# Answers

**1 (a)** A reverse takeover enables a private, unlisted company, like Chrysos Co, to gain a listing on the stock exchange without needing to go through the process of an initial public offering (IPO). The private company merges with a listed 'shell' company. The private company initially purchases equity shares in the listed company and takes control of its board of directors. The listed company then issues new equity shares and these are exchanged for equity shares in the unlisted company, thereby the original private company's equity shares gain a listing on the stock exchange. Often the name of the listed company is also changed to that of the original unlisted company.

Advantages relative to an IPO

1. An IPO can take a long time, typically between one and two years, because it involves preparing a prospectus and creating an interest among potential investors. The equity shares need to be valued and the issue process needs to be administered. Since with the reverse takeover shares in the private company are exchanged for shares in the listed company and no new capital is being raised, the process can be completed much quicker.
2. An IPO is an expensive process and can cost between 3% and 5% of the capital being raised due to involvement of various parties, such as investment banks, law firms, etc, and the need to make the IPO attractive through issuing a prospectus and marketing the issue. A reverse takeover does not require such costs to be incurred and therefore is considerably cheaper.
3. In periods of economic downturn, recessions and periods of uncertainty, an IPO may not be successful. A lot of senior managerial time and effort will be spent, as well as expenditure, with nothing to show for it. On the other hand, a reverse takeover would not face this problem as it does not need external investors and it is not raising external finance, but is being used to gain from the potential benefits of going public by getting a listing.

Disadvantages relative to an IPO

1. The 'shell' listed company being used in the reverse takeover may have hidden liabilities and may be facing potential litigation, which may not be obvious at the outset. Proper and full due diligence is necessary before the process is started. A company undertaking an IPO would not face such difficulties.
2. The original shareholders of the listed company may want to sell their shares immediately after the reverse takeover process has taken place and this may affect the share price negatively. A lock-up period during which shares cannot be sold may be necessary to prevent this. [NB: An IPO may need a lock-up period as well, but this is not usually the case.]
3. The senior management of an unlisted company may not have the expertise and/or understanding of the rules and regulations which a listed company needs to comply with. The IPO process normally takes longer and is more involved, when compared to a reverse takeover. It also involves a greater involvement from external experts. These factors will provide the senior management involved in an IPO, with opportunities to develop the necessary expertise and knowledge of listing rules and regulations, which the reverse takeover process may not provide.
4. One of the main reasons for gaining a listing is to gain access to new investor capital. However, a smaller, private company which has become public through a reverse takeover may not obtain a sufficient analyst coverage and investor following, and it may have difficulty in raising new finance in future. A well-advertised IPO will probably not face these issues and find raising new funding to be easier.

**(b)** Report to the board of directors (BoD), Chrysos Co

This report provides extracts from the financial position and an estimate of the value of Chrysos Co after it has undertaken a restructuring programme. It also contains an explanation of the process used in estimating the value and of the assumptions made. Finally, the report discusses the impact of the restructuring programme on the company and on venture capital organisations.

It is recommended that the manufacturing business unit is unbundled through a management buy-out, rather than the assets being sold separately, and it is estimated that Chrysos Co will receive $3,289m from the unbundling of the manufacturing business unit (appendix one). This amount is recorded as a cash receipt in the extract of the financial position given below.

**Extract of Chrysos Co's financial position following the restructuring programme**

| | $m |
|---|---:|
| **Non-current assets** | |
| Land and buildings (80% x $7,500m) | 6,000 |
| Equipment ((80% x $5,400m) + $1,200m) | 5,520 |
| **Current assets** | |
| Inventory (80% x $1,800m) | 1,440 |
| Receivables (80% x $900m) | 720 |
| Cash ($3,289m + $400m – $1,200m – $1,050m) | 1,439 |
| **Total assets** | 15,119 |
| **Equity** | |
| Share capital ($1,800 + $600m) | 2,400 |
| Reserves ** | 10,319 |
| **Non-current liabilities** | |
| Bank loan | 1,800 |
| **Current liabilities** | |
| Payables (80% x $750m) | 600 |
| **Total equity and liabilities** | 15,119 |

** Balancing figure

**Estimate of Chrysos Co's equity value following the restructuring programme**
It is estimated that Chrysos Co's equity value after the restructuring programme has taken place will be just over $46 billion (appendix three).

**Process undertaken in determining Chrysos Co's equity value**
The corporate value is based on a growth rate of 4% on cash flows in perpetuity, which are discounted at Chrysos Co's cost of capital (appendix two). The cash flows are estimated by calculating the profit before depreciation and tax of the unbundled firm consisting of just the mining and shipping business unit and then deducting the depreciation and taxation amounts from this.

