

MANAGEMENT ACCOUNTING – FINANCIAL STRATEGY

Doug Haste reviews the difference between cash flows and profit flows and the treatment of taxation – two key problem areas for P9 candidates.

CIMA's recent review of students' performance in P9 exams has identified a number of problematic topics, revealing that many candidates find even some of the basic concepts hard to grasp. Two specific examples are the difference between cash flows and profit flows and the treatment of taxation in both income statements and net present value (NPV) calculations.

Exam questions often ask students to evaluate a potential investment using the NPV approach. This involves identifying cash flows and then discounting them back to a present value. Candidates may also be required to evaluate the same investment using return on capital employed or accounting rate of return. These are profit-based measures, so they require a forecast income statement.

Before any numbers are introduced, it is useful to review the key difference between a (profit-based) income statement forecast and a (cash-based) NPV analysis. Panel 1 lists the typical elements of an income statement

1 Typical income statement

Item	Note
Revenue	1
Costs (excluding depreciation)	1 and 2
Depreciation	3
Profit before interest and tax	
Finance costs	4
Profit before tax	
Tax	5
Profit after tax	

2 Profit forecast for CM

Investment 1	Year 1 (£)	Year 2 (£)	Year 3 (£)
Revenue	375,000	450,000	575,000
Production costs (excluding depreciation)	131,000	158,000	201,000
Depreciation	267,000	267,000	266,000
Profit/(loss) before tax	(23,000)	25,000	108,000

forecast. Note that its precise format is not an important issue in the P9 paper. Many of the items on this statement will not involve cash flows and so should not be included in an NPV analysis. The general issues that you're likely to encounter in the exam are referenced in the panel as the following notes:

- 1 Revenue and costs.** The revenue/costs invoiced in the year may not be the same as the cash received/paid in the year. If items are sold/bought on credit, there are likely to be receivables/payables outstanding at the end of the year. Despite this, the normal approach in NPV questions is to treat the invoiced sales/costs as cash and to adjust for any timing issues separately as working capital movements.
- 2 Overheads.** Costs may also contain apportioned overheads from head office. These are relevant for a profit analysis but should be stripped out of an NPV analysis if they are not cash flows.
- 3 Depreciation.** This is not a cash flow and should be excluded from an NPV analysis.
- 4 Finance costs.** These typically reflect the interest paid on debt finance. This would not normally be a relevant cash flow in an NPV analysis, because the cost of debt is part of the weighted-average cost of

capital that's used to discount the cash flows back to a present value.

- 5 Tax.** This is a cash flow, but if a question states that the timing of the tax payment is one year after the tax is due, this needs to be reflected in the NPV analysis. Depreciation is unlikely to be an expense that is allowable for tax.

Of course, an NPV doesn't only use items found on the income statement. Cash flows from capital items such as the initial outlay and any asset disposal values must be included, too.

Adjustments to working capital also need to be made.

The normal assumption here is that some working capital will be needed at the start of a project and that this is run down to zero by the end of it. The cash flow resulting from these working capital movements reflects the change in working capital levels.

Exam questions are likely to cover some, but not all, of the above issues. Let's take question 4 from the May 2008 paper as an example. (It originally required an evaluation of two investments, but for simplicity I have abridged it so that it covers only the first one.) A private entity called CM supplies equipment to the UK oil industry. It is evaluating a potential investment that would expand its operations in the UK. The profit forecast is in panel 2.

The extra information given is as follows:

- The capital expenditure required for the investment is £1.1m, with an expected residual value of £300,000 at the end of the third year.
- CM depreciates the estimated net cost of its assets (initial cost less estimated residual value) in a straight line over the life of the investment.



