

TRANSCRIPT OF PROCEEDINGS

AUSTRALIAN ENERGY REGULATOR

**RATE OF RETURN INSTRUMENTS
CONCURRENT EVIDENCE SESSION 3 of 4**

MATTERS DISCUSSED:
Market Risk Premium

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 Jonathan Seymour (Assistant Director, AER)
Mr Esmond Smith (Senior Financial Advisor, AER)

EXPERTS PRESENT:
Dr Glenn Boyle
Dr Toby Brown
Mr Dinesh Kumareswaran
Dr Martin Lally
Dr Jonathan Mirrlees-Black
Professor Graham Partington

RECORDED VIA VIDEOCONFERENCE

THURSDAY, 17 FEBRUARY 2022 AT 9.30AM

1 MS BRAKEY: Welcome everyone to the third session and
2 day 2 of the 2022 Rate of Return Instruments
3 Concurrent Evidence Sessions. Welcome to all the
4 people who are listening in as observers and to
5 the AER board members and to the experts as well.
6 I am Anna Brakey, for those of you who weren't
7 watching in last week. I am one of the
8 commissioners at the ACCC and I will be
9 facilitating this session.

10 Before I do anything else, I would like to
11 acknowledge the traditional owners of the country
12 throughout Australia and recognise their
13 continuing connection to the land, waters and
14 community. We pay our respects to them, their
15 cultures and elders past, present and emerging.
16 And finally, I extend that respect to other
17 Aboriginal and Torres Strait Islanders who are
18 present today.

19 Last week we went through the purpose of the
20 session and some of the kind of logistics.
21 I won't repeat all that this morning, but I will
22 say that the purpose of today is to assist the
23 AER board to decide on the 2022 rate of return
24 instrument by hearing from the experts, and we
25 have all of the AER board members here today.

26 If you do want a little bit more information
27 about these expert sessions then please go to the
28 AER's website where they have published a series

1 of papers on the process that they are
2 undertaking for the development of the 2022 rate
3 of return instrument. I will just add though
4 that there are submissions open at the moment.
5 This is in particular for the people observing.
6 So there are submissions open. Today it's just a
7 discussion between the experts and then there is
8 still a consultation process going on.

9 This morning's session will focus on the
10 market risk premium, and the experts that will be
11 discussing this with the board today are Graham
12 Partington, Jonathan Mirrlees-Black, Martin
13 Lally, Dinesh Kumareswaran, Toby Brown and Glenn
14 Boyle. The experts have been asked here to
15 assist the AER board to make the best possible
16 decision on the instrument.

17 For our first session this morning we will
18 do it slightly differently to the way that we did
19 it last week. We will start the discussion with
20 hearing from all of the experts one-by-one up
21 front rather than having the two primary
22 discussions that we had last week, and then we'll
23 have a discussion after that first round.

24 So that first round will focus on two
25 questions as set out in the agenda, their views
26 on the weight of evidence about whether the MRP
27 varies through time, and whether if they do think
28 it does, how it varies. We will then move on to

1 a second part of this morning's session where we
2 will get short presentations from Jonathan and
3 Graham focused on the further three questions
4 that are set out in the agenda: Whether the
5 long-run estimate of historical excess returns is
6 the best estimate of MRP; whether the AER can
7 derive a better estimate by incorporating other
8 information and if so, how; and what are the
9 challenges the AER would need to overcome in
10 giving weight to the other information. And then
11 there will be another general discussion.

12 This morning's session is a little bit
13 longer. It is scheduled to go for three hours,
14 just recognising the importance of the MRP and
15 the board's interest in the MRP. Having said all
16 of that, does anybody on the screen or any of the
17 active participants have any questions or
18 anything that they wanted to go through?

19 No? Okay. Fantastic. We might move on
20 with Graham kicking us off.

21 PROFESSOR PARTINGTON: I'm going to start with just a
22 little bit of pedantry and I'm also going to tell
23 you what I call "the Shiller story", because that
24 helps us understand where this focus on
25 time-varying returns has come from.

26 The pedantry first: Well, really there are
27 two dimensions to the time availability of the
28 market risk premium. We've got the current term

1 structure. That is, now looking forward, what
2 market risk premium should we be applying to cash
3 flows with different terms? And then we've got
4 that term structure shifting through time.

5 Now, handling all of that is really rather
6 hard. Too hard, in all probability. So we just
7 tend to assume there's only one market risk
8 premium, which is changing through time. That's
9 okay, but if the AER does switch to a five-year
10 term for the cost of equity, I rather suspect you
11 might start to hear quite a lot about the term
12 structure of the market risk premium.

13 Moving on to what Shiller's work was about,
14 in 1981 he published his paper showing that price
15 volatility was too great to be justified by the
16 subsequent volatility in dividends. This of
17 course delighted the people who were in
18 behavioural finance because it was evidence that
19 prices were irrational.

20 Shiller delighted the people who were in
21 behavioural finance because it was right up the
22 street of irrational asset pricing, but a key
23 feature of the analysis was that we had a real
24 constant discount rate and that became the focus
25 of people who were in the efficient market
26 rational asset pricing camp because of course
27 Shiller's work was a real challenge to them. And
28 their solution was, "Well, it's obvious that this

1 result is driven by the assumption of a constant
2 discount rate. The volatility in prices that we
3 observe must be due to time-varying discount
4 rates. Then a search commenced for evidence of
5 time-varying discount rates and indeed such
6 evidence was found. And a lot of that work was
7 done by a guy from Chicago called Cochrane who
8 actually does very good work.

9 As a consequence of all that, the pendulum
10 shifted. Originally it used to be the case that
11 it was generally assumed that if the pricing's
12 changed, it was because there was cash flow news,
13 changes in expectations of cash flows. It then
14 became the view that if prices changed, it was
15 because of discount rate news, i.e. changes in
16 discount rates or changes in the market risk
17 premium.

18 Now, in my opinion the pendulum probably
19 swung too far towards the time-varying discount
20 rate explanation and the truth, like so many
21 things, probably lies in the middle ground.

22 So that's how we got onto time-varying
23 discount rates, but there's another story to be
24 told about excess volatility, and that is that in
25 fact dividends were the wrong measure of cash
26 flow. Merton and Marsh, in a very nice paper,
27 pointed out that the value of equity is
28 fundamentally given by the present value of the

1 free cash flow to equity. Subject to the present
2 value of dividends equalling the present value of
3 the free cash flow, you can have any arbitrary
4 stream of dividends that you like.

5 Now, as it turns out managers choose to set
6 dividends so that they are a smooth version of
7 the underlying free cash flow. So if you compare
8 prices with a smooth version of the true value
9 driver of prices, it's no surprise to find the
10 prices are too volatile to be explained by
11 volatility in dividends. I'd also point out that
12 Shiller was probably mis-measuring his dividends
13 since what you really need when you are doing
14 valuations is the net dividend, and in Shiller's
15 case that should have included share repurchases,
16 which were a big deal in the USA. So the moral
17 is: Take care when you are using dividends in
18 your analysis of returns

19 I'm using up my time, so let's quickly move
20 on to time variation in the market risk premium.
21 Would we expect it? Well, I think yes, we would.
22 Price of risk is likely to change through time;
23 level of risk is likely to change through time.
24 It is the product of those two things which
25 drives the market risk premium. Risk aversion is
26 likely to change for many reasons. For example,
27 changes in the level of wealth or, to put it in
28 popular terms, a change in the balance of fear

1 and greed.

2 It is also clear that if you look at
3 realised stock market volatility or if you look
4 at implied volatility from option prices,
5 volatility changes through time. I should make
6 the important point, however, that periods of
7 high volatility are short-lived so they are not
8 likely to drive long-lived variation in the
9 market risk premium. On that basis, I say we
10 should clearly expect time variation in the
11 market risk premium.

12 What is the evidence? How does the market
13 risk premium vary through time? If I had a
14 predictable model of how the market risk premium
15 is going to vary through time, frankly, I don't
16 think I'd tell anybody. I'd keep it to myself.
17 That's rational wealth maximising behaviour.
18 What we can say about the evidence is that the
19 predictive models tend to have poor outer sample
20 performance and they suffer from specification
21 error.

