Balancing Act

Capital structuring and managing our organisation's cost of capital are essential treasury skills. Doug Williamson shares a powerful weighted averaging technique to improve the speed and transparency of this work

Calculating and explaining the cost of capital are fundamentally important parts of the treasurer's responsibilities. For this reason, they are regularly included in assessments for the ACT's qualifications.

Cost of capital

All companies are funded by equity capital and most also have debt. Each of these sources of capital has a cost, conventionally expressed as an annual percentage of its current market value.

Operating returns

The returns out of which our cost of capital has to be met or exceeded are the cash surpluses from our operations. Any projects or operations that don't achieve the cost of capital will destroy value.

So it is an essential practical skill to be able to calculate and explain cost of capital quickly and confidently, in order to evaluate new proposals and continuing operations.

Let's look at some examples.

Cost of equity

£3m of equity, costing a company 8% per annum, needs:

£3m x 8% = £0.24m per annum

This is the amount required by the equity investors.

The equity investors' expected annual shareholder return is the same percentage of 8%, on their investment of £3m:

£0.24m ÷ £3m = 8%

Cost of debt

£1m of debt, costing the company 4% per annum after tax relief, needs:

£1m x 4% = £0.4m per annum

The cost of debt is cheaper for the company, but debt is also a more risky source of capital for the borrower. Equity is less risky for the company, but more expensive.

Weighted average cost of capital

The average percentage cost of all sources of capital in combination is calculated as the company's weighted average cost of capital (WACC). For a listed company, WACC changes continuously, as market values fluctuate.

A simplistic averaging technique would be to add up each of the items, and divide by the total number of items. However, this is normally too limited to give an accurate enough answer for financial evaluations.

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Instead, we need a weighted averaging calculation. The best weightings to use are normally current market values. This technique of weighting by market values has many useful applications in finance, not only WACC calculations.

Essential calculations

Calculations are also vital to gaining the ACT's qualifications.

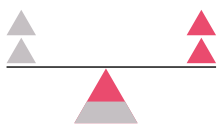
For example, the Certificate in Treasury Fundamentals (CertTF) assessment requires you to answer and get right a minimum of eight out of the 16 calculation questions included in every sitting, as well as reaching the total pass mark.

All equity (100%)

Let's start with a case where the proportion of equity funding is 100%, and the cost of equity is 8%, as before. The weighted average cost of capital is simply 8%, the same as the cost of equity.

This would normally be the most conservative, safe and flexible capital structure. The safety and flexibility enjoyed are being paid for by a relatively high WACC.

Equal weightings (50%)



Another simple case is where the proportions of debt (D) and equity (E) are exactly equal. In this case the WACC will be exactly halfway between the lower cost of debt and the higher cost of equity. This relationship is illustrated in the see-saw diagram (above).

We can also set out the calculation in a table.

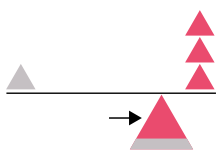
	Weighting	x Cost	= Weighted cost
D	2	4%	8%
+ E	2	8%	16%
= (D + E)	4		24%

WACC = Total weighted cost ÷ (D + E)
= 24% ÷ 4
= 6%

This is the weighted average when the weightings are equal. It is exactly halfway between 4% and 8%.

This company is enjoying a lower WACC, but it is a more risky and less flexible capital structure than all-equity.

Weighted toward equity (75%)



A more conservative compromise response would be to use a greater proportion of equity funding, perhaps 75%. Now the balancing point of our see-saw moves to the right. The weighted average moves closer to the equity cost of 8%.

	Weighting	x Cost	= Weighted cost
D	1	4%	4%
+ E	3	8%	24%
= (D + E)	4		28%

WACC = Total weighted cost ÷ (D + E)
= 28% ÷ 4
= 7%

Changing the balance of equity to debt, in the direction of more equity, has increased the weighted average cost of capital.

The WACC of 7% still lies in between the debt cost of 4% and the equity cost of 8%.

Make sense of your answers

Having an idea of the range of possible answers is always good practice. It also gives a diagnostic of errors in calculations. Another benefit is that it helps to communicate our correct results.

Explain and influence

Getting the correct answer to a calculation is only the first step in practical work. We need to be fully confident in explaining the rationale and implications of our figures to colleagues and stakeholders. Transparent workings with intermediate figures expressly set out, as in the tables in this article, will greatly assist with communicating results and sensitivities.

According to our research, inexperienced treasurers fall short in skills such as presentation and influencing.

The Contemporary Treasurer 2015

Practise, practise

Test your calculation skills and understanding of WACC with this assessment question.

APP Group is funded by £5m of debt and £20m of equity.

Its annual cost of debt is 5% and the expected annual shareholder return is 7%.

What is APP Group's weighted average cost of capital?

A 5.6%
B 6.0%
C 6.6%
D 7.0%

(Based on Certificate in Treasury Fundamentals: Specimen paper, Q74)

The answer is C: 6.6%.
This is in between 5% and 7%, but closer to the equity cost of 7%, because APP has more equity than debt.
(5 x 5% = 25%) + (20 x 7% = 140%) = 165%
165% ÷ (5 + 20 = 25) = 6.6%

Doug Williamson FCT, is a treasury and finance coach

Hidden treasure

KNOWING OUR OPTIONS IS AN ESSENTIAL FOUNDATION FOR MAKING BETTER DECISIONS. DOUG WILLIAMSON EXPLAINS HOW TO IDENTIFY AND EXERCISE VALUABLE REAL OPTIONS TO BENEFIT YOUR ORGANISATION AND YOUR CAREER

One of our most important decisions is whether or not to invest money and time into professional learning and other business opportunities. Identifying real options often helps, by revealing substantial value that is ignored by more simplistic approaches.

Value of choice

The unique value of options is that they give rights, but not obligations, to exercise potentially beneficial choices. If we hold a financial call option, we enjoy the right to buy a traded asset for a pre-agreed price. If the market price is favourable, we will exercise our option to make a gain. But we're not obliged to exercise the option if market prices are against us.

This right to choose is an asset, which has a value. This is the value of the option.

Say 'yes' if it's free

Like most assets, the value of an option for the holder cannot be negative. Therefore, the option will always be worth something, or at worst nothing. But it is never a liability. For this reason, the existence of any embedded options in our favour will always add value to a project.

If we were lucky enough to be offered an option for free, we would always be rational to accept it. It may also be worth paying to acquire some types of option, depending on the price.

Why are real options ignored?

Many practical situations give us options, which may not always be recognised or valued appropriately. Perhaps it is the perception that options are complex, or difficult to value, which means they go unrecognised or undervalued.

Why should I bother?

For example, studying for a qualification will not normally result in an immediate cash benefit. Indeed, it will cost both money and a substantial investment of our time. Our wise investment of time will hugely increase our options for making future career choices, however. Our career options may not be precisely quantifiable, but they are extremely nice to have, and they have enormous potential value if we exercise them rationally.

Expanding horizons

Many projects, such as opening a business in a new market, contain an option to expand. For example, a fictional Project P has a negative net present value of $(12)m and an embedded real option to expand, worth $68m.[1]

The total value of this project, taking account of the option to expand, is: 68 – 12 = $56m

Don't reject too soon

A simplistic net present value analysis would have rejected this project, because its net present value is negative. We should still consider it, however, because it potentially adds $56m to the value of our organisation.

As the option to expand is worth $68m, it might be beneficial to spend up to $68m, but not more than $68m, to acquire it. For

Project P, the price of acquiring the option, worth $68m, is the expected loss of $12m on the first phase of the project.

It would normally be a good idea to spend $12m to acquire an asset worth $68m, so we should consider undertaking Project P.

Expand, abandon or delay

The real option to expand a project is a type of call option. A real option to abandon is a type of put option. We can calculate values for real options using general principles of valuing conventional call and put options.

Calculated real option values need to be treated with caution, though. The inputs to the valuation are not so reliable or observable as for conventional options over traded assets.

In the frame

Let's illustrate a real options framework by planning an answer to a recent assessment question.

> Explain the nature of the embedded real options in many projects subject to investment appraisal.
>
> *Financial Maths and Modelling (FMM), April 2014, Q7 extract*

Three for starters

Three options are embedded in many projects subject to an investment appraisal. These are the Real options to Expand, Abandon or Delay. If you like acronyms, the initial letters spell READ.

An outline answer plan could include the notes set out in the table below.

Option to	Description	Valuation
Expand	Present in most projects. Start small to keep commitment relatively low. If all goes well, scale up.	Call option.
Abandon	Valuable when outcomes are poor. A possibility if there is a fallback position that generates more than just 'walking away'.	Put option.
Delay	Only if we have exclusive rights, which ensure the project remains available during any period of delay.	Call option over income-producing asset.