The bank loan debt is then deducted from the corporate value to estimate the value of the firm which is attributable to the equity holders (appendix three).

**Assumptions made in determining Chrysos Co's equity value**
It is assumed that Sidero Co's ungeared cost of equity is equivalent to Chrysos Co's ungeared cost of equity, given that they are both in the same industry and therefore face the same business risk. Modigliani and Miller's proposition 2 is used to estimate Chrysos Cos's restructured cost of equity and cost of capital.

It is assumed that deducting depreciation and tax from the profit before depreciation, interest and tax provides a reasonably accurate estimate of the free cash flows (appendix three). Other adjustments such as changes in working capital are reckoned to be immaterial and therefore not considered. Depreciation is not added back because it is assumed to be the same as the capital needed for reinvestment purposes.

It is assumed that the cash flows will grow in perpetuity. The assumption of growth in perpetuity may be over-optimistic and may give a higher than accurate estimate of Chrysos Co's equity value.

**(Note: Credit will be given for alternative and relevant assumptions)**

**Impact of the restructuring programme on Chrysos Co and on the venture capital organisations (VCOs)**

By acquiring an extra 600 million equity shares, the proportion of the VCOs' equity share capital will increase to 40% ((600m + 20% x 1,800)/(1,800 + 600)) from 20%. Therefore, the share of the equity value the VCOs will hold in Chrysos Co will increase by $9,229m, which is 77·5% more than the total of the value of bonds cancelled and extra payment made (appendix four). As long as the VCOs are satisfied that the equity value of Chrysos Co after the restructuring programme has been undertaken is accurate, the value of their investment has increased substantially. The VCOs may want undertake a feasibility study on the annual growth rate in cash flows of 4% and the assumption of growth in perpetuity. However, the extent of additional value created seems to indicate that the impact for the VCOs is positive.

By cancelling the VCOs' unsecured bonds and repaying the other debt in non-current liabilities, an opportunity has been created for Chrysos Co to raise extra debt finance for future projects. Based on a long-term capital structure ratio of 80% equity and 20% debt, and a corporate value of $47,944m (appendix three), this equates to just under $9,600m of possible debt finance which could be accessed. Since the bank loan has a current value of $1,800m, Chrysos Co could raise just under an extra $7,800m debt funding and it would also have $1,439 million in net cash available from the sale of the machinery parts manufacturing business unit.

Chrysos Co's current value has not been given and therefore it is not possible to determine the financial impact of the equity value after the restructuring has taken place on the company as a whole. Nevertheless, given that the company has access to an extra $7,800m debt funding to expand its investment into new value-creating projects, it is likely that the restructuring

programme will be beneficial. However, it is recommended that the company tries to determine its current equity value and compares this with the proposed new value. A concern may be that both the five senior equity holders' group and the 30 other equity holders group's proportion of equity shares will reduce to 30% from 40% each, as a result of the VCOs acquiring an additional 600 million shares. Both these shareholder groups need to be satisfied about the potential negative impact of these situations against the potential additional benefits accruing from the restructuring programme, before the company proceeds with the programme.

Conclusion
The restructuring programme creates an opportunity for Chrysos Co to have access to extra funding and additional cash for investment in projects in the future. The VCOs are likely to benefit financially from the restructuring programme as long as they are satisfied about the assumptions made when assessing the value created. However, Chrysos Co will need to ensure that all equity holder groups are satisfied with the change in their respective equity holdings.

**Report compiled by:**

**Date:**

**(Note: Credit will be given for alternative and relevant points)**

Appendices

**Appendix One: Unbundling the manufacturing business unit**

**Option 1: Sale of assets**

Net proceeds to Chrysos Co from net sale of assets of the manufacturing business unit are $3,102 million.

**Option 2: Management buy-out**

| | $m |
|---|---|
| Sales revenue (20% x $16,800m) | 3,360 |
| Operating costs (25% x 10,080m) | (2,520) |
| Profit before depreciation, interest and tax | 840 |
| Depreciation (12% x 20% x ($7,500m + $5,400m)) | (310) |
| | 530 |
| Tax (18% x $530m) | (95) |
| Cash flows | 435 |

Estimated value = ($435m x 1·08)/0·10 = $4,698m
Amount payable to Chrysos Co = 70% x $4,698m = $3,289m

The option to unbundle through a management buy-out (option 2) is marginally better for Chrysos Co and it will opt for this.