22 A colleague of mine, Min Zhou, wrote a very
23 nice paper demonstrating where the specification
24 error comes from you get spurious correlation,
25 and also demonstrates that when you fix that
26 spurious correlation, the significance of the
27 predictor variables disappears.

28 So, bottom line, almost certainly the market

1 risk premium varies through time but I doubt that
2 anybody can reliably tell you how it varies
3 through time. And I think that's it.

4 MS BRAKEY: Thanks, Graham. We'll move onto
5 Jonathan.

6 DR MIRRLEES-BLACK: Thank you, Anna. I have some
7 slides which --

8 DR LALLY: Excuse me, Jonathan. Anna, could I just
9 ask a clarifying question?

10 MS BRAKEY: Yes.

11 DR LALLY: You have put a number of questions to us.
12 Is it the intention that each of us talk about
13 that first question about variation through time
14 and then after we've discussed that, then we will
15 come back for a second round on the other
16 questions that you've raised?

17 MS BRAKEY: There's kind of the two. There's whether
18 it varies through time and if so, how. That's
19 that session; that's the first part of this
20 morning. And then the next three questions, we
21 will deal with later.

22 DR LALLY: Understood. Thank you.

23 MS BRAKEY: Back to you, Jonathan.

24 MR MIRRLEES-BLACK: Thank you. I've got some slides.
25 I'll move rapidly through them, but I will give
26 you page numbers. I'm not going to go through
27 them in full detail. If we start with page 5, as
28 Graham was saying, academic opinion on the MRP

1 has shifted away from the view that it is stable.

2 Graham mentioned Cochrane, and in his
3 address 2011 Presidential Address to the American
4 Finance Association, he highlighted the shift in
5 views and essentially while there is not
6 unanimity, I think there is acceptance of time
7 variation since then. He says, "Well, our view
8 of the facts has changed 100 per cent since the
9 1970s," and he goes on to say, you know,
10 dividend yields forecast returns, not dividend
11 growth. I think that is important.

12 But I think that given that there is
13 uncertainty about what the theory tells you, it
14 is not conclusive, we have to look at the
15 empirical evidence and see what it says. And for
16 that, we can look at two types of evidence. We
17 can look at ex-post equity returns versus safe
18 rates, and we can look at forward looking returns
19 based upon what market expectations are and the
20 measures that we have of those.

21 Page 6 shows some charts of returns. I look
22 at 10-year return periods, so each data point is
23 a CAPM investment horizon in which you start off
24 with the 10-year bond yield, which is a safe
25 nominal return for that 10-year time period.
26 Inflation is the growth rate of the consumer
27 price index over that time period when we get to
28 looking at inflationary returns. So this

1 approach, rather than looking at the annual
2 returns, it reflects investor time horizons and
3 the AER's 10-year term.

4 Now, the MRP on the right-hand chart is not
5 stable. It is roughly stable but volatile around
6 that until about 1970 and then it falls and it
7 becomes more volatile. So we see from this
8 clearly there is both structural variation for a
9 number of reasons but there is also cyclical
10 variation.

11 Moving to page 7, we can see that inflation
12 has had a massive impact on these returns. There
13 has been three periods over this sort of
14 100-year-or-so period of higher inflation which
15 was probably unanticipated or at least partially
16 unanticipated. And that's been associated with
17 both lower equity and lower bond returns.

18 So in looking at comparing the MRP to
19 inflation, the MRP is the blue line and the
20 dotted green line is the inflation. And we can
21 see that on the left-hand chart where bond
22 returns are the blue line and equity returns are
23 the grey one, real bond returns have risen with
24 the fall in the MRP associated with that.

25 Now, with this chart, because I'm looking at
26 10-year time horizon rolling periods it doesn't
27 include the very recent periods of very low
28 interest rates. So we are missing some of that

1 evidence and of course we can't have that.

2 Now look at page 8. Historic MRP data is on
3 this chart is the left-hand chart. It shows a
4 weak negative relationship with real bond yields.
5 But looking on the right-hand chart, we can see
6 that there is real equity returns. There is a
7 positive relationship between real equity returns
8 and real bond yields based on this data and this
9 method.

10 Importantly, though, and this is important
11 for the considerations here, the increase is not
12 one for one. So it's not that a 1 per cent
13 increase in the real bond yield is associated
14 with a 1 per cent increase in the real equity
15 return. It's about 60 per cent on these numbers,
16 and one can test and analyse seriously
17 econometrically, but this is just looking at what
18 the data is telling us from what we see.

19 So page 9, what else is going on? Well, we
20 saw earlier that inflation has got a big impact
21 on returns. This one we see that both the bond
22 and equity returns - bond returns on the far
23 right, equity returns in the middle - have a
24 negative relationship with inflation. Historic
25 MRP, no clear relationship with inflation.
26 That's relevant in thinking about what are the
27 drivers of the MRP and also is the MRP the right
28 thing that we should be looking at?

1 What about the rest of the world? Here,
2 I show the results of a study by Òscar Jordà and
3 his team. It's a very detailed assessment over a
4 long period of time of the returns on a range of
5 assets from 16 developed economies. And we see a
6 similar pattern to what we've seen in Australia.

7 The right hand chart is the risk premium,
8 which is risky assets compared to the safe rate.
9 Again, it looks at rolling periods. We see that
10 it varies through time. There are structural
11 changes; there are some cyclical changes as well.
12 We see on the left hand chart that the risky
13 return appears to be more stable than the MRP.

14 Now turn to page 11, where we move from
15 historic evidence to looking at the forward
16 evidence from the dividend discount model for
17 Australia. This was work which was done by CEPA
18 and published by the AER last year. We use
19 several different dividend growth model
20 specifications. Note that we are not assuming
21 that dividends and discount rates are stable here
22 in the future; it's just a measure of what the
23 average dividend growth rate is expected to be
24 and the average discount rate and what that is
25 expected to be. Now, each of the specifications
26 produce rather similar results and a rather
27 strong negative relationship between the cost of
28 equity and the risk free rate, and stronger in

1 the recent past.

2 Moving on to page 12, we show a similar
3 chart to the US. And this is data again on the
4 implied return on equity. And it's that the
5 return on equity which was published by Professor
6 Aswath Damodaran in New York. Here we show that
7 on his data, there is a strong relationship
8 between returns and the and the risk free rate
9 for the last 30 years, but not for the whole
10 period from 1961. So there was a structural
11 change in the relationship. And there are many
12 reasons potentially for that, but one could well
13 be, given the importance of inflation to interest
14 rates, that there had been a change in the way in
15 which inflation expectations are determined,
16 given the changes in monetary policies around
17 that time.

18 So what do we conclude, returning to
19 page 10? First of all, that there is cyclical
20 variation, second that there is structural
21 variation, there are structural changes to the
22 economy and the way that monetary policy has
23 developed, which is likely to have influenced
24 that. But I think we can also say that the MRP
25 looks like it is less stable than the return on
26 equity, and more tentatively perhaps that equity
27 returns is what investors form expectations about
28 rather than necessarily the MRP, and that equity

1 returns have a closer relationship with some of
2 those variables than the MRP.

3 One of the important conclusions of that is
4 that if there isn't evidence of stability in the
5 MRP - and there isn't - why should the tools for
6 policy on MRP assume it? And what does this all
7 mean? I think the AER should consider looking at
8 MRP by estimating a return on equity or at least
9 placing weight on measures which assume a more
10 stable return on equity rather than the MRP,
11 given the relationships we have shown.

12 We need to consider whether the task is
13 looking at structural returns or cyclical
14 returns, and that comes back to Graham's point
15 around term structure. And I think it is
16 relevant that if a change is made, it's a result
17 of change in the evidence and it's also a result
18 of change in academic thinking. I'll leave it
19 there.