Other options

Owners enjoy other real options, too. For example, a switching option is the possibility to switch resources from one type of activity to another. This adds more value to investments which can be put to alternative uses.

First time for everything

This newly assessed topic received a low average mark.

> This is the first time that real options have been covered in the exam, although the material has been in the syllabus for some diets. Well-prepared candidates coped well, while others had clearly not covered material that had not appeared in the exam before.
>
> *Examiner's report, FMM, April 2014*

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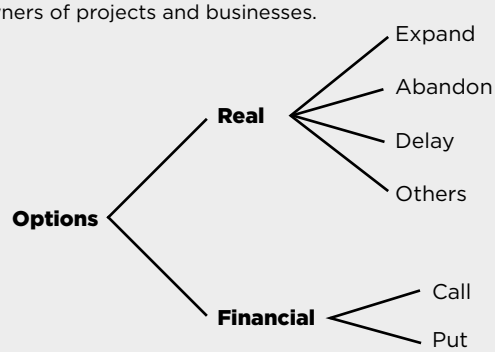
Real options

Real options are the valuable operational choices available to the owners of projects and businesses.



The examiner's comments highlight a key preparation strategy. You need to engage actively with all of the study material in the course. Most ACT assessments give no choice at all, or very limited choice, about which questions to answer. So negative 'question spotting', skipping topics in the hope they won't be assessed, is not a smart choice. Build in as many safety margins as you can in your preparations.

Award yourself options

Aiming to do the minimum necessary work to secure a pass may be an unconscious or pragmatic choice for some of us, with limited available study time. But a better choice is to study hard to enjoy the best learning we can, to create a future with many more attractive options.

> Recruiter Robert Half recently noted that, when hiring finance professionals, '...the best candidates frequently receive multiple offers and counter-offers when they look to move jobs'.
>
> The Treasurer, *web exclusive, February 2015*

Distil complexity into simplicity

Having mastered the fundamentals of real options, you will also be well prepared to explain them to senior non-technical audiences considering major investments. David Tilston FCT, group finance director, advises: "Communication, particularly with the CFO and up to the board, means distilling complex decisions down into very simple decisions that a board can understand."[2]

1 Based on *Financial Maths and Modelling* April 2014, Q7. This topic is also an important part of the Diploma in Treasury Management.
2 *The Treasurer*, February 2015, page 36.

Doug Williamson is a treasury and finance tutor. He enjoys seeing you exercise valuable options to your advantage

Ever-decreasing circles

Negotiating the circularity of equal loan instalments can feel like being lost in a maze. Doug Williamson shows the way through to easy exam marks and practical cash and profit management

Almost every large business borrows money. The team leader for borrowings is normally the treasurer. The treasurer must safeguard the firm's cash flows at all times, as well as understand and manage the impact of borrowings on the company's interest costs and profits. So treasurers need a deep and joined-up understanding of the effects of different borrowing structures, both on the firm's cash flows and on its profits. For these important reasons, loan repayments are a frequent exam topic.

Cash is king

Say we borrow £10m in a lump sum, to be repaid in annual instalments. Obviously, the lender requires full repayment of the £10m principal (capital) borrowed. They will also require interest.

Let's say the rate of interest is 5% per year. The first year's interest, before any repayments, is simply the original £10m x 5%

= £0.5m

The expense charged to the income statement, reducing net profits for the first year, is £0.5m. But the next year can start to seem complicated.

Business dilemma

Our instalment will repay some of the principal, as well as paying the interest. This means the second year's interest charge will be less than the first, because of the principal repayment.

But what if we can't afford larger instalments in the earlier years? Can we make our total cash outflows the same in each year? Is there an equal instalment that will repay just the right amount of principal in each year, to leave the original borrowing repaid, together with all of the reducing annual interest charges, by the end?

Circle solver

Help is at hand. There is, indeed, an equal instalment that does just that, sometimes called an *equated* instalment. Equated instalments pay off varying proportions of interest and principal within each period, so that by the end, the loan has been paid off in full.

The equated instalments deal nicely with our cash flow problem, but the interest charges still seem complicated.

Equated instalment

An instalment of equal value to other instalments.

Equated instalment = principal ÷ annuity factor

Dynamic balance

As we've seen, interest is only charged on the reducing balance of the principal. So the interest charge per period starts out relatively large, and then it gets smaller with each annual repayment.

The interest calculation is potentially complicated, even circular, because our principal repayments are changing as well. As the interest element of the instalment goes down each year, the balance available to pay off the principal is going up every time.

How can we figure out the varying annual interest charges? Let's look at a recent exam question, which asked us to do exactly that.

Earth mover

Southee Limited, a construction company, is planning to acquire new earth-moving equipment at a cost of £10m. Southee is considering a bank loan for the full cost of the equipment, repayable over four years in equal annual instalments, incorporating interest at a rate of 5% per annum, the first instalment to be paid one year from the date of taking out the loan.

Required:
Calculate the annual instalment that would be payable under the bank loan. Also, calculate how much would represent the principal repayment, and how much would represent interest charges, in each of the four years and in total.

Corporate Finance and Funding (CFF), April 2014, Q5 extracts

Instalment plan

Reading the question carefully, we need to work out five things:
(1) The annual instalment.
(2) Total principal repayments.
(3) Total interest charges.
(4) Interest charges for each year.
(5) Principal repayments in each year.

Success factor

The best place to start is with the annual instalment. To work out the annual instalment we need an *annuity factor*. The annuity factor (AF) is the ratio of our equated annual instalment, to the principal of £10m borrowed at the start.

The annuity factor itself is calculated as:

$AF = (1 - (1+r)^{-n}) \div r$

Where:

r = interest rate per period
= 0.05 (5%)
n = number of periods
= 4 (years)

Applying the formula:

$AF = (1 - 1.05^{-4}) \div 0.05$
= 3.55

Even stevens

Now, the equated annual instalment is given by:
Instalment
= Principal ÷ annuity factor
= £10m ÷ 3.55
= £2.82m

We've answered the first and trickiest part of the question. The rest is quite easy, so long as we follow our steps (2) to (5) above, in order.

Follow the plan

(2) The total of the principal repayments is simply the total principal originally borrowed, ie £10m.
(3) The total of the interest charges is the total of all the repayments, minus the total principal repaid. We're only paying principal and interest, so any amount paid that isn't principal, must be interest.

There are four payments of £2.82m each. So the total repayments are:
£2.82m x 4
= £11.3m

And the total interest charges for the four years are:
£11.3m less £10m
= £1.3m

Now we need to allocate this £1.3m total across each of the four years.

Time for a table

The allocations are easier to figure out in a nice table. Let's invest a little time in one, filling in the figures we already know.

(All amounts are in £m.)

Year	1	2	3	4	Total
Opening balance	10.00				10.0
Add: 5% interest					1.3
Less: instalments	(2.82)	(2.82)	(2.82)	(2.82)	(11.3)
Closing balance					-

The closing balance for each year will be the opening balance for the next year.

By the time we get to the end of the fourth year, we'll have repaid the whole of the £10m originally borrowed, together with a total of £1.3m interest.

Complete the circle

We can now fill in the 5% interest per year, and all our figures will flow through nicely.

We've already calculated the interest charge for the first year:
0.05 x £10m
= £0.5m

So our closing balance for the first year is:
Opening balance + interest – instalment
= 10.00 + 0.5 – 2.82
= £7.68m

So we can go on to fill in the rest of our table, as set out below:

Year	1	2	3	4	Total
Opening balance	10.00	7.68	5.24	2.68	10.0
Add: 5% interest	0.50	0.38*	0.26	0.13	1.3
Less: instalments	(2.82)	(2.82)	(2.82)	(2.82)	(11.3)
Closing balance	7.68	5.24	2.68	-	-

(There is a minor rounding difference of £0.01m in year four that we don't need to worry about. It would disappear if we used more decimal places.)

Full marks and debt-free

Congratulations! You've earned full marks and paid off your debts in full.

A great result from your wise investment in a nice table.

*The interest charge for the second year is less, based on the lower opening balance of £7.68m: 0.05 x £7.68m = £0.38m
Annual principal: 2.32 + 2.44 + 2.56 + 2.68 = 10

Doug Williamson FCT, is an experienced coach and tutor. As a former chief examiner, he is uniquely qualified to help you to ace your ACT exams, having read and carefully marked a great number of exam scripts

SUPER ADDITION

You don't need extraordinary powers to understand synthetic hedges. Doug Williamson shows how following a simple sign convention makes synthetic forward contracts add up to more marks

A hedge is a contract that offsets adverse changes in the value of another exposure. The hedge pays out when we're losing money on our other exposure. So we're hedged by the contingent cash receipt.

