200)	3,681·6 (AN\$40 x 92,040)	8,480·0 (AN\$40 x 212,000)	12,784·0 (AN\$40 x 319,600)	14,760·0 (AN\$40 x 369,000)
Total	2,960·0	6,628·8	18,232·4	31,888·0	42,156·0

8. Working capital investment:

	2003	2004	2005	2006	2007
	AN\$000's	AN\$000's	AN\$000's	AN\$000's	AN\$000's
Working capital requirement (8% sales)	(830·3)	(6,202·7)	(39,108·4)	(117,752·9)	(162,798·9)
Incremental investment	(830·3)	(5,372·4)	(32,905·7)	(78,644·5)	(45,046·0)

(b) Before a final decision is made, various factors should be taken into account including:

- The extent to which forecasts can be relied upon. (In particular, the extent to which figures have taken account of changes in technology).
- The level of risk associated with the venture, including the prospect that the Antaeus government will grant further network licences over the next five years.
- The likelihood of renewing the licence after the five-year period.
- The resource (human, financial, technological) implications of undertaking the project.
- Other options available to the company.

(c) Potential benefits of the joint bid include:

- The sharing of risk
- The sharing of the financing and operational costs
- Access to specialised knowledge about local conditions
- The possibility that a local partner will enhance the chances of a successful bid
- Reduction in potential competition for the bid

Some of the problems may include:

- The lack of technological and management know-how of the partner in the cellular market
- The quality of management of Antaeus Telephones Inc
- The poor image of the potential partner among the population
- The nurturing of a potential rival for a future licence bid
- The risk of disputes with the partner
- The sharing of profits
- Restrictions on the ability to make changes to earlier plans

Section 2 – Risk Management

- 2 (a) (i) Sumlin has not traded outside the UK and so has had no transaction or translation risks. But it is, like most firms, faced with economic risk – economic risk being the impact on the firm’s value caused by changes in the exchange rate making the firm more or less competitive. Within the UK market Sumlin is in competition with overseas suppliers and its relative competitive position can be altered by the strength of Sterling. When Sterling is high, other currencies being weak, overseas manufacturers will find that their cost base is lower than that of Sumlin and can quote more competitive prices thereby taking trade from Sumlin. When Sterling is low, Sumlin will be at an advantage in the UK markets compared to the overseas competitors.

It is also possible that Sumlin is at risk from the strength of a currency of a country which does not make sales within the UK. Consider country X which does not have any manufacturers which sell in the UK market and country Y which does sell in the UK markets and competes with Sumlin. If the exchange rate for country X changes to make the country more or less attractive to manufacturers in country Y, Sumlin may find that production from country Y is diverted to country X (and away from the UK) or from country X (and to the UK) – again this is likely to alter Sumlin’s competitive position.

- (ii) The long term expansion plans will involve Sumlin in additional risks of several different types – these include:

- 1 Foreign Exchange risks
- 2 Political risks
- 3 Cultural, Legal and Organisational risks.

Foreign Exchange Risks

Here Sumlin will for the first time be exposed to both transaction and translation risks as well as having changed exposure to economic risks.

Transaction risks will arise due to selling in overseas markets. This will not arise if all the Production Director’s views are made operational (see below) but if, as is likely, overseas sales are made in the currency of any of the importing countries there will be transaction exposure. Sales will be made in foreign currency but the Sterling value of the actual money received will depend upon the exchange rate – hence transaction risk.

Translation exposure will occur in the case of the Halamian subsidiary. The Halamian subsidiary will produce accounting statements denominated in Halamian Francs and this will result in translation exposure when these accounts are consolidated into Sumlin’s main accounts denominated in Sterling. It is likely that the Halamian subsidiary will also involve some transaction exposure when payments to or from Halamia are required to be paid.

With sales expected to made world wide the economic risks will increase. Sumlin will be exposed to a greater, and more direct, level of competition and so the economic risks are likely to change. With an overseas manufacturing facility some economic risks will be lower than would be the case if there were no such facility.

