

91 Overview:

Over the year Smart plc has achieved a substantial increase in sales and in the return earned on equity. Dividends are up by over 40%, with the same level of dividend cover as last year. However, failure to find additional long term finance for this expansion has resulted in erosion of cash balances and a substantial overdraft. Urgent consideration needs to be given to appropriate sources of finance if the company is not to face a liquidity crisis.

Suggested solutions to questions 1 to 40

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Balance sheet as at 31 March 19X2

	£	£
Ordinary shares		150,000
General reserve		87,600
Profit and loss account		12,400
		<u>250,000</u>
Debentures		35,000
		<u>285,000</u>
	£	£
Fixed assets		195,000
Current assets		
Stock	50,000	
Debtors	80,000	
Cash	60,000	
	<u>190,000</u>	
Less current liabilities	<u>100,000</u>	
Net current assets		90,000
		<u>285,000</u>

Workings:

Fixed assets	$\frac{13}{11} \times 150,000$	=	195,000
Current assets	$\frac{12}{10} \times 90,000$	=	190,000
Cash + debtors	$\frac{14}{10} \times 100,000$	=	140,000
Therefore stock	$190,000 - 140,000$	=	50,000
Equity	$\frac{50}{30} \times 195,000$	=	250,000
Debtors	$\frac{250,000}{356} \times 40$	=	80,000

Note: This question requires confident use of ratios, and an understanding of reserve movements.

Question 37: Solution

Overview:

Over the year Smart plc has achieved a substantial increase in sales and in the return earned on equity. Dividends are up by over 40%, with the same level of dividend cover as last year. However, failure to find additional long term finance for this expansion has resulted in erosion of cash balances and a substantial overdraft. Urgent consideration needs to be given to appropriate sources of finance if the company is not to face a liquidity crisis.

Liquidity:

The danger of the company's liquidity position is shown both in the cash flow statement, with an outflow of £½ million in cash, and in the drop in the acid test from 1.9 to 1.1. Demands on liquidity have arisen from:

- a) Substantial new fixed asset investment.
- b) New working capital requirements arising from 20% expansion in sales.
- c) A relaxation of working capital control shown by the increase in both days stock and days debtors.
- d) The failure to seek any new long term finance, apart from minor asset disposals.

It would be interesting to know what relationship the company has with its bankers, and how long overdraft facilities can be expected to continue.

Gearing:

Gearing is up substantially, and because of the high level of short term borrowing must be regarded as representing increased risk. Shareholders have benefited from this high level of gearing, in that a 2% increase in return on total funds has been magnified to a 7% increase in return on equity.

Performance:

Improved performance has been achieved as a result of improved profits achieved on sales, and despite reduced levels of sales in relation to capital employed.

The improved profit on sales is largely attributable to improved profit margins achieved. Administration expenses have also fallen in relation to sales and this is not surprising, since we would expect a part of these costs to be fixed while sales have increased by 20%.

The decline in asset turnover is attributable both to the relaxation of working capital control, already discussed above, and a reduction in sales achieved in relation to the fixed asset investment. If the increase in fixed assets only took place part way through the year then we may see an improvement in the coming year.

Recommendations:

The company might usefully consider:

- a) Reviewing stock control and credit control.
- b) Considering how to replace the overdraft with more appropriate long term sources of finance.
- c) Consider some lower rate of increase in dividends paid.

Smart plc - Cash flow statement for the year ended 31 December 19X8

	£000	£000
Net cash inflow from operating activities (note 1)		313
Returns on investment and servicing of finance		
Dividend paid (105 - 150 - 150)	(105)	
Interest paid	(180)	(285)
Taxation (119 + 160 - 158)		(121)
Investing activities		
Property purchase	(200)	
Plant purchase	(220)	
Plant sale	10	(410)
Net cash outflow before financing		(503)
Decrease in cash		(503)

Note 1

Reconciliation of operating profit to operating cash flow

	£000	£000
Operating profit		440
Depreciation	100	
Loss on sale	10	
Stock increase	(108)	
Debtor increase	(299)	
Prepayment increase	(40)	
Creditor increase	20	
Accrual decrease	(10)	
		(327)
Net cash inflow from operations		313