Two ways to hedge

Let's say we're a seller of a commodity. We have an operational exposure to its market price. If the market price falls, our revenues will suffer.

Two ways to hedge this exposure using options are to:

(i) Buy a put option; or
(ii) Enter a synthetic forward contract.

(i) Buy a put option

Say we buy a put option with a strike price of $100, for a premium paid of $6. If the price of our commodity falls below the $100 strike price, perhaps to $80, we receive a cash payout based on the difference.[1] In this case, the payout we receive would be: $100 – $80 = $20.

Ignoring timing differences, our net gain on the put strategy would be the payout received of $20 LESS the $6 premium paid = $14.

The receipt from the put offsets our lost revenues on selling our commodity more cheaply in the market, to provide an effective hedge.

But if the commodity price ends up equal to, or even higher than, the $100 strike price of the put, there is no payout. In these cases, we'd suffer a net hedging loss of the $6 premium we'd paid, as set out in the following table. All amounts are in $.

Put receipt/(payment)			
Commodity price	80	100	120
Receipt vs $100	20	–	–
(Premium paid)	(6)	(6)	(6)
Net receipt/(payment)	14	(6)	(6)

Note three key features in our receipt/(payment) table (above):

(1) The option premium and the payout from the option, if any, are always in opposite directions. These are the cost and the benefit of the option contract.

(2) Our 'mostly positive' modelling sign convention. We're hedging operational revenues, which are receipts. Applying the 'mostly positive' sign convention here designates our operational receipts – the important items there are most of – as positive numbers. Therefore, any offsetting payments will be negative (bracketed numbers).

(3) We use explicit row and column labels to support our sign convention, so we're left in no doubt about how to combine our pluses and our minuses. Any items we're going to be deducting are explicitly labelled with brackets, right from the start.

(ii) Super synthetics

An alternative, and recently examined, hedge structure is a synthetic forward contract. Here we use two options in combination, to build the synthetic forward contract. We still buy a put option, exactly as we did before. But now we also sell a call option, with the same strike price as the put.

SUPERHERO EXAM CASE

Your company, SuperHero Inc (SHI), wants to remove any price risk from its sale of a commodity, Kryptonite, which is a major revenue item.

Until recently, you have been able to fix the future price using a forward contract. The counterparty that you have normally dealt with has exited the business, however, leaving no credible market maker for a forward price. But there are option prices available for three-month expiry.

Option price data for Kryptonite

Strike price per gram	$100
Three-month call premium	$7
Three-month put premium	$6

Describe how a synthetic forward contract appropriate for SHI can be constructed using the options quoted above.

Financial Maths & Modelling (FMM), October 2013, Q6 extracts

The key to understanding this structure is that the individual results from each option simply add up. This is where investing time in our consistent sign convention and narrative labels pays off handsomely. Let's see how it works using an extract from a recent exam. (See SuperHero Exam Case, above.)

Hedging with a synthetic forward

We buy a put option for a premium payable of $6, with results as before:

Put receipt/(payment)			
Kryptonite price	80	100	120
Net receipt/(payment)	14	(6)	(6)

We also sell a call option for a premium received of $7. When the Kryptonite price exceeds the call strike price of $100, we have to make a payment, for example: $120 – $100 = $20.

But we always get to keep our premium received of $7.

Following our 'receipt/(payment)' sign convention consistently, the net results from the call sold are:

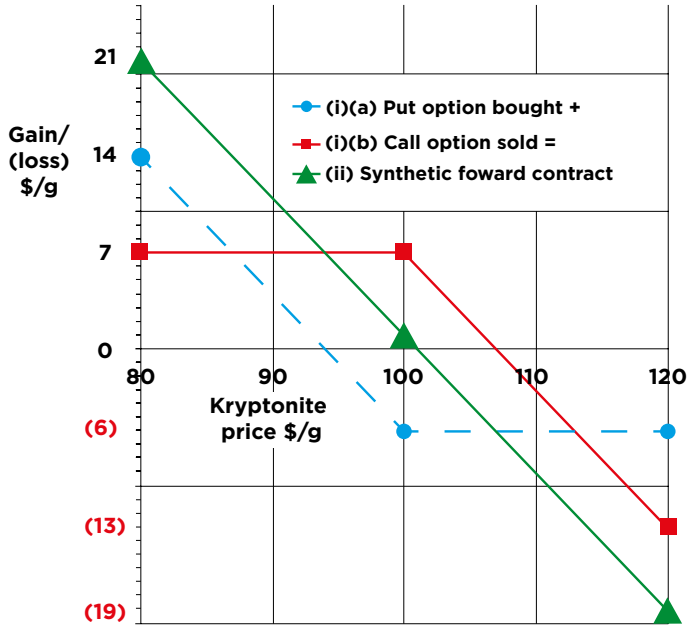
Call receipt/(payment)			
Kryptonite price	80	100	120
(Payment) vs $100 Premium received	– 7	– 7	(20) 7
Net receipt/(payment)	7	7	(13)

Now it's very easy to combine the results from each individual option. The individual results simply add up or net off. And our explicit sign convention makes it easy to get each item the right way round in the combination:

Synthetic forward receipt/(payment)			
Kryptonite price	80	100	120
Put receipt/(payment) Call receipt/(payment)	14 7	(6) 7	(6) (13)
Net receipt/(payment)	21	1	(19)

The relationships between the net gains and losses on the put (blue), the call (red) and the synthetic forward (green) are summarised in the following chart:

SYNTHETIC FORWARD CONTRACT TO SELL KRYPTONITE



Superpowers not required

Many candidates found this exam case difficult. The examiner said:

> There were relatively easy marks to be gained by describing how to create a synthetic forward contract using options, but some candidates did not take advantage of that.
>
> It is possible that the source of difficulty here is the application of option knowledge to corporate hedging rather than to option trading strategies. This is an important part of the syllabus and the topic of hedging will be covered on a more regular basis.
>
> *Examiner's report, FMM, October 2013*

Understanding hedge construction and passing your exams doesn't need extraordinary powers. It just needs study and lots of question practice, both of which you can achieve.

Be positive

Apply the 'mostly positive' sign convention consistently with explicit labels and you will master many challenging topics in finance. Some of your colleagues may even think that you have developed superhuman abilities.

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1 This is known as 'cash settlement'. It gives exactly the same result as physical sale and delivery of the commodity, but saves transport and storage.

Doug Williamson FCT is a writer, tutor, coach and former chief examiner. He is uniquely qualified to help you pass your ACT exams, having read and marked thousands of students' exam answers, carefully noting where you can gain many easy marks

THE REAL DEAL

Real rates of corporate decline often lead to miscalculation, overpaying for acquisitions and disastrous losses. Doug Williamson shows how to avoid the most common errors, save money and earn valuable exam marks

A recent Corporate Finance and Funding exam (April 2013, Q1) describes how a company chairman agreed to pay £400m for an acquisition, justified by an over-simplistic, multiple-based valuation. Among other requirements, we are asked to recalculate the value of the target using fundamental discounted cash flow (DCF) techniques. Our theoretically superior DCF valuation gives a much lower value than the purchase price of £400m agreed by the chairman. This acquisition is about to lose a lot of money.

Two common errors

Two frequent errors in DCF valuations are:
(1) Not recognising that decline is negative growth; and
(2) Not adjusting real terms figures, to add back inflation.

Growth creates value

We know that the faster any future cash flows grow, the greater their total present value.

When cash flows are in stable growth (or decline) they can be valued as a simple perpetuity, using the formula:

Time 0 value = Time 1 cash flow ÷ (r – g).

Where r is the appropriate discount rate and g is the stable rate of growth (or decline).

For example, let's assume the Time 1 cash flow is £10m and the discount rate (r) is 10% = 0.10.

When the rate of growth (g) is 2%, the term (r – g) is 0.10 – 0.02 = 0.08. The total value of the cash flows is £10m ÷ (r – g) = £10m ÷ 0.08 = £125m.