**Appendix Two: Calculation of cost of equity and cost of capital**

Chrysos Co, estimate of cost of equity (Ke) and cost of capital (CoC)
Ke = 12·46% + [0·82 x (12·46% – 4·5%) x (0·2/0·8)]
Ke = 14·09%

CoC = 0·8 x 14·09% + 0·2 x 4·5% x 0·82 = 12·01, say 12%

**Appendix Three: Estimate of value**

| | $m |
|---|---|
| Sales revenue (80% x $16,800m) | 13,440 |
| Costs prior to depreciation, interest and tax (75% x 10,080m) | (7,560) |
| Profit before depreciation and tax | 5,880 |
| Depreciation (12% x ($6,000m + $5,520m)) | (1,382) |
| | 4,498 |
| Tax (18% x $4,498m) | (810) |
| Cash flows | 3,688 |

Cost of capital to be used in estimating Chrysos Co's value is 12% (appendix two)
Estimated corporate value = ($3,688m x 1·04)/(0·12 – 0·04) = $47,944m
Estimated equity value = $47,944m – $1,800m = $46,144m

**(Note: It is also acceptable to calculate cash flows after interest payment and use the cost of equity to estimate the equity value based on cash flows to equity instead of cash flows to firm)**

**Appendix Four: Value created for VCOs**

Value attributable to the VCOs = 40% x $46,144m = $18,458m
Value from increased equity ownership (this has doubled from 20% to 40%)
50% x $18,458m = $9,229m

Value of unsecured bonds foregone by the VCOs = $4,800m
Additional capital invested by the VCOs = $400m
Total of additional capital invested and value of bonds forgone = $5,200m

Additional value = ($9,229m – $5,200m)/$5,200m = 77·5% (or $4,029m)

**(c)** As a private company, Chrysos Co is able to ensure that the needs of its primary stakeholder groups – finance providers, managers and employees – are taken into account through the supervisory board. The supervisory board has representatives from each of these groups and each group member has a voice on the board. Each stakeholder group should be able to present its position to the board through its representatives, and decisions will be made after agreement from all group representatives. In this way, no single stakeholder group holds primacy over any other group.

Once Chrysos Co is listed and raises new capital, it is likely that it will have a large and diverse range of equity shareholders, who will likely be holding equity shares in many other companies. Therefore there is likely to be pressure on Chrysos Co to engage in value creating activity aimed at keeping its share price buoyant and thereby satisfying the equity shareholders. It is, therefore, likely that the equity shareholders' needs will hold primacy over the other stakeholder groups and quite possibly the power of the supervisory board will diminish as a result of this.

**2 (a)** According to traditional finance theory, Bournelorth Co's directors will wish to strive for long-term shareholder wealth maximisation. The directors may not have been fully committed to long-term wealth maximisation, as they seemed to have focused on the development aspects which interested them most and left the original business mostly to others. However, now they are likely to come under pressure from the new external shareholders to maximise shareholder wealth and pay an acceptable level of dividend. To achieve this, it seems that Bournelorth Co will have to commit further large sums to investment in development of diagnostic applications (apps) in order to keep up with competitors.

**Selling off the IT services business**
At present the IT services business seems to be a reliable generator of significant profits. Selling it off would very likely produce a significant cash boost now, when needed. However, it would remove the safety net of reasonably certain income and mean that Bournelorth Co followed a much riskier business model. The IT services business also offers a possible gateway to reach customers who may be interested in the apps which Bournelorth Co develops.

**Rights issue**
If the executive directors wish to maintain their current percentage holdings, they would have to subscribe to 75% of the shares issued under the rights issue. Even though the shares would be issued at a discount, the directors might well not have the personal wealth available to subscribe fully. Previously they had to seek a listing to obtain enough funds for expansion, even though they were reluctant to bring in external investors, and this suggests their personal financial resources are limited.

However, the directors may need to take up the rights issue in order to ensure its success. If they do not, it may send out a message to external investors that the directors are unwilling to make a further commitment themselves because of the risks involved. There are also other factors which indicate that the rights issue may not be successful. The directors did not achieve the initial market price which they originally hoped for when Bournelorth Co was listed and shareholders may question the need for a rights issue soon after listing.

If the executive directors do not take up all of their rights, and the rights issue is still successful, this may have consequences for the operation of the business. The external shareholders would own a greater percentage of Bournelorth Co's equity share capital and may be in a position to reinforce the wishes of non-executive directors for improved governance and control systems and change of behaviour by the executive directors. Possibly they may also demand additional executive and non-executive directors, which would change the balance of power on the board.