20 MS BRAKEY: Thanks, Jonathan. So just to summarise
21 your position, you do think it varies through
22 time, and then the question of how does it vary
23 through time, you're saying that you need to
24 unpack whether you're after a structural or
25 cyclical number? Is that how --

26 MR MIRRLEES-BLACK: That's true. But I would say
27 yes, it varies through time. It's a reasonable
28 assumption that equity returns are more stable

1 than the MRP. And essentially, I think it's
2 better to make the assumption that - again,
3 I mean, the MRP on average is higher when risk
4 free rates are lower.

5 MS BRAKEY: You're saying there is a negative
6 correlation, really?

7 MR MIRRLEES-BLACK: I think the evidence from
8 forward-looking and some evidence from
9 backward-looking shows that lower risk free rates
10 are associated with higher risk premium.

11 MS BRAKEY: Thank you. Toby, I notice you've got
12 your hand up. I was going to go around to all
13 the experts, but did you want to interject now on
14 something in particular?

15 DR BROWN: If I could just go real quick just to ask
16 Jonathan a clarifying question. Just picking up
17 on what you said at the end there, Jonathan,
18 about equity returns being more stable than the
19 MRP, would I be right to infer that that might
20 push one in the direction of setting the equity
21 return in the rate of return instrument at the
22 beginning and then not updating the risk free
23 rate at each revenue determination?

24 MR MIRRLEES-BLACK: No, I wouldn't say that. I'd say
25 that - and we'll come to later, "Well, what's the
26 best way of setting the estimate of the MRP?",
27 and I think one should use a range of evidence
28 for that. It's a question of how you construct

1 your forward-looking estimates of the MRP.

2 The use of the historic excess return makes
3 the assumption that the MRP is the stable thing.
4 If you're using that as an estimate, I think
5 that's one way of doing it. But I think it makes
6 sense to look at historic equity returns, real
7 equity returns, as a metric for looking at the
8 past as well as looking at excess returns. So
9 I'm not saying you should keep it stable; you
10 should look at the evidence on each occasion.

11 MS BRAKEY: Thanks, Jonathan. I think we'll move
12 along to Martin now.

13 DR LALLY: Thanks, Anna. I don't think it's
14 controversial that the MRP is extremely difficult
15 to estimate. Graham, I think, has made that
16 point very strongly and I agree with him. In
17 Jonathan's analysis, the 10-year historic MRPs,
18 or what he calls 10-year historic MRPs, they are
19 in fact estimates, not the true values. So that
20 variation we are seeing there may be completely a
21 sampling error. The standard deviations on
22 10-year MRPs are enormous. So it's difficult to
23 read too much into those 10-year historical
24 averages.

25 What I think we can say is that the MRP is a
26 reward for investors bearing risk, and that risk
27 is measured defined by market volatility. And
28 clearly market volatility moves through time.

1 Most particularly, it spikes in recessions.
2 Therefore, one would expect the MRP would be
3 higher during these recessions and then it would
4 tend back towards a more normal level.

5 And that could easily explain why we see
6 some evidence that the MRP is negatively
7 correlated with the risk free rate. Risk free
8 rates tend to be low in recessions due to the
9 central bank policy. And that's the very time
10 when you would expect MRPs to be high because
11 volatility's high. So that negative relationship
12 between the MRP and the risk free rate, not
13 saying it's one-to-one, but the idea that there
14 is a negative relationship is entirely plausible,
15 driven by what happens during recessions.

16 A further point that's worth noting is that
17 while these spikes in volatility could be
18 expected to produce quite significant variations
19 in the MRP, those would be relatively
20 short-lived. So if volatility spikes for six
21 months, the MRP spikes for six months. But the
22 AER is interested in the MRP over a five-year
23 period or maybe even a 10-year period. And that
24 five- or 10-year period will incorporate within
25 it some sort of average of the MRP for the next
26 six months, the six months after that and so
27 forth. So these volatility spikes may produce
28 quite significant variations in the MRP, but

1 that's very transitory. The impact on the five-
2 or 10-year MRP is much less.

3 A further fact which is happening or may be
4 happening is that markets are clearly gradually
5 integrating. 50 years ago an Australian investor
6 didn't have much opportunity to invest outside
7 Australia. They do now, and lots of people are
8 doing it. So we would expect that we are moving
9 from a world in which equity markets are
10 domestically segmented to a world in which they
11 are internationally integrated.

12 But it's plausible that the true MRP is
13 lower under integration, under an international
14 CAPM than it is under a domestic CAPM. So what
15 may be happening is that gradually over time the
16 MRP is declining as we move from a situation of
17 completely segmented markets to completely
18 integrated markets.

19 So I think you've got two things going on
20 here: You've got fluctuations in the MRP, which
21 very plausibly are being driven by fluctuations
22 in market volatility; and secondly you have got
23 potentially a slow, long-term decline in the true
24 MRP. But measuring or observing these things is
25 difficult. If we could estimate time variation
26 in the MRP very accurately then we would know at
27 any given point what the MRP was, and since that
28 is the fundamental question we are interested in,

1 we wouldn't have be having the kind of problems
2 we are here. We'd love to know what the MRP is
3 for regulatory purposes, but it's tough.
4 Estimates are very, very unreliable.

5 MS BRAKEY: Thanks. Martin. Do I summarise your
6 position as you think that it does move through
7 time but over a longer time period, and that it's
8 quite difficult to - like, the answer to the
9 first question, whether it varies through time,
10 so you're saying it moves slowly through time?

11 DR LALLY: I'm saying it's doing two things.
12 I suspect there's a very long, gradual decline
13 over time and there is also short-term
14 fluctuations that are driven by fluctuations in
15 volatility which come from these periodic
16 downturns.

17 MS BRAKEY: And how does it vary through time?
18 You're saying that it's quite difficult to
19 measure?

20 DR LALLY: Yes. Plausibly, it's fluctuating with
21 volatility. But measuring it precisely? Well,
22 that is simply impossible. We haven't got any
23 technology that can estimate the MRP very
24 reliably.

25 MS BRAKEY: Thank you. Glenn, we're going to you
26 next.

27 DR BOYLE: Is it me, Anna, or is it Toby? On the
28 list I'm looking at, it's Toby next.

1 MS BRAKEY: Sorry, it might be Toby. I might have
2 the wrong list in front of me.

3 DR BOYLE: I'm happy to go, but Toby, if you are, go
4 ahead.

5 DR BROWN: I am happy to go, so I'll go.

6 MS BRAKEY: Sorry, Toby.

7 DR BROWN: No, that's quite all right. I agree with
8 a great deal of what's already been said, so I am
9 going to sort of skip to a little bit of a
10 summary of what I think, which is there's a lot
11 of uncertainty here. But the MRP does vary over
12 time; that's reasonably clear. But we just don't
13 know a lot about how it varies. I think we can
14 say that there is a negative correlation with the
15 risk free rate, so that if the risk free rate is
16 lowered at a particular point in time, the MRP is
17 more likely to be higher at that point in time,
18 and that correlation is less than one-for-one.
19 So if the risk free rate has gone down by half
20 a per cent, let's say, the MRP has probably gone
21 up by less than half a per cent. And working out
22 the precise details of the correlation is
23 basically impossible. All of the confidence
24 intervals on any estimation are going to be very
25 wide. And who knows - the way that those two
26 things vary together over time might also not be
27 stable.

28 So that's what I think. Why does it matter?

1 I think it matters in two ways. First, how
2 actually do you estimate the MRP, what's the best
3 way of estimating it every four years? We're
4 going to come on to talk about that later, but
5 also I do think it's important for a second
6 reason, and that's should we be fixing the MRP
7 for the term of the rate of return instruments so
8 we do it once up front, it's a number and then it
9 stays the same, or should we have some mechanism
10 for updating it during the term of the rate of
11 return instrument? Obviously, if there was an
12 updating process it would have to be mechanical
13 without discretion, like the risk free rate is
14 updated or has been in the past. And the reason
15 to think about that second question is that if
16 there is a correlation, then if you're fixing one
17 MRP but allowing the risk free rate to vary then
18 you're building in error. So I think both of
19 those are interesting questions.

