

TRANSCRIPT OF PROCEEDINGS

AUSTRALIAN ENERGY REGULATOR

**RATE OF RETURN INSTRUMENTS
CONCURRENT EVIDENCE SESSION 2 of 4**

MATTERS DISCUSSED:

**Term of the rate of return, and
Weighted trailing average**

FACILITATOR:

Ms Anna Brakey (Commissioner, ACCC)

AER STAFF PRESENT:

**Mr Warwick Anderson (GM Network Pricing, AER)
Mr Jim Cox (Board Member, AER)
Mr Eric Groom (Board Member, AER)
Ms Catriona Lowe (Board Member, AER)
Mr Justin Oliver (Board Member, AER)
Ms Clare Savage (Board Member, AER)
Mr Esmond Smith (Senior Financial Advisor, AER)**

EXPERTS PRESENT:

**Dr Glenn Boyle
Dr Tom Hird
Mr Jim Hancock
Mr Dinesh Kumareswaran
Dr Martin Lally
Professor Graham Partington**

RECORDED VIA VIDEOCONFERENCE

THURSDAY, 10 FEBRUARY 2022 AT 1.30PM

1 MS BRAKEY: For those who weren't with us this
2 morning for the first session, welcome. We have
3 with us a group of experts and the AER board
4 members. And I am Anna Brakey, one of the
5 commissioners at the ACCC, and I am your
6 facilitator for today.

7 I will just re-acknowledge the traditional
8 owners of the country throughout Australia and
9 recognise their continuing connection to land,
10 waters and community. I would like to pay our
11 respects to them and their cultures, elders past,
12 present and emerging. And finally, I extend that
13 respect to other Aboriginal and Torres Strait
14 Islanders who are with us today.

15 This morning, I described that this session
16 is to help the AER board members decide on the
17 2022 rate of return instrument by having a
18 discussion and hearing from experts on the
19 subject. We've got all of the AER board members
20 present, and I explained this morning the
21 importance of the instrument itself, so I won't
22 go through that again.

23 If you want any information about the
24 process, which I also went through this morning,
25 please go to the AER website where there are a
26 series of papers that set out the process. But
27 in short, this today is a discussion between the
28 participants, the experts and the board members,

1 and we do have a lot of people observing, and
2 you'll notice that you don't have the ability to
3 speak or use the chat function. That is because
4 of your status as an observer. However, you do
5 have the ability to engage in the submissions
6 process that is open until 11 March.

7 Following on from this morning's session,
8 this afternoon we're going to focus on the rate
9 of return and the weighted trailing average. The
10 experts that will be discussing the issues with
11 the board today are Professor Graham Partington,
12 Dinesh Kumareswaran, Tom Hird, Glenn Boyle,
13 Martin Lally and Jim Hancock. A reminder that
14 we're using the hands-up function so that helps
15 me just to navigate the way through it.

16 We'll start the session with short
17 presentations first up from Martin and Dinesh
18 with their thoughts on the rate of return, after
19 which we'll call for other points that are
20 additive from the other experts.

21 We'll then spend about an hour on general
22 discussion on the term of the rate of return
23 focused on two main questions set out in the
24 agenda, and they are, "Should the AER use the
25 10-year term for estimating the return on equity
26 or a term that matches the length of the
27 regulatory period?", and, "If the AER were to
28 adopt a five-year term, what other adjustments

1 would need to be made? For example, would they
2 need to estimate the beta, risk free rate, or MRP
3 on a different basis?"

4 We'll then move on to the second part where
5 we talk about the weighted trailing average. We
6 will also start out with short presentations from
7 Tom Hird and Graham Partington, followed by
8 additional other points. The general discussion
9 will also run for about an hour and will be
10 focused on two main questions, being whether
11 there is a case for taking a more tailored
12 approach to determining the return on debt for
13 regulated firms with temporary large CapEx.
14 (Capital Expenditure) programs, and if the AER
15 adopted a weighted trailing average, what
16 incentives it might create for financial
17 engineering that need considering.

18 We will aim to finish by about 4 o'clock
19 Sydney time. Unless, Clare, anything to add
20 again from the board?

21 MS SAVAGE: No, other than to welcome the experts and
22 thank you for the introduction.

23 MS BRAKEY: I will pass off to Martin.

24 DR LALLY: Thanks, Anna. I will endeavour to keep to
25 the five minutes. The first issue, the
26 appropriate term for the allowed cost of equity.
27 I have circulated a paper. I trust you have got
28 that in front of you.

1 The issue is in a scenario where the
2 regulatory cycle is five years, do you use the
3 five-year allowed cost of equity or the 10-year
4 allowed cost of equity? Just to keep the point
5 as focused as possible in my example, I imagined
6 a regulatory cycle of one year rather than five
7 years. So the issue then becomes do you use a
8 one-year allowed cost of equity or two-year
9 allowed cost of equity? To further keep the
10 example simple, I omitted debt, taxes and
11 operating expenses. So in the regulatory cycle
12 of one year, the regulator sets the allowed
13 revenues at the beginning of the year and they
14 are received at the end of the year. That gives
15 rise to the first equation on the page in
16 question.

17 The value of the regulatory cash flows is
18 the regulatory cash flows, allowed cost of
19 capital, plus depreciation and then the
20 regulatory book value at the end of the year
21 discounted at some discount rate. So the two
22 rates here that are important are the discount
23 rate, D , and the allowed cost of equity, K , and
24 the numerator. It is uncontroversial that
25 whatever you choose for D , K must be the same in
26 order to ensure that the value of the regulatory
27 cash flows is equal to the initial investment.
28 There doesn't seem to be any dispute on that

1 question.

2 So the real question then is what is the
3 allowed cost of equity in the numerator, but what
4 is the discount rate? Once you answer that
5 question, what is the discount rate, then you
6 have automatically have answered the allowed rate
7 of return in the numerator. Other things. Now,
8 I say in this situation the discount rate should
9 be the one-year rate because the things you are
10 discounting back are arising in one year.

11 Two primary contrary arguments have been
12 raised, one by Dinesh and one by Graham.
13 I interpret Dinesh's contrary argument as, "Let's
14 look at standard market practice. What do market
15 practitioners do? If they, in the five-year
16 regulatory situation, choose the 10-year discount
17 rate rather than five-year rate, we should follow
18 them." A seemingly reasonable point.

19 And he cites a paper from the ENA which in
20 turn cites a number of other papers. And the key
21 one seems to be a report by Incenta back in 2013
22 where they interviewed 14 investment analysts.
23 They posed the question, what risk free rate
24 should be used in valuing a regulated business
25 subject to a five-year regulatory cycle and would
26 the rate be different for an unregulated
27 business? Incenta claimed that all the
28 interviewees used the 10-year rate in valuing

1 both regulated and unregulated business, and
2 therefore concluded that regulators should follow
3 this practice.

4 I disagree with this line of thinking for
5 two reasons: First of all, I don't favour simply
6 copying what a set of people out in the
7 marketplace claim they are doing, or even are
8 doing for that matter. For example, a government
9 bond maturing in one year must be valued using
10 the prevailing one-year yield to maturity on the
11 government bond, not the two-year rate. And if
12 you find a collection of bond valuers out there
13 who are using the two-year rate, you surely would
14 not go, "That settles it. They're the two-year
15 rate so I'll just copy that. You'd say to
16 yourself, "Well, that's pretty strange." You'd
17 want to know why they are doing something that's
18 wrong.

19 And it could be that you've missed
20 something, and once you've heard their reasons,
21 you go, "All right. I accept that." But you
22 won't accept it until you first hear their
23 reasons and you are persuaded that those reasons
24 are sensible ones. So that's the first problem,
25 that the Incenta survey doesn't give us,
26 essentially the reasons why people are doing it.

27 The second problem is that in that Incenta
28 exercise the prevailing 10-year rates were around

1 about 3 per cent, but the average of the
2 responses that they got to the survey was
3 5 per cent. So clearly, these interviewees were
4 not in general using the prevailing 10-year rate.
5 They were doing something else.

6 And what were they doing? Mr Edwards of
7 Lonergan Edwards was using a rate higher than the
8 10-year rate, because the cash flows run out to
9 infinity. A number of others said they were
10 using a rate through the cycle, so they were
11 doing some kind of historical averaging which
12 gave them the 5 per cent. But they weren't using
13 the prevailing 10-year rate. So if they weren't
14 using the prevailing 10-year rate, they can
15 hardly be relied on to guide the AER to the
16 conclusion that it should use the 10-year rate.

17 A second contrary argument is raised by
18 Graham, who notes correctly that the debate is
19 whether you use the five- or 10-year government
20 bond rate. Graham favoured the 10-year bond rate
21 because it is more liquid. Well, I think that's
22 true. But if you were valuing a five-year
23 government bond, you wouldn't use the 10-year
24 rate to value it just because it was more liquid.
25 You would have to use the five-year rate. So the
26 fact that the 10-year bond rate is more liquid,
27 true as it may be, is not a crucial consideration
28 in choosing the appropriate discount rate.

1 Graham raises some other points there that
2 I think are not crucial to the issue here, so I
3 pass over those, bearing in mind that my time is
4 probably over, and just quickly turn to the
5 second question. If you are going to use a
6 five-year cost of equity, what does it imply
7 about the risk free rate, the beta and the MRP?

8 Well, you have to use five-year terms for
9 each of those components of the cost of equity.
10 The five-year risk free rate is observable, no
11 problem. The MRP? Well, the technology the AER
12 primarily favours is historical averaging, market
13 returns minus risk free rate, historically
14 averaged.

15 If you want an estimate like that for a
16 five-year period, you deduct out the five-year
17 risk free rates rather than the 10-year risk free
18 rates. So there seems to be no problem in
19 getting a five-year MRP if that's what you want.
20 Beta is more problematic. It is not at all
21 obvious what the right historical period is for
22 estimating beta. There was a great deal of
23 discussion of that this morning, and whatever it
24 is, whether it is five years or 20 years or
25 whatever, whether that is changed depending on
26 whether you are trying to get a beta over the
27 next five years rather than the next 10 years.

28 I am inclined to the view that one should be

1 using a long-ish historical period for reasons
2 that we discussed this morning, and that choice
3 is not affected by whether I'm trying to estimate
4 a five-year future beta rather than a 10-year
5 future beta.

6 MS BRAKEY: Thank you, Martin. Dinesh?

7 MR KUMARESWARAN: Thanks, Anna. I circulated a set
8 of slides, so if you'd all have that in front of
9 you. Let me turn to the second question, which
10 Martin has just dealt with. I agree with him
11 that if the AER were to move to a five-year term
12 for the risk free rate, the MRP should also be
13 estimated using a five-year term. The reason for
14 that is the AER is applying the capital asset
15 pricing model, which is a single period model,
16 and there is only one risk free rate in the
17 model. So if you are using a five-year risk free
18 rate for the first term, you should also use that
19 for the market risk premium. We covered the
20 discussion on beta estimation in quite a lot of
21 detail this morning, so I won't repeat the points
22 there.

23 Let me turn now to the first question,
24 should the AER use a 10-year term or a five-year
25 term? I am on slide 2 now. I agree with Martin
26 that the right way to think about this choice is
27 to use the NPV zero criterion. I think that is
28 the correct framework. I think one of the best

1 estimations of the NPV criterion I've seen is the
2 one put forward by Graham and Stephen Satchell,
3 which the AER has adopted. I've got the quote
4 there, and I'll just read the second sentence
5 from that quote:

6 *A zero NPV investment means that the*
7 *ex-ante expectation is that over the*
8 *life of the investment the expected*
9 *cash flow from the investment meets*
10 *all the operating expenditure and*
11 *corporate taxes, repays the capital*
12 *invested and there is just enough cash*
13 *flow left over to cover investors'*
14 *required return on the capital*
15 *invested.*

16 I agree with that definition and I think the
17 implication of that definition is that whatever
18 the return required by investors, that's the
19 return that the AER should seek to allow. And if
20 the AER does that, the NPV zero criterion is met.

21 Let me go to slide 3. This is basically a
22 one-period version of the mathematical example
23 that Martin has just described. The key insight
24 from this, I agree with Martin, is that if the
25 allowed return is equal to the discount rate then
26 the NPV zero criterion is satisfied. What does
27 the discount rate represent? It represents the
28 return required by investors. Again, consistent
with that definition of the NPV zero criterion on
the previous slide.

Martin is right that the key distinction
between our positions is that he says because the

1 regulatory period has a five-year length, the
2 cash flows that the regulator should focus on are
3 just those five-year cash flows, and therefore an
4 appropriate discount rate is the five-year
5 discount rate.