The level of dividend demanded by shareholders may be less predictable than the interest on debt. One of the directors is also concerned whether the stock market is efficient or whether the share price may be subject to behavioural factors (discussed in (c) below).

**Debt finance**
Debt providers will demand Bournelorth Co commits to paying interest and ultimately repaying debt. This may worry the directors because of the significant uncertainties surrounding returns from new apps. Significant debt may have restrictive covenants built in, particularly if Bournelorth Co cannot provide much security. The directors may be faced with restrictions on dividends, for example, which may upset external shareholders.

Uncertainties surrounding funding may also influence directors' decisions. Loan finance may be difficult to obtain, but the amount and repayments would be fixed and could be budgeted, whereas the success of a rights issue is uncertain.

**(b) (i)** The main risks connected with development work are that time and resources are wasted on projects which do not generate sales or are not in line with corporate strategy. Directors may choose apps which interest them rather than apps which are best for the business. There is also the risk that projects do not deliver benefits, take too long or are too costly.

Bournelorth Co's directors' heavy involvement in development activities may have made it easier to monitor them. However, the dangers with this are that the directors focus too much on their own individual projects, do not consider their projects objectively and do not step back to consider the overall picture.

The board must decide on a clear strategy for investment in development and needs to approve major initiatives before they are undertaken. There must be proper planning and budgeting of all initiatives and a structured approach to development. The board must regularly review projects, comparing planned and actual expenditure and resource usage. The board must be prepared to halt projects which are unlikely to deliver benefits. One director should be given responsibility for monitoring overall development activity without being directly involved in any of the work. Post-completion reviews should be carried out when development projects have been completed.

**(ii)** Communication with shareholders and other important stakeholders, such as potential customers, may be problematic. Bournelorth Co faces the general corporate governance requirement of transparency and has to comply with the specific disclosure requirements of its local stock market.

However, governance best practice also acknowledges that companies need to be allowed to preserve commercial confidentiality if appropriate, and clearly it will be relevant for Bournelorth Co. However, the less that it discloses, the less information finance providers will have on which to base their decisions.

Another issue with disclosure is that product failures may be more visible now that Bournelorth Co has obtained a listing and may have to include a business review in its accounts.

**(c) (i)** Sewell defines behavioural finance as the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets. Behavioural finance suggests that individual decision-making is complex and will deviate from rational decision-making. Under rational decision-making, individual preferences will be clear and remain stable. Individuals will make choices with the aim of maximising utility, and adopt a rational approach for assessing outcomes.

Under behavioural finance, individuals may be more optimistic or conservative than appears to be warranted by rational analysis. They will try to simplify complex decisions and may make different decisions based on the same facts at different times.

**(ii)** Bournelorth Co's share price may be significantly influenced by the impact of behavioural factors, as it is a newly listed company operating in a sector where returns have traditionally been variable and unpredictable. The impact of behavioural factors may be complex, and they may exert both upward and downward pressures on Bournelorth Co's share price. Investors may, for example, compensate for not knowing much about Bournelorth Co by anchoring, which means using information which is irrelevant, but which they do have, to judge investment in Bournelorth Co.

The possibility of very high returns may add to the appeal of Bournelorth Co's shares. Some investors may want the opportunity of obtaining high returns even if it is not very likely that they will. The IT sector has also been subject to herd behaviour, notably in the dotcom boom. The herd effect is when a large number of investors have taken the same decision, for example to invest in a particular sector, and this influences others to conform and take the same decision.

However, even if Bournelorth Co produces high returns for some time, the fact that it is in a volatile sector may lead to investors selling shares before it appears to be warranted on the evidence, on the grounds that by the laws of chance Bournelorth Co will make a loss eventually (known as the gambler's fallacy).

Under behavioural finance, the possible volatility of Bournelorth Co's results may lead to downward pressure on its share price for various reasons. First some investors have regret aversion, a general bias against making a loss anyway. This, it is claimed, means that the level of returns on equity is rather higher than the returns on debt than is warranted by a rational view of the risk of equity.

Similarly under prospect theory, investors are more likely to choose a net outcome which consists entirely of small gains, rather than an identical net outcome which consists of a combination of larger gains and some losses. At present also, Bournelorth Co does not have much of a history of results for the market to analyse. Even when it has been listed for some time, however, another aspect of behavioural finance is investors placing excessive weight on the most recent results.