Smart plc - key ratios

Acid test	$\frac{1,096}{969} = 1.1$	$\frac{837}{452} = 1.9$
Total liabilities = total assets	$\frac{1,769}{2,844} = 62\%$	$\frac{1,252}{2,177} = 58\%$
Sales increase	$\frac{5,694 - 4,745}{4,745} = 20\%$	
Days stock	$\frac{498 \times 365}{3,644} = 50$	$\frac{390 \times 365}{3,084} = 49$
Days debtors	$\frac{936 \times 365}{5,694} = 61$	$\frac{637 \times 365}{4,745} = 49$

Gearing (excl. D/D)

$$\frac{800}{800 + 1,075} = 42.6\%$$

$$\frac{800}{800 + 1,252} = 46.4\%$$

Gearing (incl. D/D)

$$\frac{800 + 423}{800 + 1,252 + 423} = 53.2\%$$

no change: 46.4%

Creditor turnover	$\frac{5,694}{138} = 41$	$\frac{4,745}{118} = 40$
Pre-tax return on equity	$\frac{460}{1,075} = 43\%$	$\frac{329}{925} = 36\%$
Pre-tax return on total funds	$\frac{640}{2,844} = 22.5\%$	$\frac{449}{2,177} = 20.6\%$
Net profit %	$\frac{640}{5,694} = 11.2\%$	$\frac{449}{4,745} = 9.5\%$
Asset turnover	$\frac{5,694}{2,844} = 2$	$\frac{4,745}{2,177} = 2.2$
Fixed asset turnover	$\frac{5,694}{1,250} = 4.5$	$\frac{4,745}{950} = 5$
Gross profit %	$\frac{2,050}{5,694} = 36\%$	$\frac{1,661}{4,745} = 35\%$
Distribution: Sales	$\frac{854}{5,694} = 15\%$	$\frac{712}{4,745} = 15\%$
Admin costs: Sales	$\frac{556}{5,694} = 9.8\%$	$\frac{500}{4,745} = 10.5\%$
Admin cost increase	$\frac{556 - 500}{500} = 11.2\%$	
Dividend cover	$\frac{300}{150} = 2$	$\frac{210}{105} = 2$

Question 38: Solution

Overview:

Both companies have improved their performance during 19X7. HG continues to be a very much more successful performer. Imp also shows some signs of heading towards liquidity problems.

Liquidity:

Both companies show declining liquidity in 19X7, outflows of cash and declining current ratios. This is more worrying for Imp because:

- a) Imp is placing an increasingly heavy reliance on trade credit compared to HG, as shown by the creditors turnover ratio.
- b) Imp has negative net cash balances, whereas HG's cash comfortably exceeds the overdraft. Moreover, as a substantially higher geared company we would expect Imp to have more problems in raising loan finance than HP.

Performance:

HG is clearly the stronger performer, earning more than twice as good a return on total assets. HG achieves both better asset turnover and a better

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1 Departmental overhead distribution summary:

Quarter ending 31 December, 19X3

Expense	Total	Base used	Production		Service	
			Machining	Assy.	Mtce.	Handling
	£		£	£	£	£
Indirect labour	80500	Actual	20000	8800	39700	12000
Supervision	6000	No. of employees	2000	3000	750	250
Canteen	7200	No. of employees	2400	3600	900	300
Rent and rates	25000	Floor area	12000	9000	3000	1000
Fuel and light	7500	Floor area	3600	2700	900	300
Other costs	5270	Actual	4230	420	300	320
Plant insurance	1880	Plant cost	1200	400	200	80
Plant depreciation	23250	% of cost	15000	6250	1250	750
	156600		60430	34170	47000	15000
Mtce. department		Tech. estimate	12690	29610	-47000	4700
						19700
Handling department		Tech. estimate	7880	11820		-19700
	£156600		£81000	£75600	-	-

2 Machine hour rate:

$$\frac{£81000}{6750 \text{ machine hours}} = £12 \text{ per machine hour}$$

$$\frac{£75600 \text{ hours}}{15120 \text{ direct labour hours}} = £5 \text{ per direct labour hour}$$

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[64.1]

b The layout described is generally regarded as a useful approach. Budgets are documents exclusively for the use of managers within the business. For this reason those managers can use whatever layout best suits their purpose and tastes. In fact, there is no legal requirement that budgets are prepared at all, let alone that they are prepared in any particular form.