6 My view is that the AER should think about
7 what term investors are actually using to value
8 these types of assets. On that, I think there is
9 good evidence that investors are using 10 years
10 generally, both for unregulated assets and
11 regulated assets.

12 Now, one of the criticisms that Martin makes
13 is that we shouldn't just adopt what investors
14 are doing at face value. We should think about
15 why they are doing that. I think there is a very
16 good reason why equity investors are doing that.
17 It's because the cash flows to equity arise over
18 an indefinite period of time. Martin
19 acknowledges that in his report.

20 I think one of the problems with the little
21 mathematical examples that Martin provides is
22 that it abstracts too much from reality by
23 assuming there is a finite term for these cash
24 flows. So all of his examples use two regulatory
25 periods, and at the end of each regulatory period
26 you have an expected value of the cash flows that
27 are expected to occur over the next regulatory
28 period. So what Martin is saying is that the

1 regulator can just restrict their attention to
2 the expected cash flows over this regulatory
3 period, and if you do that, it should be the
4 five-year discount rate that's used.

5 What Martin is effectively doing is
6 describing the regulatory process something like
7 a bond. And I don't think that equity should be
8 described in that way. Equity is fundamentally
9 different. So I think the reason that investors
10 use a longer term discount rate, something like
11 10 years, is because they are thinking about the
12 cash flows not just over the five years ahead of
13 them; they are thinking about the cash flows that
14 will arise beyond the five years as well.

15 I think a second problem with Martin's
16 examples is that he is using the standard capital
17 asset pricing model, which is a single period
18 model, but he is applying that to a multi-period
19 valuation problem. You can't do that. I think
20 that is one of the sources of the problem.

21 There is no easy way to value a multi-period
22 asset. So a simple heuristic or rule of thumb
23 that investors use is to try and match the
24 discount rate that they use over the terms that
25 the cash flows there are expected. So if they
26 are expecting long term cash flows, they are
27 using a long term discount rate to discount those
28 cash flows.

1 I'll pause there and perhaps we'll get into
2 the discussion.

3 MS BRAKEY: Thanks, Dinesh. I might go to the board
4 members first. Do you have any questions? Jim?

5 MR COX: Thank you, Anna. Probably a question
6 directed to any and all of the experts. I think
7 I understand the logic of Martin's argument.
8 I think I do. The question in my mind, it is a
9 change from what we do at the moment to move to a
10 different length of the regulatory period. And
11 I'm just wondering in practical terms what would
12 we gain and what would we lose if we made a
13 change as opposed to not making the change? That
14 is the issue, probably, in my mind. And if the
15 experts could address it, it would probably help
16 me.

17 DR LALLY: Well, the consequence of the AER moving
18 from the 10- to the five-year allowed rate of
19 return is that because on average 10-year rates
20 are larger than five-year rates and equivalently
21 on average five-year rates are lower than 10-year
22 rates, then on average if you switch, you are
23 over time on average going to go be providing
24 lower allowed revenues than you were previously.

25 Now, your customers are going to be happy;
26 the regulated businesses are not going to be
27 happy. But we are not engaged in a popularity
28 contest. The question is, which is the right

1 course of action? And I put it to the AER that
2 the mathematics here demonstrates that the right
3 course of action is to use an allowed cost of
4 capital that matches the regulated cycle. The
5 consequence of that is that your customers will
6 like it, and your regulated businesses won't.
7 But you are in the business of trying to find the
8 right answer regardless of how they react to it.

9 MS BRAKEY: Tom?

10 DR HIRD: I think Martin's right. But I think you
11 implicitly include the assumption, Martin, that
12 if the equity beta is less than one and the AER
13 retains the rest of its approach to setting the
14 market risk premium, essentially the market risk
15 premium will go up by on average approximately
16 the amount the risk free rate falls, so with an
17 equity beta of one there is no impact on any cost
18 estimate, but with an equity beta of less than
19 one there is a negative impact and the estimated
20 return falls.

21 I just wanted to make a very brief related
22 comment on that, which is that Martin has built
23 some logic on a multi-period model and Dinesh is
24 saying that we are using a single-period model to
25 estimate the rest of our parameters. And so, a
26 long time ago in 2008 Bruce Grundy and I wrote a
27 paper for the then gas and electricity peak
28 bodies where we were just trying to describe why

1 it was that - well, part of that paper was to
2 say, "We observe a low beta bias," that when you
3 apply the Sharpe-Lintner single period model,
4 CAPM, you estimate firms with low betas tend to
5 have higher actual returns than estimated by the
6 model.

7 And one of the core explanations that we
8 said likely plays a role in why we see that is
9 because the truth is probably investors have a
10 multi-period way of looking at the world. In the
11 Sharpe-Lintner, this single-period CAPM model,
12 what's happening - and it's pretty useful just to
13 say this out loud so everyone has in mind how
14 crazy this model is if you think of it as
15 actually describing fully how investors think
16 about things - you start on day one and you have
17 a bunch of money. You invest that for a fixed
18 period. At the end of that fixed period, which
19 is undefined, you take all the money and you
20 spend it all. You consume it all. You have some
21 savings, you have a period of investment and then
22 you have a period of pure consumption.

23 And out of that, if you are interested in
24 minimising your risk, you care about this measure
25 of beta. That is the logic of that. That model
26 was fairly quickly built on by Mertens into what
27 is commonly called the consumption CAPM. He
28 said, "Yeah, that model is good. That is a

1 really key insight. That beta concept is a
2 really great model for explaining this concept of
3 diversification and beta, but what if we are
4 actually investing over multiple periods of our
5 lives and consuming along the way?"

6 That is a different version of the CAPM
7 called the consumption CAPM. And in that model
8 we don't just care about beta; we actually also
9 care about the correlation between the returns on
10 your asset and the general reinvestment risk
11 rates in the rest of the economy.

12 And I'm not saying that the AER should go
13 out and try and implement a multi-period
14 consumption CAPM, but I am just saying that we
15 are a long way from an exact science and we are
16 making some simplifications, and that is sensible
17 in just adopting the Sharpe-Lintner and the CAPM.

18 But given the existence of the low beta bias
19 that we observe, and I think there was this paper
20 that we wrote, for the record, which is called
21 "Estimation and correction biases inherent in the
22 Sharpe CAPM formula." I think it was in 2008 or
23 so. If you accept it, and I think there is
24 overwhelming evidence that there is a low beta
25 bias, the question is whether you want to make
26 that potentially worse by adopting a shorter risk
27 free rate and a larger MRP.

28 MS BRAKEY: Thanks, Tom. Dinesh?

1 MR KUMARESWARAN: I agree with the way Tom has just
2 described the multi-period problem. There is
3 actually quite a large literature on multi-period
4 asset pricing models, and there is no single best
5 multi-period asset pricing model. And I don't
6 think anyone is suggesting that the AER should
7 try and apply a multi-period asset pricing model.

8 I think the key point is that that
9 literature demonstrates that the sequential
10 application of the single period CAPM gives you
11 the wrong answer for a multi-period valuation
12 problem. That's the first point.

13 And then to Jim's question, what is the
14 implication if the AER were to move to a
15 five-year term rather than a 10-year term? Well,
16 if it is the case that investors in fact require
17 a 10-year return rather than a five-year return,
18 and if on average the 10-year rates are higher
19 than five-year rates, the implication would be
20 that from an investor's perspective, the AER
21 would be targeting a NPV-negative outcome rather
22 than NPV-zero outcome. And all of the investment
23 incentive problems that follow from that will
24 just arise.

25 MS BRAKEY: Thanks, Dinesh. Graham?

26 PROFESSOR PARTINGTON: The first thing I want to say
27 is if we assume that the term structure of equity
28 follows the term structure of government bond

1 rates then I can't fault Martin's analysis. The
2 logic goes through. However, I still feel uneasy
3 about adopting Martin's approach because it is so
4 different from what I have considered to be
5 standard practice. First of all, using a long
6 term interest rate to work out the cost of
7 equity, and secondly what goes on in capital
8 budgeting.

9 What I taught my students was when you are
10 doing capital budgeting, you should use different
11 discount rates for different project risks. I
12 also suggested that perhaps it was ideal if you
13 matched the discount rate to the term of the
14 project. But then I told them that it was too
15 difficult, and as far as I can see no firms ever
16 did it. In fact, some firms find it difficult to
17 even discriminate across risk classes. Some
18 firms do and have divisional costs of capital.

19 However, the point is whether firms do or do
20 not discriminate across risk classes, they use
21 the same discount rate irrespective of the
22 capital project that they are evaluating. So in
23 capital budgeting, typically the practice is not
24 to match to the term of the investment. And in
25 determining the cost of equity, the typical
26 practice is to use the long term interest rate,
27 which is typically 10 years. More, if there is a
28 reliable interest rate available of longer term.

1 MS BRAKEY: Thanks, Graham. James?

2 MR HANCOCK: Thanks, Anna. I agree that the ex-ante
3 NPV equals zero is fundamentally important. We
4 are talking here about investments that typically
5 have a longer life than five years or a
6 regulatory period. Now, the investments that are
7 made by a network will in fact vary somewhat in
8 terms of their lives and their return
9 characteristics, but we are only going to set one
10 rate of return, so what we want to do is choose a
11 rate of return that is close to the average of
12 the required rates of returns over the sorts of
13 investments that networks do.

14 And I think it seems reasonably clear that
15 the four or five years is shorter than the
16 investment lives of the project, and so a 10-year
17 horizon is more reflective of the lives of those
18 projects. It seems to me that we do want to
19 achieve ex-ante NPV over 10 years and I think,
20 Martin, that you agree with that. And I think
21 what you are saying is that if we aim for ex-ante
22 NPV in each regulatory period, and I suppose
23 we're talking about two five-year regulatory
24 periods for argument's sake, if we aim at ex-ante
25 NPV equals zero in those two regulatory periods,
26 that will get us to the longer term ex-ante NPV
27 equals zero.

28 If that works, well and good. But there may

1 be a problem with it, and this is the point
2 Graham raised a week ago, which is to do with the
3 term structure issue. I'm not sure to what
4 extent you can correct this with a market risk
5 premium, but if it's the case that I discount the
6 second regulatory period at a higher discount
7 rate today than I would in five years' time, at
8 the beginning of that regulatory period in an
9 expectational sense then that would be consistent
10 with having a risk premium in the term structure,
11 then I think it becomes impossible to have NPV
12 equals zero at the beginning of each regulatory
13 period in a way that is consistent with NPV
14 equals zero over the life of the asset.

15 So that seems to me a potential risk with
16 going to an NPV equals zero over the regulatory
17 period. And if we keep our eye on NPV equals
18 zero over the life of the asset, I think we are
19 on safer ground.

20 MS BRAKEY: Thanks, James. Martin, did you want to
21 respond to that?

22 DR LALLY: I have a number of points here. In
23 respect of Jim's comments, if you can put that in
24 a mathematically formal way, Jim, that would be
25 good. And then we can just clean up the
26 ambiguity. Expressed in the English language,
27 it's just too ambiguous.

28 MR HANCOCK: Yes.

1 DR LALLY: That's the beauty of mathematics. It
2 cleans up all the ambiguities.

3 Now, Graham, let's take an example of a firm
4 that has a book, a manual, a capital budgeting
5 manual. "Thou shalt use the 10-year discount
6 rate for all projects." So here we've got Bob,
7 who does the investment analysis and comes across
8 a project in which the cash flows will arise only
9 in one year. Bob faithfully pulls out the manual
10 and uses the 10-year discount rate. Well, it
11 would be nonsense, wouldn't it, Graham, to
12 discount back the cash flows on a project that
13 arise in one year on a 10-year rate.

14 And that has happened because the firms are
15 doing something that is not sensible. Just
16 because firms do things, it doesn't mean that we
17 should copy them. We have to ask, "Why are we
18 doing this?" And the answer to the question in
19 the example here is that Bob did it because the
20 manual told him to do it. That is not a good
21 enough reason. That might be okay for lots of
22 firms doing their DCF exercises. They don't have
23 to subject themselves to external scrutiny and
24 have consumer groups on their back saying, "This
25 is too high and too low," and regulated
26 businesses the other way around.

27 The AER is writing reports that are hundreds
28 of pages long and is trying to get it right.

1 What the firms might do with their simple, crude
2 methodologies just don't have any relevance to
3 what the regulator is trying to do.