If the market reacts very well or badly to news about Bournelorth Co, the large rise or fall in the share price which results may also not be sustainable, but may revert back over time.

**3 (a)** The currency swap will involve Buryecs Co taking out a loan in € and making an arrangement with a counterparty in Wirtonia, which takes out a loan in $. Buryecs Co will pay the interest on the counterparty's loan and vice versa.

**Advantages**

Payment of interest in $ can be used to match the income Buryecs Co will receive from the rail franchise, reducing foreign exchange risk.

Buryecs Co will be able to obtain the swap for the amount it requires and may be able to reverse the swap by exchanging with the other counterparty. Other methods of hedging risk may be less certain. The cost of a swap may also be cheaper than other methods of hedging, such as options.

The swap can be used to change Buryecs Co's debt profile if it is weighted towards fixed-rate debt and its directors want a greater proportion of floating rate debt, to diversify risk and take advantage of probable lower future interest rates.

**Drawbacks**
The counterparty may default. This would leave Buryecs Co liable to pay interest on the loan in its currency. The risk of default can be reduced by obtaining a bank guarantee for the counterparty.

The swap may not be a worthwhile means of hedging currency risk if the exchange rate is unpredictable. If it is assumed that exchange rates are largely determined by inflation rates, the predicted inflation rate in Wirtonia is not stable, making it more difficult to predict future exchange rates confidently. If the movement in the exchange rate is not as expected, it may turn out to have been better for Buryecs Co not to have hedged.

Buryecs Co is swapping a fixed rate commitment in the Eurozone for a floating rate in Wirtonia. Inflation is increasing in Wirtonia and there is a risk that interest rates will increase as a result, increasing Buryecs Co's finance costs.

The swap does not hedge the whole amount of the receipt in Year 3. Another method will have to be used to hedge the additional receipt from the government in Year 3 and the receipts in the intervening years.

If the government decides to impose exchange controls in Wirtonia, Buryecs Co may not be able to realise the receipt at the end of Year 3, but will still have to fulfil the swap contract.

**(b) (i)**

| | **Buryecs Co** | **Counterparty** | **Interest rate benefit** |
|---|---|---|---|
| Eurozone | 4·0% | 5·8% | 1·8% |
| Wirtonia | Bank rate + 0·6% | Bank rate + 0·4% | 0·2% |
| Gain on swap (60:40) | 1·2% | 0·8% | 2·0% |
| Bank fee (60:40) | (0·3%) | (0·2%) | (0·5%) |
| Gain on swap after bank fee | 0·9% | 0·6% | 1·5% |

The swap arrangement will work as follows:

| | **Buryecs Co** | **Counterparty** |
|---|---|---|
| Buryecs Co borrows at | 4·0% | |
| Counterparty borrows at | | Bank rate + 0·4% |
| Swap | | |
| Counterparty receives | | (Bank rate) |
| Buryecs Co pays | Bank rate | |
| Counterparty pays | | 4·6% |
| Buryecs Co receives | (4·6%) | |
| Advantage | 120 basis points | 80 basis points |
| Net result | Bank rate – 0·6% | 5·0% |

After paying the 30 point basis fee, Buryecs Co will effectively pay interest at the bank rate – 0·3% and benefit by 90 basis points or 0·9%. The counterparty will effectively pay interest at 5·2% and benefit by 60 basis points or 0·6%.

**(ii)** Using the purchasing power parity formula to calculate exchange rates:

$S_1 = S_0 \times (1 + h_c)/(1 + h_b)$

| **Year** | **1** | **2** | **3** |
|---|---|---|---|
| | 0·1430 x 1·06/1·03 = 0·1472 | 0·1472 x 1·04/1·08 = 0·1417 | 0·1417 x 1·03/1·11 = 0·1315 |

At Year 3, $5,000 million will be exchanged at the original spot rate as per the agreement and the remaining inflows will be exchanged at the Year 3 rate.

| | **0** | **1** | **2** | **3** |
|---|---|---|---|---|
| | **$m** | **$m** | **$m** | **$m** |
| Initial fee | (5,000) | | | |
| Payment at end of franchise | | | | 7,500 |
| Annual income | | 600 | 600 | 600 |
| Year 0 Exchange rate | 0·1430 | | | |
| Years 1–3 Exchange rates | | 0·1472 | 0·1417 | 0·1315 |
| | **€m** | **€m** | **€m** | **€m** |
| Swap translated at 0·1430 | (715) | | | 715 |
| Amount not covered by swap (7,500 – 5,000) translated at 0·1315 | | | | 329 |
| Annual income | | 88 | 85 | 79 |
| Cash flows in home country | (715) | 88 | 85 | 1,123 |
| Discount factor 14% | 1·000 | 0·877 | 0·769 | 0·675 |
| Present value | (715) | 77 | 65 | 758 |

The net present value of the project is €185 million, indicating that it should go ahead. However, the value is dependent on the exchange rate, which is worsening for the foreign income. If there are also uncertainties about the variability of returns during the three years, the directors may consider the project to be in excess of their risk appetite and decline the opportunity.