20 The next thing I'd like to mention is that
21 there is some experience in North America of
22 regulators trying to do a sort of an automatic
23 update where you have a formula that effectively
24 adjusts the allowed return on equity as observed
25 risk free rates change. Those formulas have not
26 had much success. They've worked for a while,
27 but then they start to produce results. At the
28 time of GFC there were formulas in place but

1 those sort of broke down completely. There is
2 one in place in California, but that's sort of
3 breaking. So they just don't work over an
4 extended period.

5 The bottom line is that the MRP is not
6 constant; it is affected by capital market
7 conditions. So is the risk free rate, and those
8 two things may well be moving in the opposite
9 direction. But understanding or predicting
10 exactly the correlations is not feasible.

11 MS BRAKEY: Thanks, Toby. So you do think it moves
12 over time and you recognise that there's a
13 negative correlation, that in actual fact the AER
14 might build in error if there is that correlation
15 and you fix the MRP but vary the risk free rate,
16 but you're not really sure how to resolve the
17 issue? Is that it?

18 DR BROWN: Well, actually, I've got a suggestion for
19 how to resolve the issue, which is not to update
20 the risk free rate, to essentially set the cost
21 of equity at the beginning. Then that does
22 potentially give rise to another issue because
23 you've got the four years of the rate of return
24 instrument and then you've got five years of the
25 revenue determination so that a somebody, a
26 network that comes in towards the end, those
27 parameters are pretty - you know, the risk is tat
28 they might be out-of-date and there is currently

1 no mechanism for those parameters to be updated
2 until the next cycle. But there again I think
3 there is a straightforward solution, and that's
4 simply to, whatever the outcome of the rate of
5 return instrument process is, to apply that
6 immediately to all networks without waiting for
7 the next determination. And I don't see why that
8 couldn't be done in a rather straightforward way.

9 MS BRAKEY: Thanks, Toby. On to Glenn now.

10 DR BOYLE: Thank you, Anna. Well, I can really speed
11 things up here because as is probably obvious
12 from the slides I circulated: What Graham said,
13 me too. So does the market risk premium vary
14 through time? Well, absolutely. Unless somehow
15 you can repeal the laws of arithmetic, the only
16 way you can reconcile observed price movements is
17 by invocation of a time-varying expected return.
18 How does it vary through time? I have no idea.
19 Nobody does. Anybody who actually does is
20 sensibly keeping shtum about it and is making a
21 fortune.

22 But if I could just touch very briefly on
23 one point that Graham didn't mention. The very
24 first question about, "What is your view on the
25 weight of evidence about whether the MRP varies
26 through time?", this is kind of a pedantic point
27 in a sense but also keeping it in mind helps
28 avoid confusion: There are actually two MRPs.

1 In an IID (independent and identically
2 distributed) world where everything stays the
3 same there is only one, but it is by definition
4 constant. In the world we more likely live in, a
5 non-IID world, then there are two MRPs. There's
6 an unconditional MRP, which by definition is a
7 constant and so doesn't vary through time and
8 there is the conditional MRP, which by definition
9 does vary through time.

10 I think most people, when they refer to the
11 MRP, have the conditional version in mind but
12 then talk about estimating it often as though it
13 were the unconditional premium, via historical
14 averaging. And this can cause confusion. So my
15 answer as to whether the MRP varies through time,
16 I'm saying there is a conditional MRP and it
17 varies through time. How it varies through time,
18 no idea.

19 MS BRAKEY: Thanks, Glenn. I don't think I need to
20 summarise that point. I think you summarised it
21 yourself. Dinesh?

22 MR KUMARESWARAN: Thanks, Anna. I've got a couple of
23 slides so I'll just run through those very
24 briefly. I essentially agree with everyone who
25 has spoken before me that there are very good
26 reasons to think that the prevailing MRP changes
27 over time. What I'm referring to as the
28 prevailing MRP is the conditional MRP that

1 Glenn's just talked about. I think there are
2 very good reasons to think that that varies over
3 time.

4 And on the second question, how does the MRP
5 vary over time, I'm again with Glenn. I don't
6 know precisely how the MRP varies over, time but
7 I agree with what CEPA says on page 6 of their
8 report that there is strong and convincing
9 evidence that there is a negative relationship,
10 for Australia anyway, between the market risk
11 premium and risk free rate since at least the
12 mid-1990s.

13 Let me elaborate on those two points.
14 I want to emphasise a point that Graham made,
15 that there are essentially two components to the
16 market risk premium. I'm on slide 2. There is
17 the market's assessment of the quantum of risk
18 and secondly there is the price of risk. That
19 is, the compensation required by a diversified
20 investor for bearing each unit of risk.

21 Now, if you think that the MRP is constant,
22 you would have to believe that neither of these
23 things change over time, and I think that's just
24 not consistent with the observed facts. The
25 empirical literature on this topic is really
26 focused on investigating the variables that might
27 be correlated with changes in the market risk
28 premium. The empirical literature takes for

1 granted that the MRP does change. So it's not
2 investigating whether the MRP changes; it's how
3 the MRP changes and what variables, conditioning
4 variables, may be correlated with the changing
5 MRP.

6 To the point about does a constant MRP fit
7 with the observed facts, there's a paper by
8 Harris and Marston, a couple of researchers from
9 the University of Virginia, and they make the
10 point that if you assume the constant market risk
11 premium then what you would have to believe is
12 that had the required return on equity changes
13 one-for-one with government bond yields. And
14 that just doesn't seem sensible or consistent
15 with the observed facts.

16 So on slide 3 I have a picture that tries to
17 demonstrate this point. The blue line is the
18 yield on 10-year government bonds in Australia.
19 And the orange line is the CAPM return on equity
20 estimated by adding a fixed market risk premium
21 to the blue line. This is the Harris and Martin
22 point: You'd get a situation where the estimate
23 of the required return on equity moves
24 one-for-one with changes in the government bond
25 yield.

26 Now, look at what happened during the period
27 of the GFC. The estimate of the required return
28 on equity, the estimate derived using that

1 method, fell by 15 per cent during the peak of
2 the GFC. So the day after Lehman Brothers
3 collapsed, the price of risk apparently went
4 down, using this method. I don't think that
5 makes any economic sense. And so, what Harris
6 and Marston say, they have a couple of
7 conclusions in their paper. They say that:

8 *Shareholder required returns change by*
9 *less than do long-term government*
10 *interest rates. ... As a consequence,*
11 *cost of equity estimates using a*
12 *constant risk premium assumption are*
13 *highly likely to underestimate*
14 *(overestimate) required returns in low*
15 *(high) interest rate environments.*

16 I think that's right. They also say that:

17 *Improved practice would incorporate an*
18 *estimate of the market risk premium*
19 *that reflects current market*
20 *conditions and the relationships among*
21 *the equity risk premium, interest*
22 *rates and key metrics of market risk.*

23 Again, I think that's right and consistent with
24 what nearly all of the other participants have
25 said, that if you want a good estimate of the
26 market risk premium, you're best off by combining
27 different pieces of evidence.

28 Now, turning to the question of how does the
prevailing market risk premium vary in Australia,
again I have to emphasise that I don't know
precisely how the market risk premium changes in
Australia, the true market risk premium and how
it is related to the risk free rate. But if you

1 look at the empirical evidence, it suggests at
2 least that there is good evidence that there's a
3 negative relationship between these two things.
4 And the evidence that I have focused on here is
5 from dividend growth models because, as the AER
6 itself has explained in the past, the dividend
7 growth model is probably the best way we have of
8 getting a handle on what the prevailing market
9 risk premium is.

10 So I've got three charts here, and there are
11 many, many others that you can find that show a
12 very similar thing. The first is from CEPA's
13 paper. Jonathan didn't cover this one in his
14 presentation, but it's a version of the DGM that
15 uses forecasts of dividend yields. And you can
16 see a negative relationship there between the
17 market risk premium and the risk free rate.