4 Now, the consumption CAPM, a fascinating
5 discussion, but we are not engaged in the
6 consumption CAPM and frankly, the mathematics
7 that I have gone through doesn't even mention the
8 CAPM. We haven't even got there yet. All the
9 mathematics I've gone through demonstrates is
10 that if the regulatory period is five years and
11 the regulator is trying to discount back those
12 cash flows over the first five years plus the RAB
13 at the end, the right discount rate is the
14 five-year rate.

15 I haven't mentioned what model we're using.
16 You can get to the conclusion that the five-year
17 rate is right before you've even mentioned the
18 subject of the CAPM. So talking about
19 consumption CAPM, Sharpe-Lintner CAPM, that is
20 way beyond what is needed to answer this very
21 simple question. You do not need to even have a
22 CAPM to get the right answer there. It is there
23 in the mathematics.

24 MS BRAKEY: Thanks. Glenn?

25 DR BOYLE: First, a question. Can you see me?

26 MS BRAKEY: Yes.

27 DR BOYLE: Right. Because I can't see any of you.

28 Well, I can see Jim but he is frozen in time from

1 about 20 minutes ago. So perhaps I should say
2 what I've got to say and then maybe log out and
3 try and come back in. Would that be a reasonable
4 plan?

5 MS BRAKEY: Yes, although our vision of you and the
6 audio are both good.

7 DR BOYLE: So it might be better if I just live with
8 it, then?

9 MS BRAKEY: It's up to you.

10 DR BOYLE: There has been an awful lot raised here
11 and I'm not sure I have successfully kept track
12 of it all. But here are a few thoughts I have on
13 this. Basically, overall, starting with the
14 bottom line, I agree with Martin on both
15 questions 1 and 2.

16 Now, why? Well, first in terms of some of
17 the things that have been raised, it's not quite
18 true that the CAPM is inconsistent with
19 multi-period valuation. Jean Farmer set out the
20 conditions for them to be used together 40-plus
21 years ago. Admittedly, they are fairly
22 restrictive conditions, but there isn't a
23 complete dichotomy between the CAPM and
24 multi-period valuation.

25 That said, I don't think any of us would
26 argue that the CAPM has some problems in terms of
27 its ability to explain average returns. And this
28 is the issue that Tom was referring to. But I

1 don't think that should be addressed by making
2 ad hoc modifications to CAPM parameters. If
3 there's something wrong with the model, change
4 the model. Don't try and arbitrarily adjust
5 particular parameters in the model that you don't
6 like.

7 Now, as for the evidence that firms use
8 10-year rates, well, I mean, there's lots of more
9 compelling evidence that firms do all kinds of
10 strange things that are at odds with finance
11 theory. Oftentimes it turns out that in fact
12 they are doing them for good reason or they are
13 not actually doing them at all. But even if they
14 are doing them and we can't really explain it, so
15 what? That only matters if they are the marginal
16 investor, the price setter. If they are not,
17 well, whatever they say they are doing is neither
18 here nor there.

19 As I explained in the note that I sent
20 around, even if they are the marginal investor,
21 the fact that they are using the 10-year rate for
22 all future cash flows is simply an approximation
23 to the correct procedure, which is the one-year
24 rate for one-year cash flows, two-year rate for
25 two-year cash flows and so on until kingdom come.

26 Now, if those rates have an upward sloping
27 term structure then the long term rates will be
28 high, higher than both the 10- and five-year

1 rates, and of course the five-year rate will be
2 the lowest. So if you are only going to use a
3 one rate, it is going to have to be some kind of
4 average of all of those. And so the 10-year rate
5 is really just reflecting that kind of heuristic.
6 It doesn't mean that the first five years of cash
7 flows are being discounted at the 10-year rate.
8 It's just reflecting the heuristic used for
9 valuation purposes.

10 If in fact the first five years of cash
11 flows really were being discounted or valued by
12 the market at the 10-year rate then hedge funds
13 would be buying portfolios of these regulated
14 companies up like mad, splitting the first five
15 years of cash flows off for separate securities
16 and selling them at the higher price reflecting
17 the higher rate, and pocketing the difference.
18 Perhaps there is some of that going on, but I'm
19 not aware of it.

20 What else? Oh, the term structure issue
21 that Graham raised. That's certainly an issue,
22 but it's an implementation problem, basically
23 saying that we observe the five-year discount
24 rate, or one year in one period in Martin's
25 model, with error. Now, there's no doubt that we
26 do because we don't know what the risk premium
27 is. But that problem will still be there if we
28 use the 10-year rate. It doesn't make it go

1 away. Estimation error of the discount rates is
2 still going to be a problem. And I think I've
3 exhausted the various topics that were brought
4 up.

5 MS BRAKEY: Nothing else from the experts on that?

6 In that case, back to the board members? Do you
7 have any questions? Nothing else? Clare?

8 MS SAVAGE: It's a tricky one to sort of weigh in one
9 here, particularly if Martin will require me to
10 phrase my question in a mathematical formula as
11 you requested of Jim.

12 I think one of the things we are struggling
13 with is I think there is an alignment on the NPV
14 neutrality principle; I think there may be a
15 difference of views amongst the experts around
16 how that is achieved. And one of the challenges
17 I think we have then is to form a view,
18 obviously, as to what - and the definition that
19 Dinesh has called out is around what investors
20 require.

21 And so then on the one hand we have Martin's
22 suggestion around obviously almost a resetting
23 bond, which is a discount across the cash flows,
24 and then we'll take the longer term rate because
25 that will reflect the investors' financing costs
26 or construction of equity costs.

27 And so they are quite different positions,
28 and you are almost arguing them on different

1 grounds. There is no empirical data to bring
2 those two points together, I guess, and that is
3 one of the challenges that I'm hearing in the
4 evidence.

5 DR LALLY: Well, the best empirical evidence that
6 Dinesh cites is the survey by Incenta, and I
7 don't think you couldn't have got a more targeted
8 survey. Incenta went out and put two very
9 precise questions to people and got back very
10 precise answers.

11 The trouble is the answers they got back did
12 not in fact support the conclusion that Incenta
13 drew from it, that these people were using the
14 prevailing 10-year rate. They weren't. Most of
15 them were doing something else. There might have
16 been one or two of them who were using the
17 prevailing 10-year rate, but on average both the
18 average and the median rate they were using was
19 5 per cent - in their own survey.

20 It is just extraordinary how Incenta could
21 have failed to notice that the average answer
22 given was 5 per cent and yet the prevailing, that
23 is to say the average 10-year rate over the
24 preceding year was 3.2 per cent. That's the sort
25 of prosecution evidence that defence counsels
26 would die for.

27 MS SAVAGE: I'm wondering, Martin, if you have some
28 comments perhaps on Graham's comments about term

1 structure. Because I think we heard the comments
2 you made before about the Incenta survey, but I'm
3 just interested in whether you had any response
4 to Graham's comments about the term structure?

5 DR LALLY: Well, Graham poses the quite interesting
6 question of whether the structure of the cost of
7 equity matches the term structure of risk free
8 rates. With the five-year risk free rate, just
9 to keep it simple, as 5 per cent, and 10-year
10 risk free rate as 10 per cent, clearly the cost
11 of equities will be larger for those two numbers
12 and that increment is called the risk premium.

13 And is the risk premium for five years
14 different to the risk premium for 10 years? Very
15 fair question. But whatever the answer to that
16 question is, it is still true that the right
17 discount rate to use for the regulatory cash
18 flows over five years plus RAB at the end is the
19 five-year rate. So Graham's posing an
20 interesting question, but it doesn't in any way
21 relate to the problem we've got here, "What's the
22 right discount rate on the five-year cash flow?",
23 so an interesting question but it doesn't answer
24 the one we are interested in.

25 MS SAVAGE: But did you say in your earlier comments
26 that you thought if the return on equity is five
27 years then the market risk premium would also
28 need to be an equal rate? Or do you imagine it

1 could be a five-year risk free rate and a 10-year
2 market risk premium?

3 DR LALLY: No, I said in my initial presentation that
4 if the AER is going to go to a five-year cost of
5 equity for the discount rate and therefore the
6 allowed rate, that five-year cost of equity must
7 be made up of a five-year risk free rate, a
8 five-year MRP and a five-year beta.

9 And I further said that the five-year risk
10 free rate, that is easy to observe. The
11 five-year MRP, well, you can estimate a five-year
12 MRP as opposed to a 10-year MRP. So that is kind
13 of doable. But with the betas, it's pretty hard
14 getting a reasonable answer. How that answer
15 differs over five and 10 years, I don't know.

16 So they are implementation questions, but
17 the question I think we are posing here is, "In
18 principle, what's the right cost of equity for
19 the regulatory cycle?" Once we've answered that
20 question then we can move into the details about
21 how you estimate it. But I think unambiguously
22 because the things you are discounting are over a
23 five-year period then you must be using the
24 five-year cost of equity. That's just basic
25 finance.

26 MS BRAKEY: Thanks, Martin. Clare, are you all right
27 if I go onto Dinesh or do you have a follow up
28 question there?

1 MS SAVAGE: I might have one, but I think Dinesh and
2 Tom have got their hands up and it looks like
3 Graham might be leaning for the button as well.

4 MR KUMARESWARAN: Let me just address Martin's point,
5 his suggestion that the evidence that investors
6 are actually using 10 years as the relevant
7 discount rate is scant that the only evidence
8 seems to be this Incenta survey. That is just not
9 correct. There are many, many independent
10 valuation expert reports that relate to the
11 regulated assets, the assets that the AER is
12 regulating, and the independent valuation experts
13 all say that they are using a 10-year term.

14 Even the most recent transactions involving
15 Spark and AusNet, those independent valuation
16 expert reports say they are using 10-year
17 discount rates. Martin makes a point that the
18 average discount rate, the single average risk
19 free rate in the Incenta survey, was higher than
20 the prevailing risk free rate. But that risk
21 free rate was based on a 10-year term. It's just
22 that the valuation experts may have been making
23 some adjustments to that. So maybe using a
24 longer averaging period to reflect that
25 government bond yields have been falling.

26 There's very well-documented evidence that
27 valuation experts have made adjustments to things
28 like the risk free rate or other adjustments to

1 their capital asset pricing model estimates to
2 account for the fact that government bond yields
3 fell after the GFC.

4 MS BRAKEY: Thanks, Dinesh. Tom?

5 DR HIRD: Just a point of clarification for Martin.

6 Is it your position, Martin, that actually there
7 is no term structure of the return on the market,
8 if you like? That that's, you know, at one year,
9 two year, five years, at any given point in time
10 that's the same, but just for these firms that
11 have equity betas that are different to one, that
12 investors will respond to different levels of
13 short and long term interest rates differently?
14 You're not saying, I don't think, that when the
15 five-year rate falls, if we were regulating a
16 firm with an equity rate of one, that that would
17 make any difference. Have I got that right?

18 DR LALLY: No, what I pointed out was that if you
19 estimate the MRP by the historical averaging
20 methodology, you've got to take the average
21 market return and deduct the average risk free
22 rate over that period, okay? And if you're - for
23 a five-year period - deducting out naturally the
24 average of the five-year risk free rates, for a
25 firm with a beta of one, it all washes out.

26 But if you estimate the MRP in a number of
27 other different ways, you may not get that
28 washing out occurring. I simply pointed out that

1 using the AER's preferred methodology for
2 estimating the MRP, this mathematical consequence
3 would occur. I wasn't saying that's the best MRP
4 method to use. And in fact, I think I have
5 clearly said I think the AER should be using a
6 wide range of MRP estimation methods.

7 DR HIRD: I think that is important context. If the
8 AER does maintain its current approach to setting
9 the market risk premium, and it is sort of
10 doing - we have to think about what the AER might
11 be doing in adopting a five-year term in the
12 context of everything else that it does and ask
13 whether that makes things better or worse.

14 DR LALLY: I don't agree with that. My view that the
15 five-year cost of equity should be used is
16 completely independent of my view of what the AER
17 should be doing to estimate its MRP. In other
18 words, I don't mould my view on the appropriate
19 cost of equity to use according to what the AER
20 does as an estimation technology from the MRP.
21 That's a separate exercise.

22 DR HIRD: Fair enough, but I think the AER needs to
23 do that. Because it's making all those decisions
24 simultaneously, it needs to think how they bundle
25 up together to give a sensible result.

26 MS BRAKEY: Thanks, Tom. James?

27 MR HANCOCK: I want to make the point that I think it
28 is important to have ex-ante NPV equals zero over

1 the full life of anticipated investments to get
2 efficient investment signals. In saying that, it
3 comes from a prior. It doesn't come from any
4 evidence about what market practitioners do.