Transaction risks can be hedged. In some cases there may be a natural hedge – if two transactions result in both a cash inflow and a cash outflow in the same currency these can often be offset against each other. Where such a natural hedge does not exist then hedging can take place by use of forwards/futures or options according to the actual risks and the degree of protection/commitment required. If, for example, a sum of 10 million Euros is expected in three months time then these Euros can be sold forward, thereby fixing the actual receipts, or a Euro put option taken out giving the right, but not the obligation, to sell Euros at a specified price, thereby insuring against a fall in the value of the Euro but allowing advantage to be taken of any increase in its value. Sumlin will need to determine a strategy or policy concerning the hedging of transaction risks.

Translation risks can also be hedged. However there is debate about the importance of translation risk as it impacts only on accounting reports and not on reality. However if, for example, a firm has loan covenants which require it to keep its balance sheet ratios below a specified level of gearing then failure to hedge may result in a breach of the covenant. This could, in turn, lead to the loan being repayable immediately and in such circumstances hedging should be considered for this risk.

Managing economic risks requires a more strategic approach and can be attacked by attempting to match costs and revenues. Sumlin’s overseas subsidiary is a step towards such matching for the Halamian currency and those currencies closely aligned to the Halamian Franc. However it will not assist in dealing with economic risks stemming from the level of other currencies.

Political Risks

The main political risk will concern the subsidiary set up in Halamia. Issues to consider

- 1 Political and social stability.
- 2 Low tax regime. If this were to change what would be the impact on Sumlin's investment?
- 3 Exchange controls. Would a reintroduction make the investment unattractive?
- 4 Risks of expropriation of assets.

There is little that any individual firm can do about any inherent political or social instability. Exchange controls, if reintroduced, are normally more stringent on the payment of profits than they are with regard to the payment of expenses. By converting what would otherwise have been 'profit' into expenses it may allow payment to be made in spite of exchange controls – for example by entering into a licensing agreement with the subsidiary requiring it to pay for the right to manufacture Sumlin's products or by requiring a royalty fee for each unit manufactured. These methods may result in some of the benefits earned by the subsidiary being classified as costs and therefore less likely to be blocked by any exchange controls. However this would mean lower profits in Halamia to be taxed at the current lower tax rates. The approaches to managing these risks seem to pull in opposite directions.

Risks relating to the impact of expropriation of assets can be lowered by ensuring that the overseas subsidiary is financed by local borrowing.

Cultural, Legal and Organisational

These are the risks of entering into a new market in a new culture. Sumlin will need to learn the conventions concerning the way business is done in other countries and any differences in law between the UK and the countries in which it is now about to do business or undertake manufacturing.

This increase in its activities will also entail organisational and governance risks which Sumlin has never before experienced. Control of a sales force and/or a manufacturing unit at a great geographical distance will result in additional risks.

- (iii) The production director wishes to manufacture only within the UK and to price all export sales in Sterling.

By restricting manufacturing to only the UK will reduce all of the translation risks and also some of the other risks mentioned in (ii) above, but will not allow Sumlin to benefit from the advantages of setting up an overseas manufacturing facility. Such advantages could include a lower cost base, reduced transport costs, availability of materials and/or labour. The overseas subsidiary will also assist in managing economic risks – manufacturing only in the UK will not assist in this risk.

The suggestion of invoicing only in Sterling is superficially attractive as it would reduce transactions risk (but would do nothing for economic risk). It is normal that sales are made in the currency of the purchasing country – the sale of oil products being one of the exceptions as these are usually denominated throughout the world in US Dollars. By insisting on invoicing and payment in Sterling it is likely to make trading with Sumlin less attractive to many potential customers and therefore likely to reduce sales. Hence it is probably not commercially attractive.

- (b) (i) The non executive director is relying on the two currencies changing in a manner which is to Sumlin's advantage i.e. the Halamian Franc increasing in value and the US Dollar decreasing in value. He is advocating that, because of his views concerning the future levels of the currencies, no action needs to be taken to hedge currency risks. This will require the Halamian Francs and US Dollars to be transacted at the time of exchange at the spot rate existing at that time. As the spot rates are volatile and cannot be predicted with much accuracy this is a high risk approach. It is not to be recommended to the other members of the management team who would prefer certainty.

The forward rates indicate a likely increase in the value of the US Dollar and a decrease in the value of the Halamian Franc – this is in direct opposition to the views of the non executive director. While forward rates are not accurate predictors of future spot rates, the evidence of market expectations being contrary to the views of the director does not assist his argument.