18 The second chart is IPART's estimate of the
19 prevailing market risk premium. IPART derives its
20 estimate using six different methods, combining
21 the estimates from six different methods, five of
22 which are DGMs, differently specified DGMs. And
23 again, you can see a negative relationship
24 between the estimate of the market risk premium
25 and the risk free rate.

26 And then the final chart is the calibrated
27 DGM that the ENA has proposed, which is an
28 extension of the three-stage dividend growth

1 model that the AER developed in 2013. Again, you
2 can see a negative relationship. Over different
3 time periods, but all telling a fairly consistent
4 story of a negative relationship. Now, the slope
5 of these lines are all different, so I don't
6 think we can infer from that precisely what the
7 true relationship is, but we can be fairly
8 confident, I think, at least right now, the
9 relationship is a negative one.

10 Now, one point I would like to make is that
11 there sometimes seems to be a bit of a confusion
12 when we talk about the dividend growth model that
13 somehow there is an assumption of a negative
14 relationship that goes into the model, so you
15 start with an assumption of a negative
16 relationship. That's not the case. What you
17 have, the negative relationship is an outcome of
18 the model. So you just put in the market data
19 and then you observe what the model tells you the
20 market data shows. And the market data would
21 indicate a negative relationship.

22 I just want to pick up on a couple of points
23 that Martin made. He mentioned that the market
24 risk premium has a reward for bearing market
25 volatility. And I think that's correct. One way
26 we can understand why there might be a negative
27 relationship is if we go back to slide 3, that
28 picture that showed the GFC event. During that -

1 so I'm picking the financial crisis because it's
2 an extreme event that sort of demonstrates a
3 point. During the GFC, what you had was a spike
4 in market volatility, just as Martin outlined.

5 And exactly during that period, what we saw
6 was government bond yields fall very
7 significantly. So the level of risk in the
8 market went up and we observed that government
9 bond yields went down. Why did that happen?

10 There's very good evidence that what
11 occurred is a phenomenon called the "flight to
12 safety" where investors observing an increase in
13 market volatility - market risk - shifted their
14 holdings away from risky assets in favour of or
15 towards low-risk assets like government bonds.
16 So that had the impact of pushing down government
17 bond yields.

18 So what we can possibly infer from that is
19 that when market risk went up, there was a
20 substitution away from risky assets - pushed down
21 government bond yields. At the same time, the
22 level of risk went up and you would expect that
23 that coincided with an increase in the market
24 risk premium. That's one way we can
25 conceptualise this relationship.

26 The second point Martin made that I want to
27 pick up on is this idea of a long term decline
28 over time in the market risk premium as markets

1 integrate. I think that's a reasonable story to
2 tell, but I don't think it's entirely clear cut.
3 One of the consequences of markets integrating is
4 that investment opportunities open up to
5 investors who previously didn't have these
6 investment opportunities. Particularly in
7 emerging economies.

8 And there's good evidence that those types
9 of investors are more risk averse. For a range
10 of reasons, they tend to be more risk averse
11 investors than investors in established,
12 developed economies. And so, it's not entirely
13 clear that you have a persistent long-term
14 decline in the market risk premium. You may do,
15 but it may also be that the market integration
16 that Martin talked about also increases the
17 market risk premium. So I'll just leave it there
18 and hand over to Anna.

19 MS BRAKEY: Thanks, Dinesh. That brings us to the
20 end of the presentations. I was just wondering
21 if the board members had questions at this point?
22 No? Well, I think there was pretty strong
23 support --

24 MS SAVAGE: I think Jim might have just put his hand
25 up, Anna.

26 MS BRAKEY: Sorry.

27 MR COX: I'm sorry, Anna. I'm having trouble with my
28 hand functions. I apologise. But I do have a

1 question.

2 One of the things that emerged in the
3 discussion is the idea that there is a
4 correlation, at least for some periods, a
5 negative correlation between the risk free rate
6 and the market risk premium, and that's argued on
7 semi-empirical grounds.

8 Bearing in mind that we are regulators and
9 we are going to have to set a market risk premium
10 that will apply to determinations for a
11 considerable period of time, is this the sort of
12 correlation we can rely on or is it one that's
13 likely to break down under the pressure of
14 events? Since the argument is so empirical,
15 I would just be interested in the views of
16 experts on that question. I think it's one we'll
17 need to think about.

18 MS BRAKEY: Who wants to jump in and answer that one?
19 Perhaps either Jonathan, Toby or Dinesh who
20 talked about the negative correlation? Okay,
21 we've got Graham. Graham, did you want to jump
22 in?

23 PROFESSOR PARTINGTON: I'd just point out this
24 negative correlation may not exist at all. And
25 indeed, if you look at the evidence, it's all
26 over the place. Up, down, no relation, resume
27 shifts.

28 Now, in the case of using the dividend

1 discount rate, the DGM model, it's no surprise at
2 all to me if you find you've got a negative
3 correlation. Let's just think about what
4 happens. We're heading into a recession. Stock
5 prices fall sharply. Management hold their
6 dividend. What happens to the dividend yield?
7 It goes up.

8 What happens to growth rates? Well, usually
9 the long term growth rate won't be changed. And
10 for various reasons that I'll be happy to discuss
11 later, it's very probable that intermediate
12 growth rates are not adjusted downwards enough.
13 Consequently, what you will observe is an
14 apparent expansion of the risk premium, the
15 market risk premium.

16 Now, what's going on in a recession?
17 Interest rates are going down both because of a
18 declining demand to borrow and action by the
19 monetary authorities. So what you see, interest
20 rates low, estimated market risk premium -
21 misestimated market risk premium, I would say,
22 increasing. And vice versa when you move out of
23 the recession.

24 So you may well get that negative
25 correlation purely by virtue of sticky dividends
26 when you the use the dividend growth model to
27 estimate your market risk premium. So I wouldn't
28 place a lot of weight on that evidence.

1 MS BRAKEY: Thanks, Graham. Martin?

2 DR LALLY: I agree entirely with the comments that
3 Graham has made. I think that just reinforces my
4 earlier point that the MRP is extremely difficult
5 to estimate. I wouldn't place any reliance on
6 the statistical relationships that have been
7 found, partly for the reason Graham mentions and
8 also partly because the confidence intervals on
9 the estimates are so wide.

10 What I think the AER should do is to take
11 account of a wide range of different estimators,
12 some of which are sensitive to short term changes
13 in the market risk premium. So, for example, the
14 DGM would be in principle, and surveys would tend
15 to do that as well.

16 So if the AER does put weight on a wide
17 range of different estimators, by that very
18 process it will be getting some relationship
19 between the MRP estimate and current economic
20 conditions, whatever that is, but not using a
21 statistical relationship, a regression
22 relationship between risk free rates and
23 estimated MRPs.

24 MS BRAKEY: Thanks, Martin. Jonathan?

25 MR MIRRLEES-BLACK: Thank you. Of course Graham's
26 assumptions around the way that corporate
27 behaviour might work might have some element in
28 terms of the conclusions you could draw from a

1 dividend discount model. And that's why I think
2 it makes sense to look at alternative
3 specifications of the models looking at discount
4 rates.

5 In the work that we did for the AER we
6 didn't just look at dividend discount models; we
7 also looked at a specification where we looked at
8 earnings yield, which of course takes away from
9 the specific dividend policies of individual
10 companies. We found the same result, which is
11 that the expectations of the MRP implied by those
12 numbers is that you have that same correlation.

13 So I think that the empirical evidence shows
14 that there is something in that correlation even
15 if you do alternative specifications, and I think
16 that's one important point. And I think the
17 converse is that we don't have the evidence of
18 stability in the MRP, so let's not assume it. So
19 we need to take the two propositions equally.
20 It's not to say we should assume the MRP because
21 we don't have evidence that it varies with the
22 risk free rate. We have evidence that it varies
23 with the risk free rate. I think the case is to
24 prove the stability.