As a result of the exchange rates on the initial fee being fixed at the year 0 spot rate, Buryecs Co has gained $5,000 million x (0·1430 – 0·1315) x 0·675 = €39 million.

**(c)** Receipt using swap arrangement = €715m + €329m = €1,044m

Receipt if transaction unhedged = $7,500m x 0·1315 = €986m

Predicted exchange rate at year 3 is €0·1315 = $1 or $7·6046 = €1

**Options**

Buy $ put options as receiving $.

**$7·75 exercise price**

Do not exercise
Net receipt = €986m – (1·6% x $7,500m x 0·1430) = €969m

**$7·25 exercise price**

Exercise
Receipt from government = $7,500m/7·25 = €1,034m
Net receipt = €1,034m – (2·7% x $7,500m x 0·1430) = €1,005m

The $7·25 option gives a better result than not hedging, given the current expectations of the exchange rate. However, it gives a worse result than the swap even before the premium is deducted, because of the exchange rate being fixed on the swap back of the original amount paid. These calculations do not take into account possible variability of the finance costs associated with the swap, caused by swapping into floating rate borrowing.

**4 (a)** The government yield curve can be estimated from the data available:

Bond 1: $\$104 = \$109/(1 + r_1)$
$r_1 = (\$109/\$104) – 1 = 4·81\%$

Bond 2: $\$102 = \$7/1·0481 + \$107/(1 + r_2)^2$
$r_2 = [107/(102 – 6·68)]^{1/2} – 1 = 5·95\%$

Bond 3: $\$98 = \$6/1·0481 + \$6/1·0595^2 + \$106/(1 + r_3)^3$
$r_3 = [106/(98 – 5·72 – 5·35)]^{1/3} – 1 = 6·83\%$

| Year | Govt yield curve % | Spread old rating % | Toltuck Co spot old rating % | Spread new rating % | Toltuck Co spot new rating % |
|---|---|---|---|---|---|
| 1 | 4·81 | 0·18 | 4·99 | 0·54 | 5·35 |
| 2 | 5·95 | 0·31 | 6·26 | 0·69 | 6·64 |
| 3 | 6·83 | 0·45 | 7·28 | 0·86 | 7·69 |

**Valuation of bond under old credit rating**

| Year | Payment $ | Discount factor | Discounted cash flow $ |
|---|---|---|---|
| 1 | 8 | 1/1·0499 | 7·62 |
| 2 | 8 | $1/1·0626^2$ | 7·09 |
| 3 | 110 | $1/1·0728^3$ | 89·09 |
| Bond valuation | | | 103·80 |

**Valuation of bond under new credit rating**

| Year | Payment $ | Discount factor | Discounted cash flow $ |
|---|---|---|---|
| 1 | 8 | 1/1·0535 | 7·59 |
| 2 | 8 | $1/1·0664^2$ | 7·03 |
| 3 | 110 | $1/1·0769^3$ | 88·08 |
| Bond valuation | | | 102·70 |

**Yield to maturity under old credit rating**

| Year | Payment | Discount factor | Discounted cash flow | Discount factor | Discounted cash flow |
|---|---|---|---|---|---|
| | $ | 8% | $ | 7% | $ |
| 0 | (103·80) | 1·000 | (103·80) | 1·000 | (103·80) |
| 1–3 | 8·00 | 2·577 | 20·62 | 2·624 | 20·99 |
| 3 | 102·00 | 0·794 | 80·99 | 0·816 | 83·23 |
| | | | (2·19) | | 0·42 |

Using IRR approach, yield to maturity = 7 + ((0·42/(2·19 + 0·42)) x (8 – 7)) = 7·16%

**Yield to maturity under new credit rating**

| Year | Payment | Discount factor | Discounted cash flow | Discount factor | Discounted cash flow |
|---|---|---|---|---|---|
| | $ | 8% | $ | 7% | $ |
| 0 | (102·70) | 1·000 | (102·70) | 1·000 | (102·70) |
| 1–3 | 8·00 | 2·577 | 20·62 | 2·624 | 20·99 |
| 3 | 102·00 | 0·794 | 80·99 | 0·816 | 83·23 |
| | | | (1·09) | | 1·52 |

Using IRR approach, yield to maturity = 7 + ((1·52/(1·09 + 1·52)) x (8 – 7)) = 7·58%

Market value of $100 bond has fallen by $1·10 and the yield to maturity has risen by 0·42%.