The non executive director is also relying on the bid being accepted – this too is not predictable. However if the director were wrong concerning the bid being accepted AND his views on not hedging had been actioned, then Sumlin would be neither hedged nor required to pay US Dollars and the final result would not be to Sumlin's disadvantage. But if the bid were to be accepted then Sumlin would be committed to paying \$10.7 million and would be completely exposed to the then existing exchange rate. A highly risky position. With regard to the American bid an option contract is needed to cover the potential currency risk. Whereas with the Halamian contract the cash flow is known and so a method of fixing the exchange rate is needed i.e. a forward deal or a money market hedge.

(ii) Halamian Deal

Receiving 20 million Francs in 6 months' time.

Two approaches to determine the proceeds:

- 1 Sell forward 20 million HF at the forward rate of 5:39. This gives a Sterling sum of £3,710,575.14. This sum is fixed. The risks involved in this deal are failure of the counter party to honour the forward deal and failure of the Halamian government to pay on time.
- 2 Money Market. This would entail now borrowing an amount of Halamian Francs so that the liability, plus interest, would be met by the receipt of 20 million Francs in 6 months. Converting the Francs into Sterling and utilising the proceeds for 6 months.

The figures are

Borrow 20,000,000/(1 + .15/2) = 18,604,651.16 at 15% p.a. for 6 months.

This liability will grow to exactly 20 million in 6 months and will be paid off by the 20 million received from the Halamian government.

The Francs are converted to Sterling at the spot rate of 5.25. This gives a Sterling sum of £3,543,743.08. This can be deposited at 8% p.a. or used to reduce any overdraft at 10% p.a. In 6 months the benefit will be

at 8% £3,543,743.08 x (1 + .08/2) = £3,685,492.80

at 10% £3,543,743.08 x (1 + .10/2) = £3,720,930.23

If Sumlin is currently short of funds and is borrowing at 10% then the money market approach is best. If Sumlin is not short of funds and the proceeds of the money market would be deposited at 8% then the forward deal gives the best outcome.

American Bid

IF the bid is certain to succeed then a forward contract can be used to hedge the certain exposure. This will entail buying forward \$10,797,000 at the three month forward rate of \$1.5 = £1. This will give a cost of £7,198,000. However if there is any uncertainty about the bid being accepted then a forward hedge is not appropriate as a forward hedge commits Sumlin to purchasing dollars in three months – if the bid is not accepted the Dollars will not be needed and completion of the forward deal will leave Sumlin with Dollars which will need to be sold, for Sterling, at the unknown spot rate. This would increase risk.

If, as is likely, the outcome of the bid is not certain then Sumlin needs to cover the potential currency risks with an option. If the bid is successful Sumlin will need to buy Dollars – this means it will need to sell Sterling. Hence a put option is appropriate.

The figures for an exercise price of 1.4750 are:

Sterling Amount \$10,797,000 at 1.475 = £7,320,000

Cost \$0.0075 x £7,320,000 = \$54,900

In Sterling terms this is \$54,900/1.52 = £36,118.42 payable now. This cost can be financed at 8% if Sumlin has surplus funds or at 10% if it is operating on an overdraft. In 3 months this cost will amount to

8% £36,118.42 x (1 + .08/4) = £36,840.79

10% £36,118.42 x (1 + .10/4) = £37,021.38

If the bid fails then Sumlin will have lost only the option price.

If the bid is accepted then Sumlin will be free to utilise the spot market or exercise the option.

This will give a worst case cost of

Exercise \$10,797,000 at 1.475 = £7,320,000

Cost of option £36,840.79 or £37,021.38

Worst Case Total £7,356,840.79 or £7,357,021.38

The figures for all exercise prices are

	Sterling (£)	Costs (\$)	Spot Cost (£)	Cost in 3 Months	
				8%(£)	10%(£)
1.475	7,320,000	54,900	36,118	36,840	37,021
1.500	7,198,000	89,975	59,194	60,378	60,674
1.525	7,080,000	127,440	83,842	85,519	85,938

The worst case outcomes are:

	8%	10%	Initial Cost of Option
1.475	£7,356,841	£7,357,021	£36,118
1.500	£7,258,378	£7,258,674	£59,194
1.525	£7,165,519	£7,165,938	£83,842

The exercise price influences the cost of the option, which will be lost if the option is not exercised, and the level of protection if the option is exercised.