25 MS BRAKEY: Thanks, Jonathan. Glenn?

26 DR BOYLE: Just to address the Jim's question,
27 I completely agree with Dinesh and Jonathan that
28 there are really good plausible reasons for why

1 there might be a negative relationship between
2 the MRP and the riskless interest rate. No
3 problem there at all. But I would be hesitant,
4 as Martin and Graham have pointed out, about
5 drawing too much from these empirically estimated
6 relationships. It's important to remember we
7 can't actually observe, even ex-post, the true
8 market risk premium. And these negative
9 relationships have all been estimated using some
10 model. Primarily the dividend growth model but,
11 as Jonathan's pointed out, not limited to that.

12 The trouble is these are estimates. So they
13 equal the true market risk premium plus an error.
14 And all these negative slopes may be picking up
15 is that the error is negatively correlated with
16 the riskless interest rate. So it's very hard,
17 I think, to infer anything very much from this
18 evidence simply because we can't observe what it
19 is we are trying to use as one of the moving
20 parts.

21 MS BRAKEY: Thanks, Glenn. Clare, did you want to
22 jump in now before I go to Toby and Dinesh?

23 MS SAVAGE: No, go to Toby and Dinesh and then I'll
24 just make sure I understand where everyone's
25 sitting.

26 MS BRAKEY: Right, okay. Thanks, Toby?

27 DR BROWN: Thanks. Yeah, so I just want to emphasise
28 again that one issue is how do we estimate the

1 MRP, and of course that's very important. But
2 under current practice, after the MRP has been
3 estimated, for the next four years every time a
4 determination comes around, the allowed return on
5 equity is going to vary one-for-one with the risk
6 free rate. And I think that's not really
7 consistent with the evidence that we've been
8 talking about.

9 MS BRAKEY: Thanks, Toby. Dinesh?

10 MR KUMARESWARAN: Yes, I just want to make a couple
11 of points. The first is that I can't see why the
12 AER needs to know the precise relationship
13 between the market risk premium and the risk free
14 rate. That's not necessarily a necessary
15 condition in order to give some weight to
16 something like the dividend growth model.

17 I guess the point that I was trying to make
18 in my presentation is I don't know what the
19 precise relationship is, but there is very good
20 empirical evidence to suggest that right now
21 there's a negative relationship. So I agree with
22 Jonathan that the key question that the AER needs
23 to ask itself is, "How convincing is the evidence
24 that the market risk premium is constant?" And I
25 think that evidence is very thin.

26 To Jim's question, it was essentially,
27 "Well, if we believe there is currently a
28 negative relationship, should the AER worry about

1 that relationship changing over the RoRI period?"
2 Well, it's possible that the relationship might
3 change, but the evidence suggests that it doesn't
4 change overnight. So there are sort of regime
5 shifts that occur, but you would have to go back
6 more than 30 years to have a situation where the
7 relationship flipped. So I don't think we should
8 worry about that too much.

9 But even if that were the case, as I said in
10 my presentation, you don't have to make an
11 assumption about the negative relationship in
12 order to apply the dividend growth model. It's
13 an outcome of the model. So all you have to do
14 is to run the models and see what relationship
15 it's showing. So if it happens to show a
16 positive relationship, well, that's fine. The
17 most important thing is, do you think that the
18 dividend growth model contributes some useful
19 information to the estimation of the market risk
20 premium?

21 MS BRAKEY: Thanks, Dinesh. Jonathan, did you want
22 to just quickly add something before I go to
23 Clare?

24 MR MIRRLEES-BLACK: Thank you. Very quickly,
25 Graham's critique of the dividend growth model
26 estimates is that it doesn't respond properly to
27 recessions. Most sensible specifications of the
28 dividend growth model will have a return to

1 normal. So you will explicitly look at what the
2 expectations are through the cycle, through the
3 recession. It will take precisely account of all
4 that. So I think that that objection can be
5 dismissed. And I think, as Dinesh was saying, we
6 need to be driven by the empirical evidence.
7 Rather than that we can't take anything out of
8 the data, I think we can take things out of the
9 data. And we certainly can't take it out of
10 theory, so let's rely on the data.

11 MS BRAKEY: Okay, thank you. Clare?

12 MS SAVAGE: I apologise. The AER is in Senate
13 Estimates at the moment, which is where I should
14 normally be, so I'm a little bit two-minded at
15 the moment. So I just want to make sure I've
16 captured the thoughts of all of our experts
17 today.

18 It seems to me that Graham and Glenn are
19 both saying yes, it varies through time, but it's
20 not clear that it varies necessarily with the
21 risk free rate and it's actually not possible to
22 estimate anyway or very difficult to estimate
23 anyway. I think everyone else is saying yes, it
24 varies with time, it's not necessarily fixed
25 one-for-one with the risk free rate, it may be
26 negative, but it's also impossible to estimate.

27 Whereas there's a variation in the strength
28 of views in that latter camp, with Martin sort of

1 saying there might be some information that's
2 relevant right through to I think Dinesh's view,
3 which is more, "Yes, it's got a real role to
4 play."

5 And I think in the next part of this, we'll
6 talk about what role, if any. I think we will
7 need to think about inflation, particularly given
8 where we are at. And I think, Martin, you have
9 got some quite interesting views on the role
10 inflation can play in terms of some of these
11 relationships.

12 And I think obviously the experts are here.
13 It will be interesting to see whether the
14 stakeholder groups continue to have the same
15 position on a negative relationship if we are in
16 a strongly growing environment for the risk free
17 rate. That may be a different set of stakeholder
18 presentations as we get through this year, but
19 that's a side point.

20 But did I correctly capture the camps on the
21 relationship to risk free rates? I think
22 everyone's saying it's time-varying, but there's
23 a difference of views as to whether there is a
24 fixed relationship or not with the risk free
25 rate. And I think everybody agrees it is
26 impossible to estimate. But I just want to check
27 I got the mix of views there.

28 MS BRAKEY: I think you probably did, Clare. I think

1 if there was kind of a little bit of a divide
2 that I picked up, it was some people said, "Well,
3 there is evidence. Let's rely on the evidence."
4 There is really no evidence for a fixed MRP, so
5 it's a question of whether you want to rely on
6 the evidence that is there or go for a more
7 theoretical or kind of a, "hands in the air,
8 can't estimate this," type approach.

9 MS SAVAGE: When I was making notes last night, Anna,
10 I was like, "We've got this awesome situation
11 where we're trying to choose between doing
12 something that seems to be wrong but stable or
13 something that may be wrong and less stable but
14 more right.

15 MS BRAKEY: Yeah. Okay. With that - Dinesh, you've
16 got a hand up. Go, Dinesh, and then I'll quickly
17 go to Eric.

18 MR KUMARESWARAN: Yes. I think, Clare, you
19 characterised the positions pretty well. I just
20 wanted to clarify one thing about my position.
21 So my position is that the AER really doesn't
22 need to know the precise relationship. It just
23 needs to ask itself, "Does the dividend growth
24 model" - I think that's why we're sort of talking
25 about this relationship, because of the
26 considerations about the dividend growth model.
27 And I guess we'll come onto this in a moment, but
28 all the AER needs to ask itself is, "Does the

1 dividend growth model contribute some useful
2 information?"

3 Before we move on, I also wanted to say a
4 couple of words about - well, in my presentation
5 I had some charts that all seemed to show a
6 negative relationship between the risk free rate
7 and the market risk premium, but in the omnibus
8 paper the AER explained that it had developed a
9 version of the dividend growth model that
10 apparently seemed to show a positive
11 relationship.

12 I don't think that that particular
13 specification that the AER's model has used is a
14 sensible one, for the following reason: It seems
15 that the main reason that the AER finds a
16 positive relationship is because the AER has
17 chosen a fairly unusual estimate of the long term
18 growth rate for the economy. It's a key input to
19 the dividend growth model. My understanding is
20 that the estimate of the long term stable growth
21 rate that the AER has used is the prevailing
22 yield on 10-year government bonds, which is one
23 of the most volatile economic variables you can
24 imagine.