**(b)** The credit agency will have taken the following criteria into consideration when assessing Toltuck C's credit rating:

Country

Toltuck Co's debt would not normally be rated higher than the credit ratings of its country of origin, Arumland. Therefore the credit rating of Arumland should normally be at least AA. The rating will also have depended on Toltuck Co's standing relative to other companies in Arumland. The credit agency may have reckoned that Toltuck Co's recent poor results have weakened its position.

Industry

The credit agency will have taken account of the impact of the recession on property construction companies generally in Arumland. Toltuck Co's position within the industry compared with competitors will also have been assessed. If similar recent developments by competitors have been more successful, this is likely to have had an adverse impact on Toltuck Co's rating.

Management

The credit agency will have made an overall assessment of management and succession planning at Toltuck Co. It will have looked at business and financing strategies and planning and controls. It will also have assessed how successful the management has been in terms of delivering financial results. The credit agency may have believed the poor returns on recent developments show shortcomings in management decision-making processes and it may have rated the current management team poorly.

Financial

The credit agency will have analysed financial results, using measures such as return on capital employed. The agency will also have assessed possible sources of future earnings growth. It may have been sceptical about prospects, certainly for the short term, given Toltuck Co's recent problems.

The credit agency will also have assessed the financial position of Toltuck Co, looking at its gearing and working capital management, and considering whether Toltuck Co has enough cash to finance its needs. The agency will also have looked at Toltuck Co's relationship with its bankers and its debt covenants, to assess how flexible its sources of finances are if it comes under stress. It may well have been worried about Toltuck Co's gearing being higher than the industry average and concerned about the high levels of cash it needs to finance operations. It will also have assessed returns on developments-in-progress compared with commitments to repay loans. Greater doubt about Toltuck Co's ability to meet its commitments is likely to have been a significant factor in the fall in its rating.

The agency will also have needed reassurance about the quality of the financial information it was using, so it will have looked at the audit report and accounting policies.

**(c)** Toltuck Co may not have increased problems raising debt finance if debtholders do not react in the same way as the credit rating agency. They may attach different weightings to the criteria which they use. They may also come to different judgements about the quality of management and financial stability. Debtholders may believe that the recent problems Toltuck Co has had generating returns may be due more to external factors which its management could not have controlled.

However, it is probable that the fall in Toltuck Co's credit rating will result in it having more difficulty raising debt finance. Banks may be less willing to provide loans and investors less willing to subscribe for bonds. Even if debt finance is available, it may come with covenants restricting further debt or gearing levels. This will mean that if Toltuck Co requires substantial

additional finance, it is more likely to have to make a rights issue or issue new equity on the stock market. Shareholders may be faced with the choice of subscribing large amounts for new capital or having their influence diluted. This may particularly worry the more cautious shareholders.

Even if Toltuck Co can obtain the debt it needs, the predicted increase in yield to maturity may be matched by debtholders demanding a higher coupon rate on debt. This will increase finance costs, and decrease profits and earnings per share, with a possible impact on share price. It will also mean that fewer funds are available for paying dividends. Toltuck Co has been faced with difficult decisions on balancing investment expenditure versus paying dividends and these difficulties may well increase.

Additional debt may have other restrictive covenants. They may restrict Toltuck Co's buying and selling of assets, or its investment strategy. Restrictions on Toltuck Co's decisions about the developments it undertakes may impact adversely on shareholder returns.

Loan finance or bonds will also come with repayment covenants. These may require Toltuck Co to build up a fund over time which will be enough to redeem the debt at the end of its life. Given uncertainties over cash flows, this commitment to retain cash may make it more difficult to undertake major developments or pay an acceptable level of dividend.