5 We know in economics generally that when
6 people state their valuations, they can widely
7 diverge from the sorts of valuations that we
8 actually observe in the market. And so that
9 potentially is what's happening here in the
10 criticisms you're making of the Incenta report.

11 It is also a problem that arises, for
12 example, with the dividend growth method. We're
13 relying on statements that don't really have much
14 skin in the game. So when I favour a model that
15 looks at ex-ante over the life of the asset, I'm
16 not relying at all on what those market
17 practitioners are saying; I'm relying on a
18 conception of what a rational investor would need
19 to make an investment.

20 DR LALLY: Yeah, that's fine. The mathematics I've
21 gone through not only gives you NPV equals zero
22 over the first regulator period, but because you
23 apply that at the beginning of each new
24 regulatory period, you get NPV equals zero over
25 each regulator period out through the life of the
26 asset and therefore NPV equals zero over the full
27 life of the asset. There's no problem there.

28 MS BRAKEY: Thanks. Glenn?

1 DR BOYLE: Two things. First one is one sentence:
2 Independent valuation expert reports, no matter
3 how many there are of them, are not market
4 evidence.

5 The second point, I agree with Martin on
6 this. There are two relevant questions here.
7 The first one is what rate satisfies NPV equals
8 zero, and that's got to be the one matched to the
9 term of the cash flow.

10 The second question is how is that
11 implemented? There, there is room there for
12 argument. I agree with Tom that the AER may need
13 to consider how that interacts then with the
14 estimation of the market risk premium. But it is
15 a separate question. As far as the first
16 question, what rate satisfies NPV equals zero,
17 there is only one answer to that.

18 MS BRAKEY: Thanks, Glenn. I'll just quickly go to
19 Dinesh and then I'll go back and see if Clare is
20 satisfied that her question is answered. Dinesh.

21 MR KUMARESWARAN: Sorry, Glenn, can I clarify? You
22 said what would satisfy an NPV zero outcome is if
23 the discount rate is matched to the length of the
24 cash flows? Did I understand that correctly?

25 DR BOYLE: That's correct, Dinesh, otherwise there
26 are arbitrage opportunities.

27 MR KUMARESWARAN: Yes, but the cash flows from the
28 perspective of an equity investor are long-term

1 cash flows.

2 DR BOYLE: Yes, but the regulator is tasked, as
3 Martin points out, with achieving NPV equals zero
4 over the regulatory period. If they do that
5 every period, then it is NPV equals zero over the
6 entire life of the asset.

7 And so the question is, what's the relevant
8 discount rate to be used by the regulator with
9 its horizon of five years? Well, those cash
10 flows are all received in the first five years,
11 and by definition of what a five-year rate is,
12 the appropriate discount rate the apply to those
13 cash flows is the five-year rate. Now, how we
14 measure or estimate the five-year rate is a
15 different and fraught issue, but it is different.

16 MR KUMARESWARAN: Yes, I agree with that. I would
17 just take issue with your characterisation that
18 the relevant cash flows just arise over the
19 single regulatory period. I don't think from an
20 equity investor's perspective that is correct.
21 What equity investors care about - this is how
22 I've seen actual investors in these networks
23 value these assets. They forecast the cash flows
24 from these assets over a long period of time,
25 well beyond a single regulatory period, and then
26 they apply the longest feasible discount rate
27 that they have access to, which is the 10-year
28 rate, to discount those cash flows.

1 DR BOYLE: Yes. As I say, that is just an average
2 over the cash flows from today until kingdom
3 come.

4 MR KUMARESWARAN: Yes, I agree with that.

5 DR BOYLE: But it doesn't mean they are effectively
6 discounting the first five years' cash flows at
7 the 10-year rate. If they were then, as
8 I pointed out before, there would be arbitrage
9 opportunities. Hedge funds would be into this
10 like a tonne of bricks.

11 MR KUMARESWARAN: In Martin's report on pages 18 and
12 19 he has an equation which he says describes the
13 way that investors typically value unregulated
14 firms. And he says that the way that type of
15 asset is valued is for the investor in the
16 unregulated firm to forecast cash flows out to
17 infinity and then to apply a 10-year discount
18 rate. Do you see any problem with that?

19 DR BOYLE: Do I see any problem with that? Well, not
20 necessarily. I think that's just the situation
21 I've described, where instead of using matched
22 year rates for each yearly cash flow, which would
23 be a very difficult task because most of those
24 rates are not observed, instead investors act as
25 if they do that by applying one single discount
26 rate to all future cash flows that sum, in
27 effect, some complicated average of that term
28 structure of expected returns.

1 MR KUMARESWARAN: Yes.

2 DR BOYLE: But I may be getting Martin wrong there
3 since I haven't got what he said in front of me.
4 So he may want to jump in here.

5 DR LALLY: Neither have I, and I don't want to lose -
6 we were told before we weren't going to share
7 screens. What I'd like to do right now is just
8 go to the document that Dinesh is referring to,
9 take his page references and see whether his
10 claim is correct.

11 I don't believe it would be. Whenever you
12 are doing a discounting exercise over many, many
13 future years with a standard capital budgeting
14 project, whenever you use a single discount rate
15 you are averaging in the way that Glenn has
16 mentioned. And that is common practice.

17 And so long as your weights that contribute
18 to that average are right, you'll get the same
19 answer. But it is still true, as Glenn points
20 out, that that average embodies within it
21 discounting the cash flows for the first year at
22 the first-year rate, the second year at the
23 second-year rate and so forth. Just because just
24 people use an average, doesn't mean effectively
25 they are discounting the first few years' cash
26 flows at the 10-year rate. They are just doing
27 an averaging process. There is nothing in this,
28 the use of a single discount rate, which

1 contradicts anything that's been said here. It
2 is just a simple averaging process that disguises
3 the complexity of the individual discount rates.

4 MR KUMARESWARAN: Yes. The point that I was trying
5 to establish was whether Glenn agrees that that
6 is how investors in an unregulated asset would
7 value those cash flows. And if so, does he see
8 any problems with that?

9 MS BRAKEY: I think he said no. Did you have a
10 follow on point?

11 DR BOYLE: I don't have a problem with that as a
12 description. Whether that's actually how markets
13 value any particular asset or security, that
14 requires market evidence. But as a model,
15 description or approximation of how that
16 valuation takes place, that seems fine to me for
17 the reasons I've explained.

18 MS BRAKEY: Dinesh, did you have a follow-on point?

19 MR KUMARESWARAN: I guess the point I'm making is
20 that that is precisely how I understand investors
21 in regulated assets to be valuing those assets as
22 well. Regardless of whether the regulator resets
23 allowances every five years or not, what they
24 care about are long term cash flows and they use
25 a long term discount rate to value those cash
26 flows.

27 MS BRAKEY: Thanks, Dinesh. Clare, back to you.
28 Does that answer your initial question? I know

1 Eric has had his hand up for a long time, but I'm
2 presuming he will change the topic so that's why
3 I've let this run.

4 MS SAVAGE: I'm sort of hoping he will. But I need
5 to make sure. This is actually much more
6 interesting than I thought it was going to be.

7 But I need to make sure I understand the
8 difference of positions in the room, and so I'm
9 going to try and articulate it. I am not the
10 expert, but I do need to be a decision maker.
11 I think everybody agrees on the NPV neutrality
12 principle and I think everybody agrees that that
13 requires discounting over the term of the cash
14 flows.

15 I think there is then a difference of view
16 as to what the term of the cash flows means. I
17 think Martin is suggesting that the resetting
18 nature of the regulatory periods means that NPV
19 neutrality is achieved if you use a five-year
20 rate because you reset every five years and
21 therefore you will achieve NPV neutrality across
22 the whole life.

23 I think Dinesh is arguing that investors
24 have a multi-period view of cash flows, so a
25 longer view of cash flows, and therefore a
26 10-year rate would be appropriate because it is a
27 proxy for a multi-year, long term asset, and so
28 therefore you are almost seeing a very long term

1 of the cash flows.

2 I think Glenn is sort of in the camp of the
3 shorter term of the cash flows, but you see the
4 long term 10-year rate as being effectively an
5 averaging of individual annual rates. And
6 therefore I thought, Glenn, you were coming back
7 towards a five-year rate but you don't know how
8 to estimate a five-year rate, so that's where I
9 was getting a little bit unsure.

10 DR BOYLE: No, no. I'm definitely in the five-year
11 rate camp.

12 MS SAVAGE: And you think the five-year rate can be
13 estimated through the five-year Commonwealth
14 secured government bond rate?

15 DR BOYLE: Correct.

16 MS SAVAGE: And Graham, I think you're more in the
17 multi-year longer term structure of cash flows.
18 Is that correct?

19 And Tom, I'm just assuming you're there too.
20 And James, I think you're there as well.

21 PROFESSOR PARTINGTON: Well, the logic of Martin's
22 approach, I think, is unassailable. But then it
23 does concern me that people seem to do something
24 quite different. As Brealey and Myers put it,
25 businesspeople often act smarter than they talk.
26 With academics, it's often the other way around.

27 MS SAVAGE: So we just have to find the truth in the
28 middle of that.

1 PROFESSOR PARTINGTON: And if there is a practice
2 which has gone on for decades then it can't be
3 too egregious.

4 MS SAVAGE: So you think logically Martin is correct,
5 but in practice Dinesh is?

6 PROFESSOR PARTINGTON: In practice? Well, in
7 practice I don't really know. You see, I think
8 the argument that Glenn and Martin have put that
9 this simple rate is some sort of complex
10 geometric average of the individual rates, that
11 might have some legs. I don't know whether
12 that's the truth, but it has some legs.

13 MS SAVAGE: Thank you. And Tom and James, have I
14 characterised where I think you are sitting
15 correctly? I just need to make sure it's clear
16 in my head before we move onto the next topic.

17 DR HIRD: Yes, I would agree with Martin's logic if
18 we were dealing with risk-free assets. Once
19 we're dealing with risky assets, the logic falls
20 apart because we don't have an asset model of the
21 term structure of the risk premium that we're
22 working with, right? We don't have one.

23 So I don't think there's evidence to say
24 that, you know, in sort of moving from a flat to
25 a steeper yield curve, swivelling around the
26 middle would lower the expected return for
27 regulated businesses. That's the implication.

28 MS BRAKEY: James, can you just confirm for Claire

1 your position?

2 MR HANCOCK: Yes, basically, except that I remain
3 concerned that there is a possible inconsistency
4 arising from the term structure. Martin's asked
5 me to do some maths on that, so I'll do that and
6 either find that I'm wrong or find out how Martin
7 thinks differently on it.

8 MS BRAKEY: Okay, thank you. Over to Eric now.

9 MR GROOM: Thanks. Clare really helped me get
10 through the sorting out of the issues that I was
11 trying to get to anyway. It does seem to me that
12 there are some issues raised that may come up
13 next week in the discussion about MRP and its
14 variability through time. I always feel
15 uncomfortable to make a decision to compensate
16 for a perceived error in another decision, so to
17 speak, as we are building up. We do have to get
18 to a decision, I think, that's reasonable in the
19 round. But the idea that we will make an
20 assumption here to offset Tom's assumption about
21 a low beta bias is an uncomfortable position to
22 be in, in some ways.

23 The other thing is it seems that we have
24 moved away from the life of the assets to the
25 period over which people value the income stream,
26 which I think is a positive move because even the
27 10-year seems to be a matter of convenience. It
28 is not equating to the life of the assets.

1 What I'm not sure of is whether there is any
2 evidence on market practice that would alleviate
3 Martin and Glenn's concern that as a matter of
4 principle using a period longer than five years
5 is wrong. The five-year discount rate in
6 Dinesh's term characterises Martin saying, "Well,
7 that's the one that they should use, they ought
8 to use, so that's the basis for the valuation."

9 And sorry, I haven't got a question here;
10 I'm just trying to pull together the arguments.
11 When we get to a longer term and the argument for
12 the 10-year or longer period of valuation and
13 10-year or longer rate, it's a certain
14 squeakiness to the assumptions there because it
15 seems, as Dinesh and Martin have noted, that in
16 practice the people doing the valuations aren't
17 strictly limited to the 10-year term. They're
18 sort of making adjustments to the risk free rate.

19 Now, in the case of the Spark valuation
20 report it seemed as though they were making an
21 adjustment on the assumption of a return to sort
22 of higher risk free rates post the 10-year term.
23 That is, they were building in a longer term ,if
24 you like, to the discount rate. But it is not
25 terribly transparent and not terribly hard and
26 firm. Martin is giving us a hard, firm rule that
27 he reckons is right, whereas the 10-year term is
28 more a matter of convenience than a hard and fast

1 rule, if I can characterise it that way. Have I
2 got it wrong or have I summarised the discussion
3 unfairly?