As the rate of growth (g) increases, the total value also increases as follows:

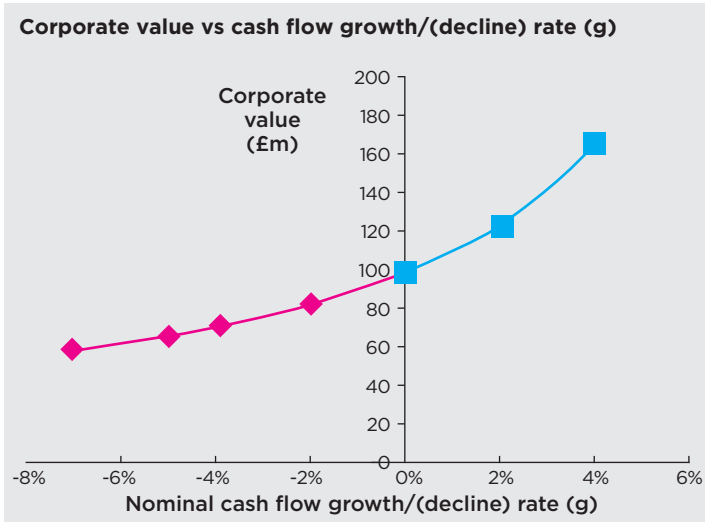
g	r – g = 0.10 – g		Value = £10m ÷ (r – g)	
0%	0.10 – 0.00	= 0.10	£10m ÷ 0.10	= £100m
2%	0.10 – 0.02	= 0.08	£10m ÷ 0.08	= £125m
4%	0.10 – 0.04	= 0.06	£10m ÷ 0.06	= £167m

The total values for positive rates of growth are summarised in the blue part of the graph (above right). The greater the rate of growth, the greater the valuation.

Decline destroys value

When growth rates fall and become negative, value is destroyed. This reduction in value is shown in the pink part of the graph (above right).

The valuation is still calculated by exactly the same perpetuity formula:



Time 0 value = Time 1 cash flow ÷ (r – g).

g is the stable rate of growth, or decline, just as before.

But now, when the cash flows are declining, the rate of growth (g) is a negative number.

For example, say the Time 1 cash flow is still £10m and the discount rate (r) is still 10% = 0.10.

When the rate of decline is 2%, g = -2%, and the term (r – g) becomes: 0.10 – (-0.02) = 0.10 + 0.02 = 0.12.
(Not 0.08.)

The total value of the cash flows now falls accordingly to: £10m ÷ 0.12 = £83m.

This is the first common error (a) highlighted by the examiner [see Growing Pains box, right]. Minus minus calculations give a plus, not another minus. Many exam candidates miscalculated, getting the signs of their g terms the wrong way round, leading to overvaluations. These candidates risked losing their companies a lot of money in overpaying for (overvalued) acquisitions.

As the rate of decline worsens, the valuations decrease even further, as we see below:

g	r – g = 0.10 – g		Value = £10m ÷ (r – g)	
-2%	0.10 + 0.02	= 0.12	£10m ÷ 0.12	= £83m
-4%	0.10 + 0.04	= 0.14	£10m ÷ 0.14	= £71m
-5%	0.10 + 0.05	= 0.15	£10m ÷ 0.15	= £67m

Two minuses make a plus
9% – (-1.6%) = 9% + 1.6% = 10.6%.
(Not 7.4%.)

Adjusting reality
A **real rate** is one that has been restated to exclude inflation.
Real rates of growth and decline often need uplifting to add back inflation.

It's your turn now. Calculate the total value of the cash flows when the rate of decline is 7%. Be careful to get your signs the right way round. The answer is at the end.[1]

Exam calculation of perpetuity value

The exam DCF valuation we saw earlier required handling the following calculation as part of its detailed workings:

Declining cash flow = £32.9m; discount rate = 9%; rate of decline = 1.6%.

Calculate the total value of these cash flows.[2]

Overvaluations lose money

Paying £400m for a business that is only worth £310m will lose £90m.

Real rates need uplifting

All of the amounts we've seen so far have been in normal cash terms (sometimes known as 'nominal' terms). By contrast, any 'real' amounts have been adjusted downwards to exclude inflation.

So when exam questions give rates of growth or decline 'in real terms', we need to adjust the given 'real' figures back into cash terms, by adding back the rate of inflation.

The necessary adjustment to a real rate of growth (or decline) is:

Nominal growth rate (g) = ((1 + real growth rate) x (1 + inflation rate)) – 1.

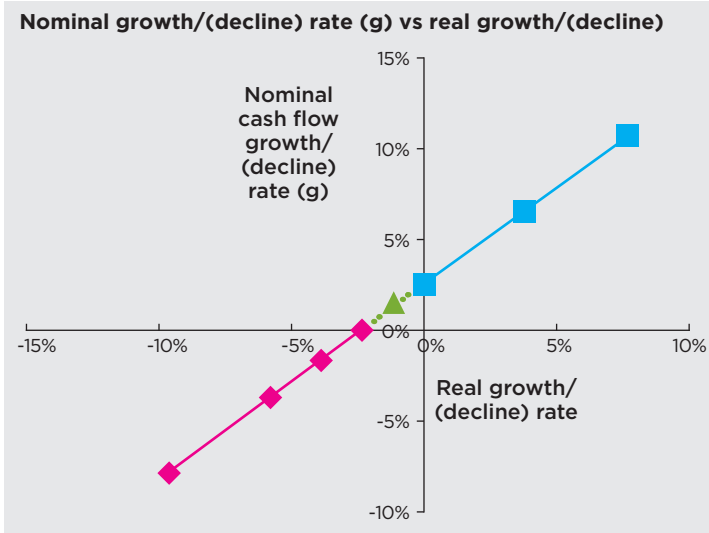
For example, when inflation is 2.5% = 0.025, nominal cash flow growth is:

Real growth rate	1 + real growth rate	1 + inflation rate	Nominal growth rate (g)	
0%	1.00	1.025	(1.00 x 1.025) – 1	= 2.50%
4%	1.04	1.025	(1.04 x 1.025) – 1	= 6.60%
8%	1.08	1.025	(1.08 x 1.025) – 1	= 10.70%

Notice in each case the nominal growth rate is roughly equal to the real growth rate plus the inflation of 2.5%. (For example, in the second row of the table, 4% + 2.5% = 6.5%, roughly 6.60%.)

GROWING PAINS

"The compulsory question required the valuation of a potential acquisition. The most common errors related to the growth rate of the cash flows. Candidates either (a) did not realise that a negative growth rate has to be *added* to the discount rate, or (b) did not adjust the real negative growth rate for inflation."
Examiner's Report, Corporate Finance and Funding, April 2013



Mastering NEGATIVE real rates

Real rates of growth can also be negative. In this case, the resulting nominal growth rate may be negative or it may be positive, depending on the size of the expected inflation rate.

The related nominal growth rates (g) are the pink and green parts of the graph (above).

The required adjustment is still:

Nominal growth rate (g) = ((1 + real growth rate) x (1 + inflation rate)) – 1.

The only difference is that now the real growth rate is a negative number.

For example, a 1% real rate of decline is -1% = -0.01, and (1 + real rate) = 1 + (-0.01) = 0.99, and so forth.

Real decline rate, as negative	1 + real decline rate	1 + inflation rate	Nominal growth/ (decline) rate (g)	
-1%	0.99	1.025	(0.99 x 1.025) – 1	= +1.48%
-6%	0.94	1.025	(0.94 x 1.025) – 1	= -3.65%
-10%	0.90	1.025	(0.90 x 1.025) – 1	= -7.75%

Forgetting to do this was the second error (b) noted by the examiner [see Growing Pains box, left]. Practise it now. Calculate the nominal rate of growth or decline, when the real rate of decline is 4%. Inflation is 2.5%, as before.[3]

Keep practising this important technique to pick up easy exam marks. Best wishes for your successful studies and exam.

1 g = -0.07. r – g = 0.10 + 0.07 = 0.17. VALUE = £10M ÷ 0.17 = £59M.
2 g = -0.016. r – g = 0.09 + 0.016 = 0.106. VALUE = £32.9M ÷ 0.106 = £310M.
3 (1 + REAL RATE) = 1 – 0.04 = 0.96. NOMINAL RATE = (0.96 x 1.025) – 1 = -1.6%.

Doug Williamson FCT is an examiner, tutor and exam scrutineer for six ACT exam courses

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Triumph with timelines

Many candidates find yield and discount calculations confusing. Doug Williamson offers a technique for mastering them

Many financial situations involve exchanging money now and re-exchanging a (larger) fixed sum of money later.

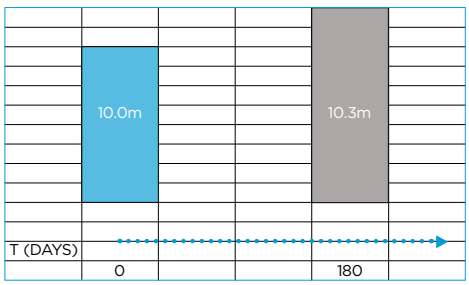
Examples include: short-term fixed rate investment; short-term fixed rate borrowing; and discounting short-term financial instruments. The concept of exchanging and re-exchanging is identical in all three cases, and it isn't too hard. But quoting conventions differ, often causing confusion. Drawing a timeline – and putting cash flows on it – will usually sort them out nicely.

We'll start with a simple investment and its cash flows. Then we'll see the different ways in which the same cash flows are quoted in different financial markets.