3 Tax depreciation

	£
Initial cost	1,100,000
Year 1 at 40%	<u>(440,000)</u>
	660,000
Year 2 at 40%	<u>(264,000)</u>
	<u>396,000</u>

- Tax depreciation is available on the equipment purchased for the investment at 40 per cent a year on the reducing-balance basis.
 - The corporate tax rate in the UK is 25 per cent. Tax would be refunded or paid at the end of the year in which the liability arises.
 - The investment would be financed by internal funds.
 - Assume that revenue and production costs excluding depreciation equal cash flows.
 - The cash flow forecasts are in nominal terms. The entity's real cost of capital is eight per cent and UK inflation is expected remain at a constant 2.75 per cent a year.
 - CM evaluates all of its investments over a three-year time horizon.
 - Cash flows are assumed to occur at the end of each year, except the initial capital cost, which is incurred in year zero.
 - CM's expected accounting return on investment is 15 per cent, which is calculated as average profits after tax as a percentage of average investment over the life of the assets.
- You are required to calculate:
- 1 The average annual accounting return (AAAR) on investment using average profit after tax and average investment over the life of the assets (nine marks).
 - 2 The NPV using an appropriate discount rate calculated from the information given in the scenario. You should round the calculated discount rate to the nearest whole number (nine marks).

Model solution

To calculate the tax due, we need to work out the tax depreciation – ie, the capital allowances (see panel 3). Over the three-year

4 Tax calculation

	Year 1 (£)	Year 2 (£)	Year 3 (£)
Revenue	375,000	450,000	575,000
Production costs	(131,000)	(158,000)	(201,000)
Tax depreciation	<u>(440,000)</u>	<u>(264,000)</u>	<u>(96,000)</u>
Taxable profit/(loss)	<u>(196,000)</u>	<u>28,000</u>	<u>278,000</u>
Corporation tax at 25%	49,000	(7,000)	(70,000)
Profit/(loss) before tax (given in panel 2)	<u>(23,000)</u>	<u>25,000</u>	<u>108,000</u>
Profit after tax	<u>26,000</u>	<u>18,000</u>	<u>38,000</u>

5 NPV calculation

	Year 0 (£)	Year 1 (£)	Year 2 (£)	Year 3 (£)
Capital expenditure	(1,100,000)			
Residual value				300,000
Revenue		375,000	450,000	575,000
Production costs		(131,000)	(158,000)	(201,000)
Corporation tax		<u>49,000</u>	<u>(7,000)</u>	<u>(70,000)</u>
Net cash flow	(1,100,000)	293,000	285,000	604,000
Discount factor at 11%	<u>1.000</u>	<u>0.901</u>	<u>0.812</u>	<u>0.731</u>
Present value	<u>(1,100,000)</u>	<u>264,000</u>	<u>231,000</u>	<u>442,000</u>

life of this asset we can assume that the total tax depreciation will be £800,000 (ie, the initial cost of £1.1m less the disposal value of £300,000). Having claimed £440,000 + £264,000 = £704,000 in the first two years, this means that the total depreciation in the final year is £800,000 – £704,000 = £96,000. We can now put this value into the tax calculation (see panel 4), which is used in both the profit and cash flow based analyses. (There is no need to adjust for timing issues on tax payments in this particular question.)

The average profit after tax over three years is: (£26,000 + £18,000 + £38,000) ÷ 3 = £27,300.

The average investment is: (£1,100,000 + £300,000) ÷ 2 = £700,000.

So, to answer question 1, the AAAR is: 27,300 ÷ 700,000 × 100 = 3.9 per cent.

To calculate the NPV, we are given the real (uninflated) cost of capital but are told that the cash flows are in nominal (inflated) terms.

This means we have to inflate the cost of capital so that it is also in nominal terms.

The nominal cost of capital is calculated as follows: 1 + nominal cost of capital = (1 + real cost of capital) × (1 + rate of inflation). In this case, that's (1 + 0.08) × (1 + 0.0275) = 1.1097, making the rounded-up nominal cost of capital 11 per cent. We can now use this discount rate to calculate the present values for each year (see panel 5).

So, to answer question 2, the NPV is: -£1,100,000 + £264,000 + £231,000 + £442,000 = -£163,000.

Once you've mastered the concepts I've covered here, I recommend that you read a feature by the examiner entitled "Principles of finance and financial management". This can be found at www.snipurl.com/b85zw, along with an archive of articles on other P9 topics.

Doug Haste is an education specialist at BPP Professional Education.