4 MS BRAKEY: Tom, I'll go to you and then to Dinesh.

5 DR HIRD: I just take one issue with your
6 characterisation of my position, Eric. It was
7 not that Martin's right but you shouldn't do that
8 because it will make the low beta bias worse,
9 it's that actually the evidence is not there for
10 what Martin is saying because we don't have a
11 multi-period model that we're working with that
12 deals with the risk premium. And you should also
13 would be cognisant that if you nonetheless did
14 follow Martin's advice, you would make the low
15 beta problem worse.

16 MS BRAKEY: Thanks, Tom. Dinesh?

17 MR KUMARESWARAN: I understand Martin and Glenn to be
18 saying that anything that we can observe actually
19 happening as commercial practice is not relevant,
20 because that's not the market clearing price of
21 capital. But where does that get us? I mean, we
22 can't observe what the actual cost of equity is
23 in the market. I mean, if we could do that, the
24 AER wouldn't have to go through this process. So
25 what's the best evidence that we have? Well,
26 it's what investors are actually using.

27 What Martin and Glenn seem to be saying is,
28 "Let's disregard what investors are actually

1 doing. Let's use some finance theory to
2 determine what rate ought to be used." But their
3 result depends on some very restrictive
4 assumptions, which I don't think represent
5 reality very well.

6 MS BRAKEY: Thanks, Dinesh. We'll go to Glenn and
7 then I think we might wrap up this topic because
8 I'm not 100 per cent sure we're going to land
9 anywhere aside from where Clare has suggested
10 that everybody is and summarised their positions.
11 But Glenn, just quickly to wrap up on that?

12 DR BOYLE: Very much so. Dinesh is absolutely right
13 that the position Martin and I are adopting is
14 based on finance theory. That is because Dinesh
15 is also right in saying that it is very difficult
16 to obtain - I don't know of any actual way of
17 obtaining the market evidence. In the absence of
18 market evidence, we rely on theory. It doesn't
19 follow to me that we rely on what people say they
20 do or alternatively neither.

21 If we didn't go to a theoretical solution,
22 that would imply that we wouldn't use the CAPM
23 and we just average realised returns on whatever
24 securities we were interested in for as far back
25 as we can. We don't do that; we use the CAPM.
26 And really I think all Martin and I are saying is
27 that in the absence of market evidence, we should
28 apply the best available theory. So I agree with

1 Dinesh; I'm just explaining why.

2 MS BRAKEY: Excellent. All right. Well, now we will
3 move on to the weighted trailing average, and we
4 have Tom as our first presenter.

5 DR HIRD: I think this is fairly - I have not a lot
6 to say on this. I'll just bring up my notes.
7 Just going back to the sort of framework that I
8 talked about in relation to the EICSI, the first
9 decision the AER has to make when coming up with
10 as part of setting an allowance for the cost of
11 debt is what an efficient benchmark debt
12 management strategy is.

13 Now, to date the AER has adopted the
14 issuance of a 10-year bond and an evenly weighted
15 trailing average. That's an approximation to
16 what a business would actually do for a range of
17 reasons, but including that it may be that their
18 debt portfolio is rising over time, falling over
19 time or is just moving around more and it's hard
20 to maintain a constant, steady - you know, it's
21 not in a steady state equilibrium. In principle,
22 if there's a material deviation between what NSPs
23 were actually doing and that simplification of
24 the trailing average, I would see a version of
25 the weighted version of the trailing average
26 better reflect what an NSP actually has to do to
27 maintain its business as a reasonable approach.

28 It just depends on the extent to which that

1 situation arises and the cost of any additional
2 complexity of reflecting that in the regulatory
3 building block models. And I am agnostic and I
4 can see a situation where that might well be the
5 case that that was justified.

6 MS BRAKEY: That was quick. Thanks, Graham. Over to
7 you.

8 PROFESSOR PARTINGTON: It is well-known I've never
9 liked the trailing average. It creates problems
10 and I think today's discussions have demonstrated
11 that. But my concern is a much more fundamental
12 issue, so let me explain. We are now onto
13 slide 2, which is talking about fundamentals.

14 What I have got there is that the expected
15 return on the asset is equal to the expected
16 return on the portfolio of issued securities. So
17 the point of that is that it is the asset that
18 determines the cash flows and their risk. The
19 portfolio of issued securities inherits the cash
20 flow characteristics of the assets.

21 In other words, you can think of it as being
22 a mirror to the assets. Sometimes it seems more
23 like smoke and mirrors because you get all sorts
24 of arcane and largely irrelevant discussion about
25 what firms are actually doing about their
26 financing. The whole point of the portfolio of
27 issued securities is to use it as a measurement
28 instrument to measure the WACC. But the driver

1 of that WACC is the nature of the assets that you
2 invest in. High risk assets, high WACC. Low
3 risk assets, low WACC.

4 So we want the expected return on the assets
5 because we are interested in computing the
6 present value and we are interested in the NPV
7 equals nought criteria. So what do we do? We
8 take the expected cash flow from the asset and
9 then we discount it at the current equilibrium
10 expected return for the asset. Equilibrium is
11 important there because in equilibrium, the
12 expected return is equal to the required return
13 for investors.

14 And where does that required return come
15 from? It comes from the capital market. It's
16 the current opportunity cost of capital. Look at
17 the characteristics of the cash flows from the
18 asset, look at how you could recreate those
19 characteristics by investing in the capital
20 market, what's the rate of return on that
21 investment in the capital market, that's your
22 benchmark for your investment in assets.

23 Now, notice that the current opportunity
24 cost of capital is determined by the market. It
25 is not determined by what the networks do or did
26 about their financing or plan to do. It is
27 determined by the market. Neither is it
28 determined by the history of interest rates. Our

1 objective here is not to compensate the firm for
2 the costs of debt historically incurred.

3 I'm not walking alone here. There is plenty
4 of support for my arguments. In fact, I could
5 produce a small mountain of finance texts which
6 would all tell you that when you are working out
7 the weighted average cost of capital, you should
8 use the current cost of debt, not the historic
9 cost of debt.

10 Indeed, I can even claim support from the
11 AER. If you look at the document assessing the
12 long term interests of consumers, what you will
13 find there is the statement that the allowed rate
14 of return should be the best estimate of the
15 investors' expected returns matching the market
16 cost of capital. And if you do that, you're
17 going to deliver the best outcome for consumers.

18 There is also a federal court decision on
19 what is in consumers' interests, and the federal
20 court concluded that consumers' interests were
21 served by providing investors with a return which
22 covers the opportunity cost of capital. And
23 I would entirely agree with that.

24 Okay, so conclusions: Historic costs of debt
25 are not an expected return. Historic costs of
26 debt are not an opportunity cost of capital. And
27 so the use of historic costs of debt is
28 fundamentally inconsistent with using the

1 expected return and hence fundamentally
2 inconsistent with the NPV equals zero criterion.
3 Also to date it's been costly for consumers.
4 Whether they will ever be compensated by the
5 swings and roundabouts principle is an open
6 question.

7 Turning to the issue of lumping investment
8 and the weighting mismatch issue, what I would
9 say, of course, is that problem arises from using
10 the wrong cost of debt to begin with. But it is
11 clear that there is a problem, and it is a
12 problem which needs to be addressed. That is
13 rising interest rates. Well, they may be a year
14 or so down the track, but it is almost certain
15 that in the not-too-distant-future, the current
16 interest rate is going to be running away from
17 the historic weighted average. When it does, I
18 predict you are going to hear a lot from the
19 networks. I don't think that would surprise
20 anybody. And with substantial investment to be
21 undertaken, they will have a good story to tell.

22 I have a suggested solution, and that is to
23 create a separate asset base for new investment.
24 That would need some definition. And then really
25 and truly apply the expected rate of return to
26 that new investment asset base.

27 Now, of course there are some problems.
28 First of all, you've got two RABs (regulator

1 asset bases), which I understand would creates a
2 regulatory issue and that would need to be
3 resolved. Consumers will not be fully
4 benefitting from the swings and roundabouts
5 principle that is supposed to apply under the
6 trailing weighted average, and networks may
7 complain about the difficulty of hedging, to
8 which I would respond that hedging is not
9 compulsory. It is a choice. I have simple
10 valuation illustration at the end of my
11 presentation, but I think it is so blindingly
12 obvious that it doesn't need me to go through it.

13 MS BRAKEY: Thanks, Graham. And those two
14 presentations, I should have explained earlier,
15 when the AER set the agenda and picked which
16 experts would lead the discussion, they picked it
17 such that there would be contrasting views put up
18 in those initial discussions. And I think that
19 is a good illustration of those contrasting
20 views.

21 I'll first go to the board members to see if
22 they've got any questions. No? Okay. To the
23 other experts - sorry, Clare?

24 MS SAVAGE: So I guess, Graham, just to clarify, if
25 we were to change - and I understand the
26 arguments you're making about why we may not have
27 used a weighted trailing average of debt, but we
28 are using one at the moment and we are mid-way

1 through the full 10 years. If the AER was to
2 continue using a 10-year trailing average of
3 debt, your view is a separate WACC is the way to
4 deal with the up-front large lumpy CapEx?

5 PROFESSOR PARTINGTON: Yes.

6 MS BRAKEY: Thank you. Jim?

7 MR COX: A couple of questions. I sort of realise
8 from Graham's point of view the original sin was
9 to go to the trailing average in the first place,
10 but we have got there. I'd like you to say a bit
11 about why you think a separate RAB and a separate
12 rate of return based on opportunity costs of
13 capital is better than the weighted trailing
14 average approach?

15 PROFESSOR PARTINGTON: Well, because it is consistent
16 with an NPV equals zero criterion, whereas the
17 historic cost of debt is not. Now, why do I
18 suggest a separate set of assets? Because that
19 is a quick way to get you back to using the
20 proper weighted average cost of capital.

21 And obviously, you know, there would be
22 enormous problems with transitioning everything
23 to the on-the-day approach. You know, if you
24 transitioned in, you've got to transition out.
25 So it can't be solved quickly by looking at
26 getting rid of the weighted trailing average.

27 But there is, it appears, going to be a problem.

28 MS SAVAGE: That would be a 50- to 80-year

1 transition, wouldn't it?

2 PROFESSOR PARTINGTON: Yes. Well, 10 years in and 10
3 years out, right? But clearly one would expect a
4 capital strike if the current cost of debt starts
5 going well beyond the trailing weighted average.

6 MR COX: Thank you. Can I then ask Tom how he
7 responds to Graham's suggestion of a separate RAB
8 and on-the-day approach being applied to it?

9 DR HIRD: I might respond with a question, because I
10 wasn't entirely sure how a separate RAB is
11 different to a weighted trailing average. In my
12 imaginings of what that meant, you say, "Well,
13 next year we're going to invest in this much
14 CapEx and then we're going to assume that it's
15 financed with 10-year debt," and then that sits
16 there on its own, you know, as 2022 RAB.

17 The CapEx just means your change in RAB for
18 2022 and then that just gets refinanced every
19 10 years for forever. And then you do it again
20 for 2023 for the change in RAB in that year and
21 then it goes on forever. That is what I thought
22 Graham was talking about, which then I thought
23 that's just a weighted trailing average or a form
24 of one. But I think that's not what you meant,
25 is it, Graham?

26 PROFESSOR PARTINGTON: No, no. I'm saying we have a
27 separate set of assets - sorry, go on.

28 DR HIRD: The AER currently updates its trailing

1 average every year, so it uses a current estimate
2 of the cost of debt every year, so if I'm
3 imagining the situation that you are putting
4 forward, Graham, it would be something like
5 instead of just updating the trailing average
6 every year, we just update the cost of debt every
7 year. And that would be prevailing for that
8 year. It would be a current estimate. We have
9 these on the debt side of things; we would have
10 these one-year little mini determinations. Does
11 that satisfy the desire that you have to have a
12 prevailing estimate of the cost of capital?

13 PROFESSOR PARTINGTON: Yes, you could do it annually
14 or you might want to do it for the five-year
15 period. There would be other factors that would
16 come into play.

17 DR HIRD: Assuming we already have the infrastructure
18 in place to do it annually, we could just do it
19 annually. I think that highlights the reason why
20 I think it would be is a bad decision. Even
21 though it would best satisfy the criteria that
22 you have, it is because I think it really matters
23 what an NSP would actually do as they are the
24 ones that have to operate in this environment.