Investing 10.0m and getting 10.3m back

Let's say we're considering a simple investment to pay out 10.0m (in a given currency) today, and get back 10.3m (in the same currency) in 180 days' time. Is this a good deal?

Let's start by drawing a timeline and putting the known cash flows onto it.



Clearly, we're making a gain of 10.3m (the terminal value) *less* 10.0m (the initial amount) = 0.3m.

Expressed as a proportion of the initial amount of 10.0m, the gain of 0.3m is 0.3/10.0 = 3.000% per 180 days. (This is a *yield* basis of expressing our expected gain[1].)

Expressed as a proportion of the terminal value 10.3m, the gain of 0.3m is 0.3/10.3 = 2.913% per 180 days. (This is a *discount* basis of expressing exactly the same cash flows and gain[2].)

Note that it makes no difference at all to any of the cash flows, whether the gain of 0.3m is expressed (or described) as a yield or as a discount. We still pay out exactly the same 10.0m at the start, and we still get back exactly the same 10.3m at the end.

Well, that might be a good deal or it might not. It depends on what rate of return we could get from other comparable investments. We've already made a great start for our comparisons by calculating both the yield per 180 days and the discount percentage per 180 days, above.

But these figures are more conventionally quoted on a simple, annualised basis. We'll do that next.

Calculating the nominal annual yield

The simple nominal annual yield on a short-term investment is: (gain ÷ initial amount) x (conventional year ÷ days).

So in the case of our 10.0m initial amount returning 10.3m after 180 days, the nominal annual yield = (0.3 ÷ 10.0) x (conventional year ÷ 180).

But how many days per year?

The conventional year for GBP is 365 days.

So, if we're considering a GBP 10.0m investment (paying back GBP 10.3m after 180 days), the simple nominal annual yield calculation is: (0.3/10.0) x (365/180) = **6.08%**.

But the conventional calculation year for short-term USD and EUR is 360 days (not 365).

So if we had a USD 10.0m investment (paying back USD 10.3m after the same 180 days), the nominal annual yield calculation would be a lower figure based on 360 days: (0.3/10.0) x (360/180) = **6.00%**.

The 360 days basis of calculation is sometimes known as 'act/360', meaning 'actual' days over 360 days.

The second important question for the exam is: 'Yield or discount rate?' We'll look at that next.

Calculating the annual discount rate

Short-term discount rates are based on terminal values (rather than on initial amounts).

The annual discount rate on a short-term investment is: (gain/terminal value) x (conventional year/days).

In the same case of our 10.0m investment returning 10.3m terminal value after 180 days, the annual discount rate = (0.3/10.3) x (conventional year/180).

We saw that the conventional year for GBP is 365 days.

So for a GBP 10.0m investment (paying back GBP 10.3m after 180 days), the calculation is: (0.3/10.3) x (365/180) = 5.91%.

But it's different for USD and EUR. Again, the conventional calculation year for short-term USD and EUR is 360 days (not 365).

So if we had a USD 10.0m investment (paying back USD 10.3m after the same 180 days), the annual discount rate calculation would again be lower: (0.3/10.3) x (360/180) = **5.83%**.

Start by drawing a timeline and putting cash flows on it. This clarifies thinking EXAMINERS' REPORTS, APRIL 2012

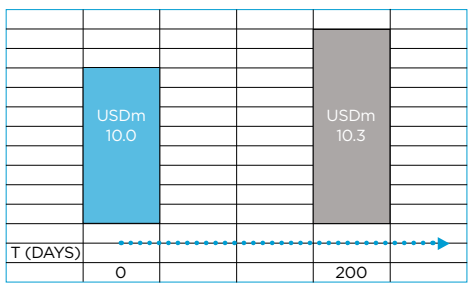
Three questions in a recent International Treasury Management (ITM) exam tested these calculations.

Short-term USD investment yield question *ITM April 2012*

What is the holding period yield (act/360 basis) for a USD certificate of deposit with a face value of 9.9m bought for 10.0m and sold 200 days later at 10.3m?

Short-term investment yield answer

The relevant cash flows for the investor are the investment of USD 10.0m and the sale proceeds of USD 10.3m. Drawing a timeline clarifies this and helps to avoid the red herring (irrelevant) USD 9.9m, which is not a cash flow.



How many days per year? The investment is in USD, so we'd expect 360 days. And this question also (very helpfully) confirms the 'act/360' basis.

Yield or discount rate? This question expressly asks for a yield. So we'll use an annual yield calculation (based on the gain of USD 0.3m and the USD 10.0m initial amount) on a 360-day basis over 200 days: 0.3/10.0 x 360/200 = **5.40%**.

The next calculations in the same ITM exam contained a discount rate as well as a yield.

USD instrument discount rate and yield

A firm issues 91-day zero coupon commercial paper with a face value of USD 50.0m and receives issue proceeds of USD 49.4m. What rates would this instrument be quoted at in the USCP market and in the ECP market?

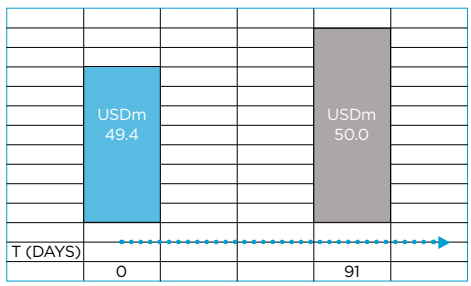
USD instrument discount rate and yield answer

With no issue costs, the investor's return and the issuer's borrowing cost are the same.

So our calculation is based simply on the USD 50.0m and the USD 49.4m. The gain is 50.0m – 49.4m = 0.6m.

How many days per year? The investment is in USD, so 360 days.

Yield or discount rate? USCP is US commercial paper, which is quoted on a discount basis. So the relevant 360-day discount rate calculation (based on the terminal value of USD 50.0m) is: (0.6/50.0) x (360/91) = **4.75%** for the USCP market.



ECP is euro commercial paper, which is quoted on a yield basis. So the relevant 360-day yield calculation (based on the initial amount of USD 49.4m) is: (0.6/49.4) x (360/91) = **4.80%** for the ECP market.

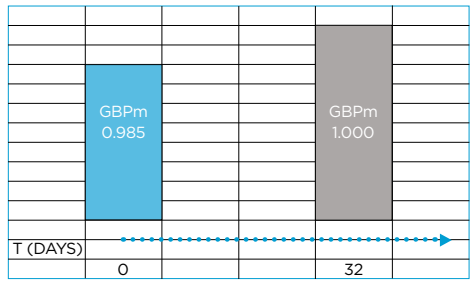
Finally, here's a harder question from the same ITM exam.

Early settlement discount

A customer is due to pay GBP 1m, 60 days after the invoice date. You offer a 1.5% discount for settlement 28 days after the invoice date. Calculate the cost of discount as a yield (act/365 basis).

Early settlement discount answer

We can use exactly the same timeline structure of terminal value, initial amount and a difference. The terminal value is GBP 1m. The 1.5% discount is a flat amount on the GBP 1m, not per annum. So the money discount is simply 0.015 x GBP 1m = GBP 0.015m. And the initial amount is 1 – 0.015 = GBP 0.985m.



This is a yield calculation on a 365 days basis.

The borrowing cost is GBP 0.015m, the initial amount is GBP 0.985m, and the time difference is 60 – 28 days = 32 days.

So the required yield figure is 0.015/0.985 x 365/32 = **17.4%**.

This is very expensive. Far more expensive than you might expect based on the headline number of 1.5%. In the exam as in life.

What next?

To quote your examiners:

"The average pass rate for questions testing calculations, at 54%, was significantly lower than for those testing knowledge, at 80%. Candidates are recommended to pay particular attention to this area in the future... start by drawing a timeline and putting cash flows on it. This clarifies thinking."

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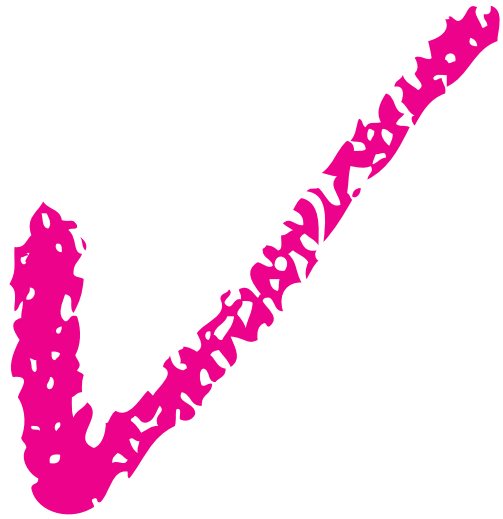
Doug Williamson **FCT is an examiner, tutor and exam scrutineer for six ACT exam courses**

1 THE YIELD BASIS SAYS HOW MUCH THE INITIAL MONEY AMOUNT HAS GROWN BY; IN THE SAME WAY AS AGRICULTURAL YIELDS SAY HOW MUCH OF A CROP HAS *GROWN* IN A FIELD. 2 THE DISCOUNT BASIS SAYS HOW MUCH IS *DEDUCTED* FROM A TERMINAL VALUE TO WORK OUT THE INITIAL AMOUNT

SIMPLE SOLUTIONS



Simple interest makes interest calculations easier, but it adds complexity to yield curve conversions. Doug Williamson explains a reliable method to score the easy exam marks on offer

Jargon busting

First of all, let's clarify:

(1) Yield curve
(2) Simple interest
(3) Zero coupon rate
(4) Forward rate

(1) Yield curve

A yield curve describes today's market rates per annum for fixed-rate funds with different maturities.