The fall in Toltuck Co's credit rating may result in its cost of equity rising as well as its cost of debt. In turn, Toltuck Co's weighted average cost of capital will rise. This will affect its investment choices and hence its ability to generate wealth for shareholders. It may result in Toltuck Co prioritising developments offering better short-term returns. This may suit the more cautious shareholders, but the current majority may worry that Toltuck Co will have to turn down opportunities which offer the possibility of high returns.

| | | | | | *Marks* |
|---|---|---|---|---|---|
| **1** | **(a)** | | Explanation of what a reverse takeover involves | | 2 |
| | | | Advantages (up to 2 marks per well explained advantage) | Max | 4 |
| | | | Disadvantages (up to 2 marks per well explained disadvantage) | Max | 4 |
| | | | | **Max** | **9** |
| | **(b)** | **(i)** | Extract of financial position after restructuring programme | | 5 |
| | | | **Appendix One** | | |
| | | | Manufacturing business unit unbundled through an MBO | | |
| | | | Estimate of cash flows | | 3 |
| | | | Estimate of amount payable to Chrysos Co | | 2 |
| | | | Selection of higher value unbundling option | | 1 |
| | | | **Appendix Two** | | |
| | | | Chrysos Co, cost of equity | | 1 |
| | | | Chrysos Co, cost of capital | | 1 |
| | | | **Appendix Three** | | |
| | | | Estimate of cash flows | | 3 |
| | | | Estimate of equity value | | 2 |
| | | | | | **18** |
| | | **(ii)** | Explanation of approach taken | | 1–2 |
| | | | Explanation of assumptions made (up to 2 marks per assumption) | | 3–4 |
| | | | | **Max** | **5** |
| | | **(iii)** | **Appendix Four** | | |
| | | | Value from increased ownership | | 1 |
| | | | Additional value | | 1 |
| | | | Discussion of restructuring programme on the VCOs | | 3–4 |
| | | | Discussion of restructuring programme on Chrysos Co | | 4–5 |
| | | | | **Max** | **10** |
| | | | **Professional marks for part (b)** | | |
| | | | Report format | | 1 |
| | | | Structure and presentation of the report | | 3 |
| | | | | | **4** |
| | **(c)** | | 1–2 marks per relevant point | **Max** | **4** |
| | | | | **Total** | **50** |

| | | | | | |
|---|---|---|---|---|---|
| **2** | **(a)** | | Shareholder wealth maximisation and need for further investment | | 1–2 |
| | | | Sell-off of IT services business | | 1–2 |
| | | | Rights issue | | 2–3 |
| | | | Debt finance | | 2–3 |
| | | | | **Max** | **8** |
| | **(b)** | **(i)** | Risks associated with investment in development | | up to 4 |
| | | | Controls over development | | up to 4 |
| | | | | **Max** | **6** |
| | | **(ii)** | 1 mark per point | | **3** |
| | **(c)** | **(i)** | Explanation that behavioural finance departs from rational decision-making | | **3** |
| | | **(ii)** | Impacts of behavioural factors on share price – Up to 2 marks per well-explained point | **Max** | **5** |
| | | | | **Total** | **25** |

| | | | | | Marks |
|---|---|---|---|---|---|
| **3** | **(a)** | Advantages | | | 2–3 |
| | | Disadvantages | | | 3–4 |
| | | **Limit marks for (a) to 3 marks in total if answer does not mention Buryecs Co's situation** | | Max | 6 |
| | **(b)** | **(i)** | Recognition that swap gives advantage | | 1 |
| | | | Swap mechanism | | 2 |
| | | | Net benefit after bank charges | | 1 |
| | | | | | 4 |
| | | **(ii)** | Exchange rates | | 2 |
| | | | Correct translation of amounts swapped | | 1 |
| | | | Correct translation of other amounts | | 1 |
| | | | Net present value | | 1 |
| | | | Gain in € from the swap of the initial fee amount | | 1 |
| | | | Comments | | 2–3 |
| | | | | | 8 |
| | **(c)** | Put option | | | 1 |
| | | $7·25 option calculations | | | 2 |
| | | $7·75 option calculations | | | 2 |
| | | Comments | | | 2–3 |
| | | | | | 7 |
| | | | | **Total** | **25** |
| **4** | **(a)** | Government yield curve | | | 2 |
| | | Toltuck Co spot-curve old and new | | | 2 |
| | | Bond valuation – old and new | | | 3 |
| | | Yield to maturity – old and new | | | 3 |
| | | | | | 10 |
| | **(b)** | Financial factors | | | 4 |
| | | Other factors | | | 4 |
| | | **Limit marks for (b) to 3 marks in total if answer does not mention Toltuck Co's position and performance** | | | 8 |
| | **(c)** | 1–2 marks per impact discussed | | Max | 7 |
| | | | | **Total** | **25** |