25 And if we could sort of step away from that
26 completely and say, "We are just interested in
27 some - because when we write out our finance
28 textbooks and we come to value a cash flow at any

1 given point in time we use the current cost of
2 capital." And I think that is just not relevant
3 to asking how do we regulate on behalf of
4 consumers a relatively low-risk business?

5 And the way you do that is that you
6 compensate them for what they would efficiently
7 do. You can not do that, but as soon as you
8 start not doing that, you are adding to the risk
9 of those businesses.

10 PROFESSOR PARTINGTON: Well, you either compensate
11 them for what their costs were and don't have the
12 NPV equals nought criterion or use the current
13 cost of capital and do have the NPV equals nought
14 criterion.

15 DR HIRD: Would you agree, Graham, that a perfectly
16 weighted trailing average would satisfy the NPV
17 equals nought criterion on all new investment at
18 the time it was being made?

19 PROFESSOR PARTINGTON: No, I wouldn't agree with
20 that. Let's think about what happens when
21 interest rates change. First of all, there's a
22 change in the value of the underlying asset.
23 We've seen that recently with respect to tech
24 stocks in the US. Then there's a revaluation of
25 the debt and equity. There's a repartitioning of
26 the value of the debt and the value of the
27 equity, and there's a wealth transfer between
28 those two groups. It depends on which way

1 interest rates have moved.

2 So the market values have actually already
3 shifted. The trailing average is just a piece of
4 history. It is very nice for a firm to have its
5 historic costs of debt more or less guaranteed by
6 the regulator. I think it has very little to do
7 with ensuring that the net present value of the
8 investments going forward is zero.

9 DR HIRD: I would respond to that by saying that in
10 expectation you have them in both situations,
11 probably, in terms of a long running sense. You
12 have the same expected revenues, the same
13 expected prices, assuming there is no change in
14 risk moving between those regimes.

15 You are proposing a regime that is riskier
16 and will cause those debt costs to be higher and
17 likely equity costs to be higher as well. So I
18 don't see that anyone wins from that proposal.

19 I think the AER was very sensible and it has
20 followed regulatory practice around the world to
21 try and set up a regime where the compensation
22 for the debt portfolio matches broadly what an
23 efficient business would have to pay out, which
24 inevitably means most of those costs are
25 historic.

26 PROFESSOR PARTINGTON: There is another problem,
27 right? We have to define what is an efficient
28 financing structure? I defy anybody to actually

1 describe what that optimal structure truly is.
2 Some assumptions would be made.

3 DR HIRD: I would characterise your position that it
4 wouldn't necessarily stop at a financing
5 structure. Your position would be a bit like the
6 ACCC actually implemented for a long time in
7 telecommunications. They said, "What would it
8 cost to build this network again today?" The way
9 the ACCC went about setting regulated revenues
10 for Telstra was just every couple of years to
11 say, "How has the cost of digging trenches
12 changed? We know you've got some existing
13 trenches, but they are not the efficient
14 forward-looking trenches so we'll just model some
15 new trenches that are being dug up overnight."

16 And I don't see why the logic that you're
17 putting forward stops that at debt. Why doesn't
18 it stop at every aspect of a business's historic
19 decisions? Why do we take the existence of
20 transformers, why do we take the RAB as being
21 something that is a historic value that is into
22 existence? Why don't we just do that every year?
23 The answer to that has been assessed by the AER
24 that - the ACCC has changed its position by the
25 way - and regulators around the world that
26 historic costs are a relevant factor and it is
27 sensible to take that into account.

28 MS SAVAGE: I think it would be really helpful, Anna,

1 if we could focus the conversation a bit more on
2 the weighting question. We're talking a lot
3 about trailing average of debt and one of the
4 things that we were really grappling with in our
5 information paper and also in the omnibus paper
6 was the nature of especially the large integrated
7 system plan projects and the fact that we will
8 have very large CapEx projects being added.

9 Now, Graham has talked about a separate RAB.
10 We have put forward a few other options in our
11 paper and I would be really keen to hear the
12 spectrum of views from the experts on that
13 question. It is not that this isn't fascinating,
14 but it is a separate question to one of the
15 questions we are actually grappling with at the
16 moment. So I just wonder, Anna, if we could get
17 some views on how to address those very large,
18 discrete projects.

19 MS BRAKEY: I might start with Glenn, then,

20 DR BOYLE: Right. Well, I guess the first thing -
21 and I don't know the answer to this - is there is
22 apparently going to be a lot of new, large CapEx.
23 That's fine, but that just raises the level.
24 These won't be, by the sounds of it, bang-bang
25 projects. They are not going to be completed
26 overnight or even in a year or even in several
27 years. They will take time to plan, organise and
28 most importantly build, as I understand them.

1 So it is not clear to me as yet, anyway, and
2 it may be clear to everybody else, that the very
3 existence of incoming large CapEx necessarily
4 moves these firms away from one over N or raising
5 debt roughly one-tenth each year, especially if
6 there is an ongoing series of these large CapExs.
7 So I guess that's my first observation. It's not
8 clear to me just how these new projects will
9 actually deviate from the one over ten.

10 MS BRAKEY: Thank you. Martin?

11 DR LALLY: If you have an existing set of assets that
12 are on the trailing average and then suddenly you
13 have a new investment that's on the day, there's
14 always some weighted average which produces
15 exactly the same result as breaking the RAB up
16 into these two parts. But to me breaking it up
17 into the two parts is transparent. You can see
18 exactly what's going on. This bit over here gets
19 on the day and this bit over here, the existing
20 stuff get the trailing average.

21 So I would favour transparency and going
22 with breaking RAB up into its pieces. Having
23 said that, it may very well be that the weighted
24 average which is equivalent to that partition is
25 very close to one over ten, as Glenn
26 hypothesises. And if it is then don't bother.

27 Having said that, I wonder if I could just
28 say something that's a bit more fundamental. So

1 I always interpret the NPV rule, and the examples
2 I have ever presented to the AER have always
3 been, today is the first day in the life of a new
4 regulated business. So if today is the first day
5 in the life of a new regulated business which
6 will borrow some money, raise some equity capital
7 and off it goes, that scenario must use the
8 on-the-day rate for debt.

9 But we, I think, generally agree that a
10 business that starts off like that will not
11 borrow for 10 years and just roll it over every
12 10 years, because that would subject it to huge
13 refinancing risk. A business that borrows all
14 that money on day zero to commence a regulatory
15 operation will stagger the debt. It will borrow
16 a tenth of it to mature in a year and a tenth of
17 it to repay in two years and so forth. So after
18 10 years, it has then got a trailing average.

19 So the NPV rule, to me, says with a newly
20 commencing business you start off with on the day
21 and then you will transition to a trailing
22 average over 10 years. And once you've got to
23 that trailing average, you just stay there. The
24 only thing that will disrupt that beautiful
25 trailing average equilibrium is CapEx.

26 Now, in the work I've done for the AER, if
27 the CapEx is fairly small each year, you can just
28 stay with the trailing average. But if the CapEx

1 gets big enough, at some point you've got to do
2 what Graham says and you've got to partition or
3 equivalently using a weighted trailing average
4 which isn't one over ten.

5 And when you do, if you do partition it as I
6 suggest, because that is transparent even though
7 it is mathematically equivalent to a non-equal
8 weighted trailing average, once you initiate that
9 new CapEx, that new CapEx will just be like a new
10 firm. It will start off with on-the-day and it
11 will then over 10 years phase into the trailing
12 average.

13 So in truth the right way to do this is it's
14 a mixture of trailing average and on-the-day.
15 The arguments sound like it's one or the other.
16 Both are true. When you commence a new
17 investment, it's got to be on the day but in
18 10 years it has become a trailing average.

19 And if that is what the efficient practice
20 of business is then it is sensible for the
21 regulator in making allowances to recognise that.
22 So after 10 years, the regulator reaches a point
23 where it is just using a 10-year trailing
24 average. And that is not inconsistent with NPV
25 equals zero because NPV equals zero was
26 formulated on the day that the business
27 commenced.

28 MS BRAKEY: Thanks, Martin. James?

1 MR HANCOCK: I share Graham's view that the trailing
2 average isn't reflective of opportunity costs.
3 So I think here we are worrying about an entity
4 where we are using the trailing average costs of
5 capital, but an entity is concerned that without
6 proper weighting it is inconsistent with the
7 financing costs that it faces in the market.

8 But that is really what the opportunity
9 costs question is saying, that with the trailing
10 average we will regularly have situations where
11 this trailing average cost of capital is
12 inconsistent with the rates of return that the
13 network needs to carry out investment, in this
14 case, potentially large monthly investment.

15 MS BRAKEY: Thanks. And Dinesh?

16 MR KUMARESWARAN: I think the approach that Martin
17 has laid out makes a lot of logical sense to me,
18 that if you are dealing with new CapEx, you can
19 partition the RAB between the existing RAB and
20 new CapEx. That new CapEx would get an
21 on-the-day rate to start with and then would
22 eventually transition to a full trailing average
23 over a period of 10 years.

24 And then once it has achieved that point, it
25 just gets rolled into the rest of the RAB. The
26 AER could do that right now with any new CapEx,
27 but my sense is that the AER doesn't bother doing
28 that because it wouldn't be worth the trouble

1 doing that.

2 But it is conceivable that if the future
3 CapEx gets so large then it would be worth doing
4 that because that would give you a better match
5 between the cost of capital and the regulatory
6 allowance, and that would satisfy the NPV zero
7 principle better. So I think the approach that
8 Martin has laid out makes sense. The question
9 really for the AER is, is it worth doing that and
10 at what point does it become worth doing that?

11 MS BRAKEY: Thanks, Dinesh. I might move on to the
12 second question, which is if the AER were to
13 adopt the weighted trailing average, what
14 incentives it might create for financial
15 engineering? So perhaps not just the weighted
16 average as contemplated by the AER but this kind
17 of on-the-day for new rolling into a trailing
18 average as well, and perhaps Graham wants to deal
19 with the financial incentives under an on-the-day
20 approach in general. So maybe I'll start with
21 you, Graham?

22 PROFESSOR PARTINGTON: I think if you are using the
23 on-the-day approach, you're giving the firms the
24 right incentive. You are saying, "This is the
25 return that your investors currently require in
26 the market. We are going to offer you the
27 opportunity to earn that return."

28 I might also point out that if you adopt the

1 on-the-day approach, you are probably going to
2 stabilise or reduce volatility in the valuation
3 of the underlying assets. And the logic behind
4 that is think about what happens when interest
5 rates change. Interest rates go up, value of the
6 underlying assets go down. That's the bad news.

7 The good news is when we get to the next
8 regulatory period, the regulator is going to
9 increase our allowed cash flow. So you have got
10 two offsetting effects there.

11 Now let's think about what happens when
12 interest rates go down. The good news is the
13 value of the assets goes up, the bad news is the
14 regulator is going to reduce our allowed cash
15 flow in the next regulatory period. So again
16 those two effects are to some extent offsetting.

17 I think it is clear. From finance theory,
18 what you should be using is the on-the-day
19 approach. I've been through Martin's switching
20 the weighted average hybrid approach. I can't
21 quite understand why it works. It seems like
22 magic to me, and I don't believe in magic. So I
23 can't quite put my finger on it, but I think it's
24 something to do with the market value of debt
25 somewhere in the model being constrained equal to
26 its book value, which it is right at the start in
27 Martin's model. But then I can't keep track of
28 what happens to it as we roll forward through

1 time.

2 MS BRAKEY: Thank you. I might go in the reverse
3 order than we did before. Dinesh?

4 MR KUMARESWARAN: I guess I don't really understand
5 what the question is getting at. Is the question
6 asking is there a greater need for some kind of
7 hedging by the businesses? Is that what the
8 question is?

9 MS BRAKEY: As I understand it, no. But Eric, did
10 you want to talk about the question a little bit
11 more?

12 MR GROOM: I guess this is the second question: If
13 we adopted a weighted average trailing approach,
14 what incentives might it create for financial
15 engineering? I guess it's the question you were
16 getting at, wasn't it, Anna?

17 MS BRAKEY: Yes.

18 MR GROOM: And that's where we look at it
19 practically. We put forward a set of options for
20 a weighted average approach. Now, I guess Martin
21 has put forward another option now, an
22 alternative where we start with the on-the-day
23 rate and for a new major investment and
24 transition to a trailing average.

25 Perhaps one thing I would like clarification
26 with Martin on, it was partly because he said,
27 "Well, a new business won't just finance it all
28 by 10-year debt. They will have a portfolio of

1 debt of different maturities and over time that
2 will lead them to get to a trailing average. So
3 is the transition path based on their proposed
4 strategy for the portfolio of debt in terms of
5 financing the original investment or an
6 assumption by us that over time within 10 years
7 they will get to, say, a 10-year trailing average
8 for the debt for that new investment?