25 So let's just think about this for a moment.
26 We're saying that a good estimate of the
27 long-term stable growth rate for the economy is
28 the prevailing yield on 10-year government bonds?

1 I don't think that's a sensible input to the
2 dividend growth model.

3 I did check with some good macroeconomists,
4 and they sent me an email with about a page of
5 algebra that explained that there is some
6 macroeconomic theory that suggests that the
7 long-term risk free rate could be used as an
8 estimate or a proxy for the long-term growth rate
9 for the economy. But that's a long-term stable
10 risk free rate, so something like 5 per cent
11 that doesn't really change much over time. It's
12 not the prevailing government bond yield.

13 So I think that exception to the rule that
14 the AER has point to in the omnibus paper may be
15 driven by an assumption or an input that's not
16 appropriate. And to be fair to the AER, the
17 omnibus paper did caveat that particular
18 assumption quite carefully and say, "We don't
19 think that this is necessarily a good estimate of
20 the long-term growth rate." But I just wanted to
21 put that particular model in some context.

22 MS BRAKEY: Jonathan, do you have a very short point
23 on that? Because I'm trying to get to Eric. But
24 did you want to address something related to what
25 Dinesh just said?

26 MR MIRRLEES-BLACK: I just wanted to say that I agree
27 with Dinesh in terms of long term growth. Real
28 interest rates have structurally declined and now

1 expectations are that long term real interest
2 rates will be substantially lower than real
3 growth. I leave it there.

4 MS BRAKEY: Thank you. Eric?

5 MR GROOM: Thanks, Anna. I think one of the key
6 issues or questions for me is whether there are
7 structural changes happening rather than cyclical
8 changes, because I think we have got to take a
9 longer term view as to what's happening or what
10 may be happening in terms of relationships
11 between market risk premium and the risk free
12 rate.

13 So I'm interested in understanding more
14 about the extent to which there is evidence for
15 structural changes, and if so, what they are and
16 what may be the implications for that. That's a
17 larger question. A more immediate question, if
18 I could, what we're trying to do is not forecast
19 future returns but come up with an estimate, a
20 long-term expectations, I guess, for returns to
21 investors.

22 And I guess the question was the testing, if
23 you like, of different models seems to slip into
24 whether they have good predictive power in terms
25 of predicting future returns. What are the
26 assumptions implicit in using a test of
27 predictive power to test whether our expectation
28 of estimations are reasonable or not?

1 MS BRAKEY: Eric, who would like first crack at that?
2 Glenn?

3 DR BOYLE: Almost hopeless, Eric. Subsequently
4 realised excess returns are - in the very long
5 run, right, all these things, all the shocks,
6 unanticipated shocks, will average out and they
7 will converge on the unconditional mean. But in
8 the short run, virtually all changes in returns
9 are driven by things that weren't anticipated at
10 the beginning of the period. So whether they are
11 high or low reflects almost entirely those
12 unanticipated shocks rather than whether expected
13 returns at the beginning of the period were high
14 or low. So no, you're not going to get very far
15 that way.

16 MS BRAKEY: It seems as though there's general
17 agreement with Glenn on that.

18 MR GROOM: I think that gets back to the point that
19 we can say a model may have poor predictive
20 power, but does that mean it's not reflective of
21 current expectations? That's a challenge for us,
22 I guess.

23 DR BOYLE: No, it doesn't mean that. But the problem
24 is that we have no way of telling whether the
25 model actually generates a good estimate of the
26 ex-ante market risk premium. We can't even
27 observe that ex-post. Right? So we can't get to
28 five years later and say, "Oh, well. Now we can

1 see what the market risk premium was five years
2 ago." Right?

3 Because if we could do that, then we could
4 test all these models. But they are basically
5 untestable because we can never observe the true
6 market risk premium even with the benefit of
7 hindsight. So the fact that a particular
8 approach or model doesn't predict subsequently
9 realised returns very well, has low predictive
10 power, doesn't in and of itself mean that it's
11 not a good model of the ex-ante market risk
12 premium. It just means we can't tell.

13 MR GROOM: Yeah, which is a challenge for us.

14 DR BOYLE: Yes.

15 MR GROOM: If I could put one question? When we were
16 discussing beta last week, Dinesh had a framework
17 for considering the estimation of beta that
18 talked about the choice, if you like, or the
19 relevance of the saliency of the estimate and the
20 stability of the estimate.

21 Can that framework be brought forward there
22 to help guide us in this discussion today about -
23 or should it be brought forward to help guide us
24 in the discussion about alternative models for
25 informing our estimate of expectations for the
26 market risk premium? And this goes back to my
27 question about structural changes through time.

28 MS BRAKEY: Dinesh, I might go to you there.

1 MR KUMARESWARAN: Yes. I mean, I guess what was
2 underlying that framework was that you have
3 different ways of estimating the same thing. And
4 all of these different things are giving you some
5 slightly different information. And so in a
6 world of uncertainty, the best you can do is make
7 use of all of the information available to you.
8 That's essentially the point that I was trying to
9 major and I think that's the point that Martin is
10 making in his suggestion that we apply some
11 weight to all of the available evidence.

12 Now, one way you could think about the task
13 of estimating the market risk premium is as sort
14 of a Bayesian approach. So you could start with
15 a prior, and your prior being, "What is the long
16 term market risk premium?" That is, what is the
17 market premium over a very long period of time,
18 or averaged over a long period of time? That's
19 essentially the historical excess returns, the
20 average of long term historical excess returns.

21 But then you have to ask yourself, "Well,
22 what's the additional information that I have
23 about the prevailing market risk premium?" And
24 so in order to improve your overall estimate of
25 the prevailing market risk premium, you'd start
26 with that prior and then give some weight to some
27 other evidence. So I think some other evidence
28 that you might give weight to would be dividend

1 growth model estimates.

2 The AER says in its paper, the omnibus
3 paper, that the dividend growth model has strong
4 theoretical foundations. So it's not that it's
5 theoretically flawed; the main objection seems to
6 be concerns about the implementation of the
7 model. So give the model, or the estimates
8 derived using that model, appropriate weight to
9 reflect your concerns about the limitations of
10 that model. That's how I would think about it.

11 MS BRAKEY: Thanks, Dinesh. I might move on to
12 Graham, and then I propose to have a short two-
13 or three-minute break and we'll move on to the
14 second part of the question. So, Graham?

15 PROFESSOR PARTINGTON: Just on the observation that
16 it's always better to use more information, more
17 information is not necessarily better if the bad
18 information swamps the good. That's my first
19 point.

20 And the second point is it is generally
21 assumed that more information reduces uncertainty
22 and often it does, but that also is not
23 necessarily the case. More information can
24 actually increase your uncertainty. So it
25 doesn't follow at all that if there is more
26 information, you should use it.

27 MS BRAKEY: Thank you very much. So what we might do
28 is we might break till 10.50. So that's four

1 minutes time, just to give everybody a chance to
2 get a drink or have a bathroom break or whatever.
3 And then we will then restart with the second set
4 of questions and Jonathan and Graham presenting
5 on those. So we'll see you at 10.50.

6 **SHORT BREAK**

7 MS BRAKEY: Welcome back, everybody. We will now
8 move onto the second set of questions on the
9 market risk premium dealing with the long run
10 estimate of historical returns and whether that's
11 the best estimate of MRP, can the AER derive a
12 better estimate by incorporating other
13 information, and if so how, and what challenges
14 would the AER need to overcome in giving weight
15 to any other information? So we will kick off
16 with Jonathan.

17 MR MIRRLEES-BLACK: Thank you very much, Anna. In
18 the second part of the slides that have been
19 circulated, we can start on page 15 where I have
20 summarised - these are the AER's questions that
21 you've asked us to address in this segment of
22 this session. I won't repeat them. You can read
23 those.

24 Moving to 16, I have questions around, well,
25 is the long run estimate the best estimate of the
26 MRP? And I put five questions. So firstly, does
27 it measure the variable that we want to measure?
28 This goes to Eric's point just at the end of -

1 before the break that it's measuring historic
2 returns rather than expectations. So it doesn't
3 directly measure expectations, although it might
4 provide insights into what people might expect
5 and so we need to factor that in.