For example:

Table 1: Zero coupon rates

Maturity (months)	Quoted rate per annum
0-3	4.0%
0-6	4.2%
0-9	4.4%

Today's quoted interest rate for 0-3 month funds is 4% per annum. The quoted rates for longer maturities are slightly higher.

(2) Simple interest

The simple interest basis is a longstanding market convention. It was designed to make interest calculations quick and reliable, before the invention of modern calculators. Simple interest calculates actual interest and quotes rates, with no interest on interest incorporated into the quoted market rate per annum. The simple interest basis is the market convention for quoting interest rates for short-term periods. 'Short term' means up to, and including, one year.

Actual interest for a given period is then worked out from the simple interest quote by a straightforward multiplication of the quoted annual rate. To illustrate, let's work in sterling and use whole months. To keep our numbers as easy as possible, let's deposit exactly £1, for 0-3 months.

There are, of course, 12 months in a year (not three). So the actual interest payable for the three-month period (3/12 of a year) is not the quoted 4%, but rather:

(3/12 x 0.04) x £1 = **£0.01**.

This actual interest amount is also known as the 'periodic interest'.

The total cash (principal + *interest*) we get back after three months is **£1.01** (= (1 + *(3/12 x 0.04)*) x £1).

Similarly, the total interest for a 0-6 month deposit (6/12 of a year) at a quoted rate of 4.2% per annum (from Table 1, left) is:

(6/12 x 0.042) x £1 = **£0.021**.

And the total cash we get back after six months is (1 + *(6/12 x 0.042)*) x £1 = **£1.021**.

Your turn now.

Please calculate (i) the interest and (ii) the total cash returned, from a 0-9 month deposit of £1. The quoted rate per annum is 4.4%. The answers appear at the end of this article.[1]

(3) Zero coupon rate

All of the rates we've worked with so far have been zero coupon rates. They all apply to cash deposited or borrowed today (Time 0) and returned with all of the interest at the very end.

For example, our 0-6 month deposit above involves the following cash flows:
(1) We pay £1 **now** and (2) We get back (1 + *(6/12 x 0.042)*) x £1 = £1.021 after six months.

(4) Forward rate

Forward interest rates are slightly different. These are rates that we can lock into today, for fixed deposits or borrowings **starting in the future**.

Table 2: Forward rates

Maturity (months)	Quoted rate per annum
0-3	4.0000%
3-6	4.3564%

For example, the rate for 3-6 months funds is 4.3564% per annum. This means we can lock ourselves in today, to deposit cash three months from now, to get back our cash with pre-agreed interest after a further three months. Interest will be calculated at the pre-agreed interest rate of 4.3564% per annum, applied for 3/12 of a year.

This 3/12 factor is needed because the forward period of 3-6 months is three months long. (See box The complexity, far right)

Assume cash available to deposit of £1.01. This also happens to be the amount available from our earlier maturing deposit for 0-3 months (= (1 + *(3/12 x 0.04)*) x £1). Locking ourselves in today, to deposit this £1.01 at Time 3 months will return:

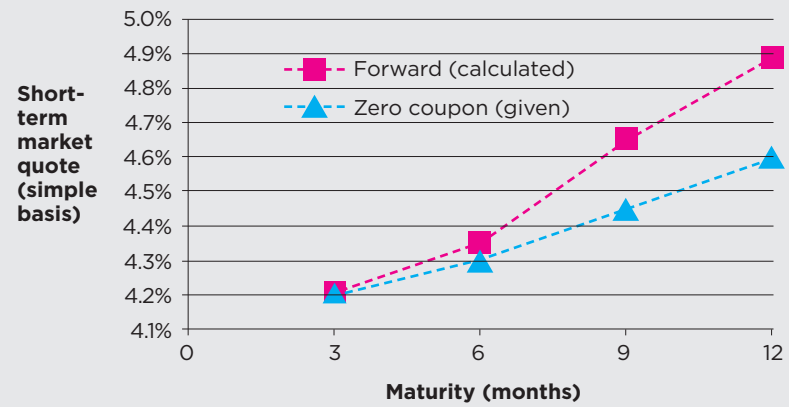
(1 + *(3/12 x 0.043564)*) x £1.01 = **£1.021** at Time 6 months.

This is exactly the same amount of cash as we received from our alternative zero coupon deposit for the entire period 0-6 months, which also gave us back £1.021 (see 'Simple interest' section earlier).

No free lunches

Our two calculations above are examples of the 'no free lunch' principle. Both alternative ways of structuring a 0-6 month deposit produce exactly the same six-month cash flow of £1.021.

Exam answers (summary)



THE COMPLEXITY

"This question was about yield curve conversion. The complexity that most frequently caused problems was the concept of a simple interest basis for the zero coupon rate and the quarterly compounding of the quarterly forward rate."
Examiner's Report, Financial Maths & Modelling (FMM), October 2012

If the two equivalent deals didn't produce exactly the same final cash flow of £1.021, everyone in the market would prefer the better deal. Supply and demand in the market would then cause market prices to change, until the related cash flows came back into an exact balance, as before.[2]

This is known as the 'no arbitrage' market pricing principle. We can use 'no arbitrage' in our exam to calculate implied forward interest rates, converting from given zero coupon rates.

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Calculating forward quotes: 3-6 months

The forward market rate of interest (or return) links two related future cash flows in the market.

For example, the final cash flows from our two zero coupon deposits:
(1) £1.01 at Time 3 months
(2) £1.021 at Time 6 months

We can make a commitment today to deposit £1.01 in three months' time, for a further three-month period. That deposit must return £1.021 at its maturity of Time 6 months. This is the 'no arbitrage' principle, illustrated above.

The related periodic rate of return is given by:
((Cash at end) ÷ (Cash at start)) – 1
In this case, periodic rate:
(£1.021 ÷ £1.01) – 1
= 1.0891% interest per three months.

As we've seen, short-term interest rates are quoted as simple rates per annum.

Therefore, the (simple annual) quoted rates are multiplied by 3/12 to work out the actual interest for a three-month-long period. So to convert the periodic rate for three months (1.0891%) to a simple quoted annual rate, we need to make the opposite adjustment. That is, multiply by 12/3:
1.0891% x 12/3
= **4.3564%** quoted forward rate per annum, for 3-6 months maturity.

4.3564% is indeed the figure that we saw before in Table 2 and that we have already validated in the section titled 'Forward rate' earlier. So our 'no arbitrage' conversion, to convert zero coupon rates to forward rates, produces the right answer.

Calculate forward quotes: 6-9 months

It's your turn again.

You calculated before that the final cash flow from a 0-9 month deposit of £1 quoted at 4.4% per annum is £1.033. Make sure that you're still happy with this calculation. If you need to refresh yourself, see answer 1 at the end of this article.

Now use (1) the £1.033 at nine months and (2) the £1.021 at six months (from our 0-6 month zero coupon deposit) to work out the 6-9 month forward quote.

Clue: follow the pattern above of: ((£1.021 ÷ £1.01) – 1) x 12/3, but roll everything forward by three months. Answer at the end.[3]

The heart of the exam question[4]

Use the GBP market zero coupon rates (▲) quoted below to calculate the related forward rate quotes for the periods 3-6 months, 6-9 months and 9-12 months.