9 DR LALLY: The transition from on-the-day to trailing
10 average should reflect what the efficient
11 business would be doing, which would be one tenth
12 of the new borrowing would be for one year, one
13 tenth for two years and so forth. And each of
14 them, when they mature, then still roll over to
15 be a 10-year debt.

16 MR GROOM: So that's still a decision that's
17 independent of the actual financing decision
18 taken by the firm?

19 DR LALLY: Indeed, the firm can do anything it wants.
20 But that would be what we would generally regard
21 as the most efficient strategy because it most
22 quickly transitions a firm from on-the-day, from
23 all the debt arising at one point in time to
24 staggering over time.

25 MR GROOM: I guess the thinking behind the question
26 we posed in the brief that went out is, as we
27 move to an approach that has a weighted average
28 for specific classes, you know, if you are a

1 network and your new investment exceeds a certain
2 proportion of your RAB, if you are a TNSP or if
3 the investment is an ISP, it introduces a
4 difference between the treatment of that debt
5 versus the treatment of the rest of your debt
6 when you are just on a straight trailing average.

7 Does that introduce any biases in terms of
8 choices of financial vehicle or financing
9 strategies that could end up being less efficient
10 and driven by that choice?

11 To raise a hypothetical example, suppose we
12 said that if your investment is greater than a
13 large proportion of your existing RAB, you'll go
14 into the weighted trailing average with a large
15 weight given to the debt at the current time,
16 almost an on-the-day rate? Would that encourage
17 the entity to, say, create special vehicles for
18 that project, as separate entity, and finance it
19 through that entity rather than financing as part
20 of its normal sort of CapEx?

21 That is, does it introduce any incentives
22 for financial engineering that may be driven by
23 the regulatory rules rather than whether it is an
24 efficient or inefficient strategy?

25 DR LALLY: No, I don't think there is any problem
26 there for the firm whose CapEx is large enough to
27 get it moved into this new regime because the new
28 regime I'm proposing would mirror the financing

1 strategy of an efficient firm. The only
2 incentive problem would arise for firms that have
3 got CapEx but it is not large enough to get them
4 moved into the new regime. So the allowance they
5 get on their borrowing for new CapEx is just the
6 10-year trailing average, and Graham would
7 rightly say they are not paying the 10-year
8 trailing average on that new CapEx; they are
9 paying the on-the-day.

10 So there would be an incentive problem there
11 for small CapEx, but if the cut-off point is
12 sufficiently small, one might think that firms
13 wouldn't be too troubled by the difference
14 between on-the-day and trailing average for a
15 relatively small amount CapEx.

16 MR GROOM: Does that explanation help you, Dinesh?

17 MS BRAKEY: Yes, that's what I was about to ask.

18 Dinesh, does that help you answer the question?

19 MR KUMARESWARAN: Yeah, I think that's right and I
20 agree with Martin. I don't think it creates any
21 bad incentives. I think what the AER would
22 implicitly be assuming is that the steady state
23 efficient debt financing approach would be the
24 same as the existing firm.

25 It's just that there's just this new CapEx
26 that needs to be accounted for and that will
27 eventually be transitioned to the existing RAB.
28 And so this transition would be completely

1 consistent with what the AER would be assuming
2 would be the efficient debt financing approach.

3 MS BRAKEY: Thanks, Dinesh. Clare?

4 MS SAVAGE: I was just going to say I think the point
5 that Eric is trying to draw out here is the
6 tricky grey zone. If you took a business like
7 TransGrid, for example, which has a RAB of about
8 \$8 billion over a five-year regulatory period,
9 its CapEx might be something like \$1.5 billion.
10 That new \$1.5 billion may not trigger a threshold
11 and therefore might be a normal 10-year trailing
12 average, whereas the additional \$8 billion that
13 they might spend over the next five years on ISP
14 projects would be lumped into the on-the-day rate
15 with the 10-year rolling approach that Martin has
16 described.

17 And so it is the decision about where you
18 set - and you were saying, Martin, as long as you
19 don't set it too high so that your small CapEx
20 are not incentivised or you don't break projects
21 up, effectively, to keep them in the trailing
22 average. But that still \$1.5 billion on an
23 \$8 billion RAB as ongoing CapEx is still quite
24 large. So how do we make the distinction between
25 the stay-in-business CapEx and the really big
26 projects?

27 MS BRAKEY: Does anybody have any comments on that
28 aspect?

1 DR LALLY: So long as that cut-off figure between
2 firms that will get the two RABs and those that
3 will be on the present model is low enough, there
4 won't be a problem. And a low enough figure
5 would be considerably lower than the kind of
6 number for the firm you're mentioning.
7 Considerably lower.

8 Bearing in mind that this is really just a
9 relatively simple Excel spreadsheet task. This
10 is not rocket science. This isn't building the
11 Eiffel Tower. This is a fairly simple exercise.
12 The costs of it are absolutely inconsequential
13 relative to the numbers involved. You mentioned
14 figures in the billions. This is just a few
15 dollars of spreadsheeting calculations. It
16 really is nothing.

17 MS SAVAGE: But it is quite an interesting point you
18 make there, because that is picking up quite a
19 different set of problems to what we articulated
20 about in the discussion paper, because we were
21 talking about the very large ISP projects.
22 Whereas if we are going to start talking about
23 the \$1.5 billion of CapEx that's spent over a
24 five-year reset period, that is picking up augex,
25 repex, ICT CapEx, a bunch of different things
26 that are not about the really brand-new projects
27 but are really the sorts of projects that
28 transmission companies undertake all the time.

1 So then that speaks to really pulling out
2 most new CapEx, putting it into an on-the-day
3 rate and then transitioning it back into a
4 10-year, which starts to become, as Tom was
5 describing, almost you would have a '22 RAB, a
6 '23 RAB and a '24 RAB at that rate,

7 DR LALLY: That's fine. For a company with billions
8 of dollars of assets, what harm is there in
9 having a spreadsheet with 24 rows in it? Or even
10 100 rows?

11 MS SAVAGE: We have 30-something of those companies.

12 MS BRAKEY: Tom?

13 DR HIRD: Yeah, so I was just trying to clarify in my
14 mind what this question meant. The way that it's
15 put is financial engineering on behalf of the
16 business. But I think I heard then - I didn't
17 really understand how that worked, given that
18 what the business actually does doesn't feed
19 directly into any decision that you make in terms
20 of how they raise their debt. Not directly
21 anyway.

22 But am I hearing that the concern is that if
23 you have a threshold then people will in some
24 circumstances try and stay below the threshold
25 and in other circumstances jump over the
26 threshold? That seems like it could be a
27 problem.

28 MS BRAKEY: Thanks, Tom. James?

1 MR HANCOCK: If I was a network and my trailing
2 average was weighted taking into account the
3 pattern of my capital expenditures, let's imagine
4 seven years down the track and suppose interest
5 rates are three or four percentage points higher
6 than they were three years ago, so that I know
7 that next year I'm going to be bringing in a
8 considerably higher interest rate and dropping
9 out an old interest rate. So I have an incentive
10 to delay my CapEx by a year and be awarded that
11 higher rate of return.

12 MS BRAKEY: Thanks, James. Dinesh?

13 MR KUMARESWARAN: I now sort of understand what
14 Martin is suggesting that the threshold for
15 splitting the RAB should be set quite low to deal
16 with this incentive problem, and I understand
17 what that incentive problem might be. But it
18 seems a little bit uncomfortable to me that we
19 are now moving away from the original reason why
20 the AER raised this issue, which was to really
21 deal with extraordinarily large CapEx that might
22 need some new finance.

23 It seems like if we adopt Martin's approach
24 then we will be implementing a new trailing
25 average approach for business-as-usual CapEx.
26 And I'm not sure - maybe the AER thinks that is
27 appropriate, but I'm not sure - I mean, is that
28 really the original problem that we're trying to

1 deal with?

2 DR LALLY: I thought the original problem was indeed
3 big CapEx, but the trouble is that "big" is
4 undefined and once you define it then you get
5 this incentive problem for people just under it.
6 And that then propels you to define "big" to be
7 even smaller.

8 So you are led, starting with a perfectly
9 good idea, understanding how people react to it,
10 to then having to basically make it more
11 expensive to deal with that incentive problem.

12 It would be nice if people didn't react to
13 the perverse incentives that would arise once you
14 have this dichotomy between big and not big
15 CapEx, but unfortunately people are such clever,
16 calculating and devious things, and we have to
17 recognise how they might react.

18 MS BRAKEY: I guess this is a good illustration of
19 how things can get very complicated and create
20 all sorts of incentives. Catriona?

21 MS LOWE: Thanks, Anna. It is a somewhat related
22 question, I suppose. One of the speakers earlier
23 mentioned about consumers missing out on the
24 swings and the roundabouts. And I guess we have
25 talked about some of the incentives that shifting
26 our approach might create.

27 I guess I'm interested across the spectrum
28 of options that we have talking about today, so

1 not confining it to the question that we
2 originally asked, which of those options you
3 think would minimise consumers missing out on the
4 benefits of the swings and roundabouts,
5 acknowledging that they have already paid some of
6 those costs over the last few years of their
7 trailing average?

8 MS BRAKEY: I'm not sure who to go to to answer this
9 one.

10 MS SAVAGE: It was Graham who made the comment
11 originally. And I think it was related to will
12 we see interest rates start to rise. But you
13 then went on to say that you think they will,
14 Graham.

15 PROFESSOR PARTINGTON: I think the swings and
16 roundabouts principle just requires you to keep
17 soldiering on with the trailing weighted average.

18 MS LOWE: So no change?

19 PROFESSOR PARTINGTON: No change.

20 MS BRAKEY: Thanks, Graham and Catriona. Jim?

21 MR COX: I wanted to make a similar point. I think
22 Martin says quite rightly, the lower you set the
23 threshold, the less the adverse incentive effects
24 will be, but possibly also the larger the price
25 increases may be for consumers. And there is a
26 balance there that we will need to think about, I
27 think.

28 MS BRAKEY: I'm not sure that's a question, so much

1 as a statement.

2 MR COX: No, that was a statement.

3 MS BRAKEY: Thank you.

4 MS SAVAGE: That's a volatility point as well, I
5 presume, Jim?

6 MR COX: Mainly. But I don't think particularly.
7 I think the point I wanted to make - yes, there's
8 a volatility of prices through time. I guess
9 that's probably right. But there are different
10 price implications for various things we're
11 talking about, I guess is what I'm saying,
12 important though the incentive effects are.

13 MS BRAKEY: To the board members, do you have more
14 areas that you wanted to test in relation to this
15 issue? And if the answer is no to that, other
16 issues?

17 I'll take that as a no. In that case,
18 I will go to the experts and ask them if there
19 are any points that you want to make on this or
20 other issues. Glenn?

21 DR BOYLE: Just one very simple thing. This question
22 about incentives and in particular perverse
23 incentives. It certainly would seem on the face
24 of it that whatever scheme is adopted, a
25 threshold or a weighted trailing average, there
26 could be incentives to delay investment or to
27 accelerate investment. And either of those
28 changes may be inefficient.

1 But the only real reason for doing that is
2 to take advantage of changes in interest rates
3 and bond yields. And long term bond yields, all
4 the evidence suggests they are unpredictable. So
5 basically they persist for a long time, then
6 there is a big change which is unpredictable and
7 then they persist for another long time. So it
8 would be a brave network, I think, that would try
9 and take advantage of that. That is assuming, of
10 course, that the rates are set ex-ante. If they
11 are set ex-post that's a different ball game.
12 But I'm assuming nobody's considering that.

13 MS BRAKEY: Any other comments from any of the
14 experts or any other topics that you would like
15 to use this time to raise? Clare?

16 MS SAVAGE: I just think I would be interested if
17 there's any feedback on how the experts feel the
18 sessions have gone today before we get to next
19 week.

20 MS BRAKEY: I might do that at the end. I see a few
21 hands going up for potentially other issues that
22 we can deal with. I might deal with that at the
23 end if that's all right, Clare. Dinesh?

24 MR KUMARESWARAN: I just wanted to ask Martin a
25 question about the term issue that we were
26 talking about earlier. The allowed rate of
27 return in those examples, is that - I understand
28 that to be the WACC rather than the return on

1 equity just alone?

2 DR LALLY: Correct. To simplify the analysis, I said
3 no debt, no OpEx, no taxes. So if there's no
4 debt, the WACC is the same thing as the cost of
5 equity. That is just to keep everything simple.