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(1) Knowledge of the break even point is useful because it enables the management of the business to make some judgement about how close the planned level of activity to the point at which no profit will be made. This enable some assessment of riskiness to be made.

$$\text{Break-even point (b.e.p.)} = \frac{\text{Fixed costs}}{\text{Contribution}} = \frac{\text{Fixed costs}}{\text{selling price} - \text{variable costs}}$$

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Q3

Calculations of cash flows

Average annual revenue	= 0.6 x £70,000 + 0.4 x £40,000	=	£58,000
Average annual costs	= 0.6 x £55,000 + 0.4 x £30,000	=	£45,000
First year's costs		=	£55,000

(a) Return on capital employed

	£
Initial investment	
Legal costs	4,000
Machinery	40,000
Existing equipment	1,000
	<u>45,000</u>
Final book value	
Machinery	<u>5,000</u>
	£
Total depreciation (45,000 – 5,000)	40,000
Total production and labour costs (average)	
(9 x 45,000 + 55,000)	460,000
Total reallocated fixed costs	<u>50,000</u>
	<u>550,000</u>
Total revenue (average)	<u>580,000</u>
Total profit	<u>30,000</u>
Average annual profit	<u>3,000</u>

(i) $ROCE = \frac{3,000}{45,000} \times 100 = 6\frac{2}{3}\%$

(ii) $ROCE = \frac{3,000}{\frac{1}{2}(45,000 + 5,000)} \times 100 = 12\%$

(iii) $ROCE = \frac{30,000}{45,000} \times 100 = 66\frac{2}{3}\%$

FINANCIAL DECISIONS

(b) Payback

Payback is a measure based on relevant cash flows, which are as follows.

Time	Cash flow £	Narrative
0	(20,000)	First instalment on printing machinery
0	(2,000)	Opportunity cost of existing plant
1	(20,000)	Second instalment on printing machinery
1	(55,000)	First year's labour and production cost
2 – 10	13,000	Net cash inflows from project
10	5,000	Scrap proceeds of plant
11	58,000	Final year's revenue

Notes

- (1) The legal and academic research has already been done, and the cost of it is not saved if the project does not proceed. It is a sunk cost.
- (2) Fixed costs reallocated to the project are not cash flows.

The cash outflows at times 0 and 1 (total £97,000) are recouped at a rate of £13,000 per year and hence are repaid in 7.46 years

Since cash inflows start at time 2, payback is in 8.46 years or nine years if receipts are assumed to arise at year-ends.

(c) Net present value

Time	Cash flows £000	Discount factor @8%	Present value @8% £000	Discount factor @12%	Present value @12% £000
0	(22)	1	(22)	1	(22)
1	(75)	0.926	(69.45)	0.893	(66.975)
2 – 10	13	5.784 (W1)	75.192	4.757(W1)	61.841
10	5	0.463	2.315	0.322	1.61
11	58	0.429 (W2)	24.882	0.287 (W2)	16.646
			<u>10.939</u>		<u>(8.878)</u>

WORKINGS

- (1) $AF(2 - 10) = AF(1 - 10) - DF(1)$
 At 8% $AF(2 - 10) = 6.71 - 0.926 = 5.784$
 At 12% $AF(2 - 10) = 5.65 - 0.893 = 4.757$

- (2) $DF(11) = \frac{1}{(1+r)^{11}}$
 At 8% $DF(11) = \frac{1}{1.08^{11}} = 0.429$
 At 12% $DF(11) = \frac{1}{1.12^{11}} = 0.287$

FINANCIAL DECISIONS

(d) **Internal rate of return**

$$\text{NPV @ 8\%} = \text{£}10,939$$

Since this is positive the second "guess" is higher, reducing the effect of the later positive cash flows.

$$\text{Hence, NPV @ 12\%} = \text{£}(8,878)$$

The IRR must therefore be between 8% and 12%.