3 months: 4.205%
6 months: 4.300%
9 months: 4.450%
12 months: 4.600%

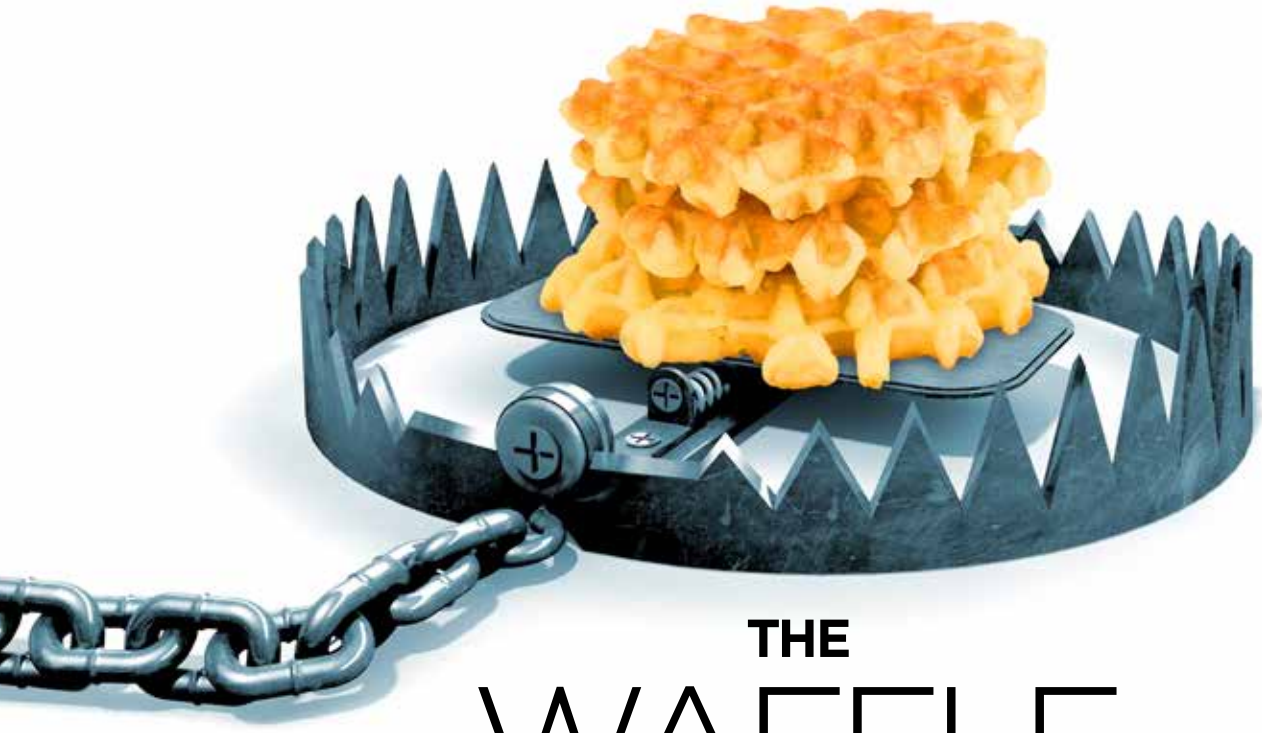
The first answer (■)

3-6 months quote:
((1 + (6/12 x 0.043) = 1.0215)
÷
(1 + (3/12 x 0.04205) = 1.0105125))
– 1
= 1.08732%
x 12/3
= **4.3493%** 3-6 months quote per annum.

Finish the question off now, for 6-9 months[5] and 9-12 months[6]. If you're not sure, follow the pattern of the similarly structured examples above.

1 Interest £0.033 = (9/12 x 0.044) x £1. Total cash £1.033 (= (1 + (9/12 x 0.044)) x £1).
2 In practice, these price adjustments are almost instantaneous, because of computer-driven trading.
3 Periodic rate (3 months) = (1.033 ÷ 1.021) – 1 = 1.17532%. Quote per annum x 12/3 = 4.7013%.
4 FMM October 2012, Q4.
5 ((1 + (9/12 x 0.0445) = 1.033375) ÷ 1.0215) – 1 = 1.16251%: x 12/3 = 4.6500%.
6 ((1 + (12/12 x 0.046) = 1.046) ÷ 1.033375) – 1 = 1.22172%: x 12/3 = 4.8869%.

Doug Williamson FCT is an examiner, tutor and exam scrutineer for six ACT exam courses



THE WAFFLE TRAP

Waffling wastes exam time and earns no marks. Doug Williamson explains how to avoid its sticky embrace and get out fast if you accidentally fall in

What is waffle? Waffle is true – but irrelevant – material in an exam answer. Waffle earns no marks because it does not answer the question we're being asked. Waffle is extremely common, appearing somewhere in almost every script that ACT examiners mark.

Waffle causes four problems:
(1) Waste of time on a question.
(2) Time overruns, eating into time for later questions.
(3) The illusion of doing well, because we're writing so much. We believe – or hope – we're answering the question asked, so we don't check.
(4) Waffle hides other good points from our marker.

The alluring waffle trap

Like the honey trap, waffling is seductive and deadly. We believe we've found the exam question we've been dreaming of, and fall in love with our illusion. We write far too much about our dream question, getting tangled in the sticky embrace of our irrelevant answer. We're temporarily blinded to what's really required, and are hoodwinked into telling all we know.

Escape is possible. But, as with many traps, we can only get free if we first admit we've been caught. We'll see how to escape from a waffle trap later. Even better, of course, is avoiding getting caught in the first place.

How to avoid waffling

(1) Invest substantial time in learning the course material thoroughly.
(2) Read questions carefully, until you know exactly what they're asking.

Each step is essential. To avoid the waffle trap entirely, you must take both steps.

The fewer gaps we have in our knowledge, the less likely we are to misread exam questions. We're prepared and confident to answer different detailed questions within each broad topic. We will then carefully read and understand exactly what's being asked of us. We're unlikely to 'dive in' prematurely to answer the wrong question.

Let's look at a recent example, illustrating question interpretation.

Once more unto the breach

With reference to English contract law, identify the main remedies for breach of contract and describe the key features of each remedy you have identified.

You are not required to discuss the factors that may limit the liability of the party in breach.

Business Law compulsory question A1, April 2013

HELP FOR ACT STUDENTS

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Contract law lies at the very heart of every business transaction and commercial relationship. For this reason, it is a practical and frequently examined topic in the ACT's exams.

This recent question is about a particular important aspect of breach of contract. Breach of contract is a wide topic. But this question's scope was restricted by its detailed wording.

Enjoy reading the question again, calmly and carefully. There are two or three crucial limiting words that narrow the scope of this question. What are they? Read the question again for yourself. Don't look at the answer.

One key limiting word is 'English' in the first sentence.[1] Another key word is 'remedies'. Taking account of these crucial words 'English' and 'remedies', this question is specifically about, and only about:

(1) English contract law.
(2) The main English law remedies for breach of contract.
(3) The key features of each (English law) remedy.

This question was NOT about Chinese, French or US contract law remedies. These topics are all in the ACT syllabus,[2] but they weren't examined in this sitting.

Another key limiting word is 'not' in the second sentence. The question was NOT about factors that may limit the liability of the contract breaker. What candidates wrote in response to this part of the requirement was very unexpected.

Two bad waffles

A number of candidates did not focus their answer on English contract law, and a notable number of candidates concentrated on the factors that may limit the liability of a contract breaker, despite clear instructions in the question not to do so.

Examiner's Report, Business Law, April 2013

Sadly, those candidates earned no marks for the irrelevant parts of their scripts, and they wasted precious exam time.

Why did the candidates waffle?

These two waffles appeared to have two different causes. Remedies under Chinese law had indeed been examined in the very last exam. Candidates who'd practised this recent paper probably had the knowledge fresh in their minds, and they couldn't resist sharing it again. Answering last time's question – instead of this time's – is the most common type of waffle.

Some of us ignore 'not'

The second irrelevant topic candidates wrote about was the one expressly excluded by the wording of the question: "You are not required to discuss the factors..."

Research shows that many of us ignore the word 'not'. This is quite surprising. But on the evidence of the exam scripts, a notable number of candidates interpreted this part of the question as if it had said exactly the opposite, namely: "You are required to discuss the factors that may limit the liability of the party in breach."

All these candidates disregarded the word 'not'.

To solve the problem of ignoring 'not', draw a big circle around the word 'not' whenever you see it on your exam paper. Then you won't miss it.

This covers our essential second step of reading all exam questions very carefully.

Remember, the first step is to learn the examinable material, in detail. There is no escape whatever from investing the substantial study time needed to learn the course material.

Going back to the exam itself, it is possible to escape from a waffle trap if we stumble into one on the day. We'll finish by learning how to get out of a waffle trap.

How to get out of a waffle trap

Two essential steps to getting out of the trap are (1) diagnosis, then (2) cure.

Starting with diagnosis, we can never escape from the waffle trap unless we recognise we are in it. The only way to find out if we've been waffling is to reread the exam question. The best prevention – or the earliest diagnosis – is to keep the question open in front of us at all times as we write our answer.

If your answer doesn't match the question, *stop writing immediately*. This avoids wasting any more time, and gives an opportunity to replan.