6 MR KUMARESWARAN: But suppose there is debt, and the
7 evidence is that investors - that these types of
8 businesses raise 10-year debt. Would you advise
9 using a 10-year term for the allowed return or
10 debt or not?

11 DR LALLY: Absolutely. All of the discussion earlier
12 about the cost of equity where I'm saying
13 five-year allowed cost of equity because you're
14 discounting back for five years, that's just
15 equity.

16 Once we go to debt, the whole ball game
17 changes. The efficient practice for firms is to
18 borrow for, say, 10 years and a regulator has got
19 to compensate firms for that efficient strategy,
20 and so it's a completely different ball game.
21 The mathematics of all this, WACC can be put into
22 the discount rate but that's just a mathematical
23 transformation of something that's going in the
24 numerator. So the cleanest way of looking at
25 this is to treat debt just like OpEx. It's a
26 cost that the firm bears and all the discounting
27 is done just through the cost of equity. Debt is
28 just a cost like OpEx which the firm must get

1 compensation for if it acts in an efficient
2 fashion.

3 MR KUMARESWARAN: So you say that if the cash flows
4 that arise over the regulatory period are
5 five-year cash flows, then it is appropriate to
6 discount that using a WACC that uses a 10-year
7 cost of debt?

8 DR LALLY: I am saying to you that the cost of equity
9 is a five-year cost of equity. The cost of debt
10 is a 10-year cost of debt.

11 MR KUMARESWARAN: In your example, you're discounting
12 those cash flows over a five-year period, and I
13 understood you to say that you should use a
14 five-year discount rate because you are
15 discounting five-year cash flows. So why does it
16 have to be a five-year cost of equity but it is
17 okay to have a 10-year cost of debt?

18 DR LALLY: As with so many of these things, Dinesh,
19 that one struggles with the English language to
20 explain, it can be done very simply in
21 mathematical terms. I will modify the example to
22 deal with two-year cost of debt and send it to
23 you, and I hope that will clarify it. But trying
24 to do it through the English language, it's just
25 the wrong tool for trying to answer the kind of
26 question that you are asking.

27 MS BRAKEY: Having said that, I guess it does need to
28 turn into the English language in order to have a

1 debate about it and to engage with board members.

2 But I'll leave you to find a way to do that.

3 DR LALLY: Yes. The compromise is to construct a
4 mathematical formulation and then talk through it
5 using the English language with the maths in the
6 background to hang the discussion on.

7 MR KUMARESWARAN: Yes, I guess an explanation of the
8 intuition would be useful.

9 DR LALLY: Yes. But first get the maths and then
10 here's the intuition for it.

11 MS BRAKEY: Glenn?

12 DR BOYLE: Have I got my hand up?

13 MS BRAKEY: Yes. You don't have to.

14 DR BOYLE: I don't have anything to raise at this
15 point so no, I'll lower it.

16 MS BRAKEY: Good. James?

17 MR HANCOCK: I'm just thinking about the trailing
18 average and the divergence from opportunity cost
19 of capital. I mean, if you look at interest rate
20 movements over the last decade or so and consider
21 that they might have a similar pattern of ups and
22 downs, it is easy to imagine that the weighted
23 trailing average might be sort of 50 to 100
24 points away from the contemporaneous cost of debt
25 in any one year. It obviously is hard to
26 quantify what the sort of size of the distortion
27 to investment decisions would be, but potentially
28 there is some distortion there.

1 It seems to me that that is a cost of using
2 of trailing average. So then I ask myself what
3 is the benefit of using the trailing average? It
4 seems to me the main benefit is that it
5 simplifies the network's financing task so that
6 they don't have to restructure their borrowing
7 books to take into account anticipated future
8 market developments and it spares them the
9 embarrassment of marking to market if things go
10 wrong. And we know managers don't like that very
11 much.

12 But I'm just left wondering how much these
13 costs really are and so how much we really want
14 to pay to avoid those costs of inconvenience to
15 the networks as set against the impact on
16 investment decisions.

17 MS BRAKEY: Thanks, James. Tom?

18 DR HIRD: Just in response to James's commentary
19 there, I completely agree that it is quite
20 possible for the trailing average, unweighted or
21 weighted, to be quite different to the on-the-day
22 estimate of the cost of debt, but that doesn't
23 create the incentive problems that I think you
24 imagine, James.

25 Let's take the weighted trailing average.
26 Then you know what you're spending in that year
27 is getting the weight that it has in your entire
28 RAB. The fact that the weighted trailing average

1 is different to the on-the-day rate doesn't
2 affect you at all as long as the weighting is
3 done properly, because you know that it's
4 entering into your RAB with a weight that
5 actually reflects your expenditure. And that may
6 or may not be perfectly true with a simple
7 trailing average, but it still the case that it
8 is going to go into the RAB at the cost that you
9 finance it at today and it is going to stay there
10 for 10 years, which is the time of the period for
11 which you invested.

12 And so it may be that the on-the-day rate is
13 lower than the trailing average at the beginning
14 of that process, but likely it is higher at the
15 end. So it is not as simple as saying that if
16 the trailing average is different to the
17 on-the-day rate, that creates incentive
18 distortions. I don't think that is correct.

19 MS BRAKEY: Thanks, Tom. Dinesh?

20 MR KUMARESWARAN: Yes, I think Tom is right. The
21 whole idea of the trailing average approach is
22 that in each year you set the regulatory
23 allowance equal to the cost of debt faced by the
24 firm. And the cost of debt for the firm in each
25 year is a trailing average of the debt that it
26 has raised over the last 10 years. And there is
27 no loss to consumers as a result of that, because
28 they are paying the efficient cost of delivering

1 the regulated service.

2 MR HANCOCK: I accept that I can see this sort of
3 running as a pool in which there are swings and
4 roundabouts, and consumers recompense the
5 networks and the networks get back what they
6 spent. Like, I can see that potentially that can
7 work.

8 But at a point in time as a network, I have
9 a particular cost of capital in mind that I have
10 to meet and that maybe different from what's
11 coming out of the trailing average model. In
12 that case, my decision about new investment may
13 be distorted.

14 MS BRAKEY: Thanks, James. Eric?

15 MR GROOM: This first question is really on the same
16 thing. I think, Tom, you said if it's a weighted
17 trailing average then you have an equivalence
18 between the cost of debt to the firm and the
19 market cost of debt at that point in time because
20 the firm gets the current cost of debt weighted
21 by the amount they spend in that year.

22 But then I think you said that that may or
23 may not be true for if it's a simple unweighted
24 trailing average because you break that linkage
25 between their investment decision and the weight
26 of the debt from that year for that year.

27 MS BRAKEY: Tom?

28 DR HIRD: Which is the reason the AER is considering

1 a weighted trailing average, because when it
2 comes to percentages, that may be important.

3 MR GROOM: But it does enliven some of James and
4 Graham's concerns, does it not?

5 DR HIRD: Yes, I think it does. To the extent that
6 you are actually refinancing 10 per cent of your
7 debt, then the weighting is right. Now, maybe
8 you're sort of financing 11 per cent of your RAB
9 in a given year and on that extra 1 per cent
10 there's a sort of incentive issue, but it's not
11 on the entirety of what you are financing or
12 refinancing in that year. So the difference in
13 the weight between the trailing and the weighted
14 trailing average.

15 MS BRAKEY: All right. Well, thank you. I think
16 today's discussion in both sessions has been
17 really, really valuable. I think I really
18 personally appreciate the spirit and the nature
19 with which the experts and the board members have
20 engaged. I think it's been a very, very
21 worthwhile process from me as an outsider's
22 perspective at least. So hopefully the board
23 members are finding that as well.

24 But Clare did pose the question about
25 whether you felt that the way we run it today is
26 working for you and if you have any suggestions.
27 Graham, you have your hand up.

28 PROFESSOR PARTINGTON: Two things: First, with regard

1 to the sessions, I have found them interesting
2 and stimulating. The real question is, have they
3 been helpful to the board members? That is the
4 real question, right? And only you can judge
5 that.

6 The other thing is just an interesting bit
7 of history. I've gone back to the Energy Users
8 Network submission that started this whole rule
9 change business with regard to the cost of debt
10 rolling. And their complaint at that time was
11 that the actual debt cost of the network NSPs was
12 250 basis points less than the allowance. And so
13 obviously they felt that if we moved to the
14 trailing average they'd be better off. It is
15 somewhat ironic that actually moving to the
16 trailing average, they haven't been worse off and
17 it is even more ironic that we are now saying,
18 "Well, actually there could be a problem because
19 the trailing average is going to be less than the
20 on-the-day rate." I'll just throw that in as an
21 interesting insight on how things evolved.

22 DR LALLY: The same point occurred to me, Graham,
23 thinking back to the history of all this.

24 MS BRAKEY: That aside, can we get back to the
25 question? Clare, what were you going to say?

26 MS SAVAGE: I was just going to say I found them, to
27 answer Graham's question, extremely useful. I
28 wasn't quite sure what to expect today, not

1 having participated in the 2018 instrument.

2 I think what would be helpful next week is
3 where you can identify that you are making a
4 point of difference to someone else, more
5 directly calling that out is quite useful.
6 I found that I was almost needing to categorise
7 the views a little bit so that it was clear what
8 was alignment and what was opposition and the
9 grounds for that. And I think to the extent that
10 as a group of experts you can more clearly say,
11 "Well, yes, I agree with this part but disagree
12 with this part for these reasons," it just helps
13 us in terms of being able to - for the transcript
14 as well, but for our own understanding and
15 thinking on this.

16 MS BRAKEY: James?

17 MR HANCOCK: Just on that, I was involved in the
18 second of the sessions for the 2018 decision and
19 what happened then was that Jonathan
20 Mirrlees-Black was sort of a coordinator for
21 those experts, and he drew up a document that
22 sort of listed a number of propositions under all
23 of these types of categories that we are talking
24 about today. This is after the discussion, he
25 picked out what he thought were the key
26 propositions that came out and then asked the
27 experts to agree or disagree. And so he tried to
28 pick out the ones that he thought were bones of

1 contention. And I think that that process helped
2 to actually crystallise where there were points
3 of difference.

4 MS SAVAGE: Thanks, James. I think we did have a
5 discussion about that when we were looking at the
6 format for this year, but can't quite recall
7 where we landed on that or why, to be honest.

8 MR HANCOCK: Yes.

9 MS BRAKEY: Perhaps the board and staff could have a
10 chat about that and come back with an answer or a
11 proposed way forward. Catriona?

12 MS LOWE: Thanks. I was just going to say I'm very
13 happy for there to be discussion about what has
14 been useful in the past. But one of the things I
15 certainly found enormously useful today was
16 where, particularly given the extremely
17 constructive and respectful nature of the
18 discussion, where the experts were almost
19 directly engaging with each other about some of
20 those points of difference, I found that
21 enormously helpful just in terms of exploring
22 those, perhaps in a bit of greater depth which
23 I think might get lost in a more paper-based
24 format.

25 MS BRAKEY: Good. I'm glad, Catriona. That's how I
26 viewed it as well. Does anybody else have
27 suggestions or comments? Glenn?

28 DR BOYLE: I've just got a tongue-in-cheek

1 observation to make. I found this morning's
2 discussion very interesting. This afternoon's
3 has been a bit challenging due to the fact that
4 for at least the last hour and a half I have been
5 staring at two frozen frames of Graham and James.
6 Graham looks like he's had a stroke and James
7 looks like he's 16. All of that has been a bit
8 disconcerting.

9 MS BRAKEY: Perhaps I should have said, "Yes, go and
10 log off and log back on again, please."

11 DR BOYLE: I'm starting to think I should have done
12 that, yes.

13 MS BRAKEY: I do apologise.

14 MS SAVAGE: It's an alternative universe for you,
15 Glenn.

16 DR BOYLE: That's right.

17 MS BRAKEY: But from our perspective or certainly
18 from my perspective the technology worked quite
19 well and nobody froze from where I am, so it was
20 all good.

21 MS SAVAGE: And Anna, I think you've done a great job
22 in chairing, too. Thank you very much for that.

23 MS BRAKEY: Thank you. It's actually been a pleasure
24 because it's been very interesting. Graham?

25 PROFESSOR PARTINGTON: I just wanted to second
26 Clare's comment.

27 MS BRAKEY: Thank you. All right. I'll give you
28 nine minutes back in your day and we will see

1 most people, I presume, next Thursday for
2 round two. Looking forward to that as well.
3 Thanks, everybody.

4 **THE SESSION CONCLUDED AT 3.51PM**

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