By interpolation,

$$\begin{aligned} \text{IRR} &= a + \frac{\text{NPV}_1}{\text{NPV}_1 - \text{NPV}_2} (b - a) \\ &= 8 + \frac{10,939}{10,939 - (-8,878)} \times (12 - 8) \\ &= 8 + 2.2 \\ &= 10.2\%, \text{ say } 10\%. \end{aligned}$$

(e) **Sensitivity**

(i) **Required rate of return**

As shown in part (d), the project has an IRR of 10% therefore the required rate of return can rise from 8% to 10% before the investment decision would change. This represents a rise of 2% or

$$\frac{2}{8} \times 100 = 25\%$$

(ii) **Sales revenue**

Present value of sales revenue is

$$\begin{aligned} &\text{AF}(2 - 11 @ 8\%) \times \text{£}58,000 \\ &= (5.784 + 0.429) \times \text{£}58,000 \\ &= \text{£}360,354 \end{aligned}$$

The percentage change in sales revenue required to change the decision is given by

$$\frac{10,939}{360,354} \times 100\% = 3.04\%$$

(iii) **Life of project**

If project were shortened by one year the NPV would fall by

$$\begin{aligned} &\text{DF}(11 @ 8\%) \times 58,000 - \text{DF}(10 @ 8\%) \times 45,000 \\ &= 0.429 \times 58,000 - 0.463 \times 45,000 \\ &= \text{£}4,047 \end{aligned}$$

FINANCIAL DECISIONS

Shorten the project by a further year and the NPV falls by

$$\begin{aligned} & DF(10 @ 8\%) \times 58,000 - DF(9 @ 8\%) \times 45,000 \\ &= 0.463 \times 58,000 - 0.500 \times 45,000 \\ &= \text{£}4,354 \end{aligned}$$

The NPV of the project is thus reduced to $10,939 - 4,047 - 4,354 = \text{£}2,538$

PV of cash flows of the eighth year are

$$\begin{aligned} & DF(9 @ 8\%) \times 58,000 - DF(8 @ 8\%) \times 45,000 \\ &= 0.50 \times 58,000 - 0.54 \times 45,000 \\ &= \text{£}4,700 \end{aligned}$$

This is sufficient to change the positive NPV (£2,538) into a negative and hence alter the initial decision to go ahead.

$$\text{Sensitivity} = \frac{3 \text{ yrs}}{10 \text{ yrs}} \text{ or } 30\%$$

Note The effect of receiving the sale proceeds of plant earlier is small and has been ignored.

(iv) Probabilities

PV of certain cash flows (initial costs, including production and labour cost for year 1 and sales proceeds of plant).

$$= -22 - 69.45 + 2.315 = -89.135$$

Let p = prob (high demand)
Then $1 - p$ = prob (low demand)

$$\begin{aligned} \text{NPV} &= -89.135 \\ &\quad + 5.784(p \times 15 + (1-p) \times 10) \\ &\quad + 0.429(p \times 70 + (1-p) \times 40) \\ &= -89.135 \\ &\quad + 5.784(5p + 10) \\ &\quad + 0.429(30p + 40) \\ &= -89.135 + 57.84 + 17.16 \\ &\quad + 28.92p + 12.87p \\ &= -14.135 + 41.79p \text{ (Check } -14.135 + 41.79 \times 0.6 = 10.939) \end{aligned}$$

The critical point is where this becomes zero.

$$\text{Hence } 41.79p - 14.135 = 0$$

$$p = \frac{14.135}{41.79} = 0.338$$

ie probability of high demand must fall from 0.6 to 0.338, or in percentage terms

$$\frac{0.6 - 0.338}{0.6} \times 100 = 43.7\%$$