We're half-cured already. We've stopped wasting time. What we need to do next depends on our remaining time.[3] If time for the question is up, move on now. This will feel wrong, but it's absolutely essential to keep your exam-passing prospects alive.

If there's any time remaining for this question, make brief notes only during the remaining time. You will certainly get part credit for your relevant notes, for example, along the lines below.

English law remedies for breach of contract

Rescission
Damages
Specific performance
Injunction

Rescission means cancelling the contract, if possible.
Damages compensate the innocent party; they don't punish the contract breaker.
Specific performance may be ordered where damages are not adequate.
Prohibitory injunctions prevent future breaches; mandatory injunctions 'undo' breaches.

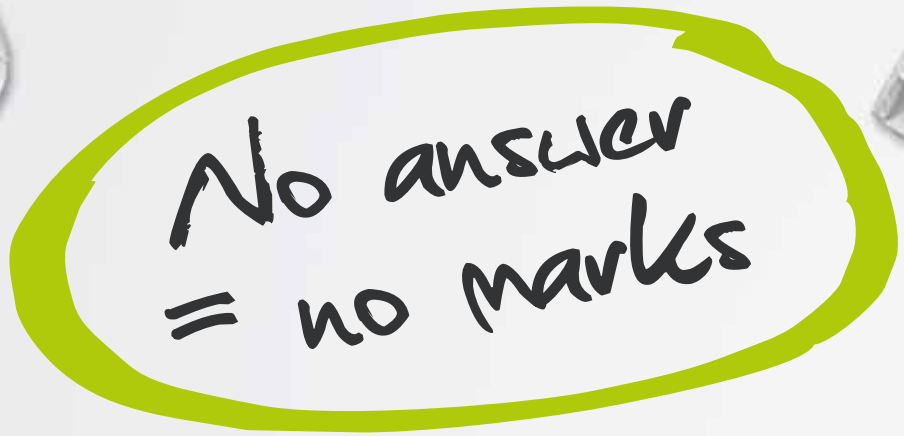
When time is up, move on ruthlessly.

1 Did you look at the answer without trying to figure it out for yourself? If you did look, this proves the surprising insight that some of us ignore 'not' and 'don't'. If you tried to work it out for yourself first, thank you.
2 Detailed knowledge is required for Business Law. Awareness is required for other papers.
3 See The Test of Time, *The Treasurer*, September 2012, page 62.

Doug Williamson FCT, is an examiner, tutor and coach who enjoys helping you to pass your ACT exams

MAGIC FORMULA

Remembering one simple principle will make your exam success more likely. Doug Williamson reveals the trick



Any exam requirements you don't attempt must necessarily score zero. How could it be any other way? This important insight translates into a very simple formula: No answer = no marks. Learning this formula could substantially increase your final marks. You need to know it, because it's not on any of the formula sheets provided in your exams.

Applying the formula means you must always give an answer, even when you aren't sure. Start doing this now as part of your exam practice.

Marking misconceptions

Before going any further, let's reassure and remind ourselves how marks are awarded.

Q. Do wrong answers get marks deducted?
A. No. There is no negative marking.
Q. If I make a mistake and get the wrong answer at the start, do I lose all the marks for that question?
A. There is no further loss of marks as long as your subsequent method is correct.
Q. If I get 80% of the marks for 60% of the paper that I answer, don't I pass?
A. If you work this out, you will only score 80% x 60% = 48% of the marks out of a potential 100%. That would, sadly, be a fail.

It's smart to guess

This all makes it very smart to guess when you don't know. Leave any blank spaces and you will simply throw marks away. As the Financial and Management Accounting examiner points out, in most questions some marks can usually be earned very quickly.

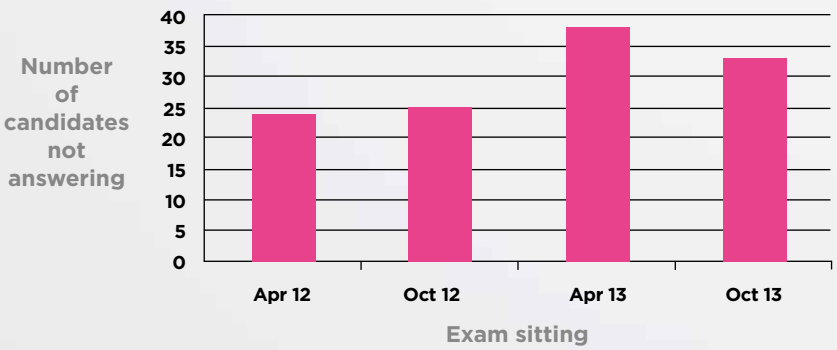
Guessing has two important benefits:
(1) You may well guess right, and score marks. With practice, your guesses will become remarkably accurate.
(2) Having a go, rather than giving up, will always make you feel happier, whatever the outcome. You'll then be in better shape to tackle the rest of your paper.

Be amazed

Despite this simple magic formula, many candidates don't answer all the required questions. Astonishingly, omitted questions feature every season. With very few exceptions, all questions in all ACT exam papers are compulsory. (Only CertRM,

CertITM CANDIDATES NOT ANSWERING ALL QUESTIONS

Figures from the International Treasury Management (CertITM) Examiner's Report highlight this surprising point



Thirty-three candidates chose not to answer all questions. Marks are *not* deducted for incorrect answers. Candidates are therefore encouraged to give an answer for all questions, even those where they are unsure of the correct answer.

CertITM Examiner's Report, October 2013

CertCFF and CertCFF (Fast Track) have one optional question each.)

Many other scripts in the October 2013 sitting revealed similarly poor exam technique, as illustrated by these extracts from the Examiner's Reports:

Financial and Management Accounting

"In Question 1 a significant number gave no answers... A significant number did not attempt Question 8..."

"Most candidates omitted to cover the second part of Question 9. This led to the automatic loss of marks."

"A significant number of candidates did not attempt Question 11. Time management is important. Ensure you have sufficient time to attempt all questions. In most questions, some marks can usually be earned very quickly."

Financial Maths and Modelling

"You should ensure that you attempt, so far as possible, all parts of all questions. Any part-questions you do not attempt must necessarily score zero for that part, reducing your prospects of gaining a pass."

"Surprisingly, many candidates gave little attention to part (b) of Question 1, given that it carried 4 marks from a total 10. This is a learning point for all candidates. Attempt all parts of the question seriously."

"In a few cases, there was a suspicion that candidates had skip-read questions, missing the final phrase '...and comment on your result'."

International Cash Management

"For multiple choice questions: (1) There is no requirement to justify or explain your answer; (2) Writing out the questions is not required, and simply wastes time; and (3) There is no negative marking, so always select an answer even if you don't know it."

Practice makes perfect

Repeated practice is the essential key to grounding your excellent exam technique. Practising past question papers under exam conditions is your number one insurance policy. Invest enough time and effort now, so that when you take your real exam you will pass with a big safety margin.

Practising past question papers will help you answer all parts of all requirements by:

(1) Working out and writing down time allocations.
(2) Sticking to them.
(3) Reading questions actively and understanding what they require.
(4) Planning all your answers for maximum marks in minimum time.
(5) Becoming familiar with the structure and style of your paper.
(6) Replicating the time pressure of the exam and identifying your personal, unhelpful exam techniques, for example, speed-reading requirements.
(7) Identifying things you already know, as a foundation for further understanding.

Your likelihood of ultimate success will then rise substantially.

Recover your composure

If you find you don't know how to answer a question, despite all your diligent practice, here are some top tips:

Do	Don't
Breathe	**Don't panic**
Read the question again carefully	**Don't speed-read or skip-read**
Stick to your time plan	**Don't overrun your time plan**
Keep going If you have time left, complete as much as you can There are generous part-marks for part-right answers	**Don't give up** (Unless your time is up, in which case stop immediately)
Check through your paper at the end Fill in any remaining blanks	**Don't despair** Everyone involved in the exam process wants you to pass

HELP FOR ACT STUDENTS

Download the previous articles from this series and other useful study information from the Exam tips area of the student site at **study.treasurers.org/examtips**

Eliminate the negative

Multiple-choice questions give you an extra advantage. The correct answer is right in front of you. You only need to identify it. To answer any multiple-choice questions you're not sure about, use elimination. Cross out the answers you know aren't right. Then guess or figure out the best answer from the remainder.

Get off the fence

You must get off the fence to give an answer. But which is the better of two or more multiple answers if you are not sure?
(1) Read the question again to see if it contains a clue.
(2) Guess.
(3) Move on to the next question.

Never hedge your bets

Only give one answer to each multiple-choice question. You can't successfully hedge your bets. If you give more than one answer, no credit can ever be given, even if one of your answers is right.

Whatever the style or format of the question, always give an answer. Practise that consistently, and it will work like magic.

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