6 Secondly, has there been a structural
7 change? So therefore, will the future be like
8 the past? And we say, well, there have been
9 significant structural changes and obviously if
10 we're are going to use it, we need to reflect
11 that into future expectations.

12 The third questions is, is the AER providing
13 through-the-cycle returns or is it taking account
14 of some of the cyclical moves? Given what we've
15 observed, which is that there can be significant
16 changes which are quite long-lasting, even in
17 cyclical returns, that's important to reflect in
18 what MRP has said.

19 The fourth thing is, is the historic MRP the
20 right metric to measure or should we be measuring
21 total market returns? Is that a better measure
22 of a structural economic variable? And I think
23 that there's evidence that the real total market
24 return is at least as good and weight should be
25 placed potentially on both of those.

26 And then the fifth thing - I think this is
27 important. Do investors exclusively use historic
28 MRP to determine their own expectation of the

1 returns? I think the answer to that is no,
2 rather straightforwardly.

3 So then the question is, are equity return
4 market returns predictable over the medium term?
5 It's not quite the same as expectations, which I
6 think is what we're getting at. But I think some
7 of this is relevant and we can say, "Well, there
8 is evidence forecast that there are variables
9 which are used which can provide some guidance
10 around future expectations of return."

11 Shiller's work, which Graham's referred to,
12 is well-known for his cyclically adjusted
13 PE ratio. And that provides some guidance and
14 predictive elements in terms of future returns.
15 Yes, there are elements over out of long returns,
16 but here we return back to Eric's point about
17 what investors are expecting. And investors
18 looking at capital market projections over the
19 next 10 years or so, they do look at what market
20 trends are.

21 And in general, if we look at the right-hand
22 side, there is a relationship between valuations
23 of markets and expectations of future returns.
24 Where markets are cheap, they are more likely to
25 go up further than when they are expensive. And
26 even if the out-of-sample models are incorrect,
27 that certainly guides investor expectations of
28 what future returns will be, and I think that is

1 very relevant for the decisions that the AER is
2 taking in terms of forward expectations of market
3 returns.

4 So, page 18, can we derive better estimates,
5 and if so, how? Dividend growth models - I won't
6 go through the details - is one element. Capital
7 market assumptions models is another. Not
8 typically used in regulatory determinations. I'm
9 not aware of that. The AER might look at some of
10 the input data as conditional variables, but this
11 is what real investors and portfolio advisers are
12 using to construct estimates of forward-looking
13 10-year returns. They look at yield, they look
14 at earnings growth and they look at valuation
15 changes. Widely used in portfolio construction
16 and widely used to frame investor expectations.

17 I think there is evidence around that, and
18 you can find surveys of what those capital market
19 assumption models are, rather than some of the
20 direct surveys that AER has used. So there is
21 evidence out there. How it is used is another
22 matter, but there are method of getting to market
23 expectations.

24 Moving to 19, we have spent a lot of time
25 already today talking around dividend growth
26 models and do they provide reliable estimates of
27 equity return expectations. Caveats around
28 models are well-known. Concerns of the AER are

1 set out in the omnibus paper or in the 2018
2 determination explanatory paper. There are a few
3 objections here, which I've looked at. There is
4 a perpetual model, but what I would say is that
5 there are concerns around the estimates made for
6 the dividend growth model. I think there are
7 equally concerns about the historic equity return
8 model which are hidden. There are assumptions
9 which are made which are implicit in the historic
10 equity return model. For example, there is a
11 concern DGM produces imprecise estimates.

12 The historic equity return approach makes
13 the assumption that the future will be like the
14 past, but in those long term averages it gives a
15 false precision of returns over the medium term.
16 And I think that there is uncertainty over the
17 long terms growth assumptions, which produces
18 uncertainty over the dividend growth model, but
19 the historic equity return approach, you're
20 fixing the assumptions around what the past
21 economic growth rate was, equity investment
22 growth was, dividend structures. Expected
23 returns should be conditional on some of the
24 variables which are used to determine your
25 expectations in the dividend growth model, and
26 you can't vary those in the historic excess
27 return approach.

28 Page 20, so conclusions on all of this,

1 historic excess returns are widely used as an
2 estimate and one reason for this is that it
3 appears to provide some certainty. But there is
4 good information in the other measures and they
5 do measure the variable of concern directly. Of
6 course there is uncertainty and of course the AER
7 needs to demonstrate a process that it's making
8 good use of evidence and sensible judgement. But
9 with this uncertainty, yes, in terms of the
10 interests of consumers isn't it best that it
11 makes use of this broader evidence and gets a
12 decision that's roughly right rather than the
13 spurious precision that can be there in the
14 historic excess returns approach.

15 And I think it's important to state now it's
16 a particularly important moment. Bond yields
17 have probably reached a bottom and are beginning
18 to rise, central banks are changing monetary
19 policy, we've got bigger inflation risk. And so
20 therefore, in that context I think it's really
21 important that the AER should be able to take
22 account of the full range of evidence, which
23 includes dividend growth models and some of the
24 other conditional variables which are used to
25 inform capital markets assumptions. Thank you.

26 MS BRAKEY: Thanks, Jonathan. I think we're going to
27 Graham now.

28 PROFESSOR PARTINGTON: Yeah, okay. Well, I did

1 circulate some slides. So let's start with the
2 first one. The historic market return estimator
3 is the default method, and it does have the
4 advantage that at least the data is observable,
5 the method is relatively objective and it's quite
6 transparent. It's also clear that that's the
7 method that has influenced the 6 per cent that
8 practitioners in Australia commonly use.

9 So it has got some things going for it, but
10 it's not all good. As Jonathan just said, we're
11 assuming that history repeats itself or, as Glenn
12 might put it, that we've either got a constant
13 market risk premium or the market risk premium
14 mean reverts. We also know that it's an
15 imprecise measure over short horizons; you need
16 lots of history in order to get a relatively low
17 standard error.

18 And that poses a problem because what we are
19 now doing, we are measuring the historic market
20 risk premium over many different tax systems.
21 For example, there was a time when Australia had
22 no corporate tax. There was a time when it had
23 not an imputation system, but a system that was
24 very like an imputation system in its effects.

25 We are covering lots of crises, so I
26 actually think - and I think Glenn agrees with
27 this - covering the crisis is a good thing. You
28 shouldn't take them out, because that is part of

1 the investor experience as it was and part of the
2 investor experience as it is going to be in the
3 future. Indeed there is literature which says if
4 you want to test asset pricing models properly,
5 you need to make sure you've got a good
6 cross-section of crises in there.

7 And furthermore, the crises can make a big
8 contribution to explaining levels of risk
9 aversion and the magnitude in the MRP. We have
10 also got structural differences. Obviously, the
11 exchanges that existed 120 years ago - there will
12 be one in Melbourne, there will be one in Sydney,
13 there might have been one in Brisbane or Perth,
14 there would have been a relatively small number
15 of stocks, they would be heavily weighted to
16 agriculture and mining - would look quite
17 different to the exchange today. And there are
18 some questions of data reliability at long
19 horizons, the mystery of history, if you like.

20 In the Australian context, there's been some
21 debate about dividend adjustments. And there's
22 an interesting paper out of the RBA by
23 Thomas Mathews (RDP 2019-04 "A History of
24 Australian Equities") which suggests actually, if
25 you construct your dividend series properly, the
26 market risk premium in Australia, the historic
27 risk premium, comes in at about 4 per cent.

28 A big problem with the historic average is

1 by definition you cannot capture changes that
2 have occurred within the average. In other
3 words, you can't pick up the ups and downs
4 because you are averaging them out.

5 I tend to agree with Martin that it's likely
6 that the average from history is going to
7 overstate rather than understate the required
8 rate of return. The integration argument, the
9 argument that we are wealthier and therefore more
10 likely to be less risk averse, the argument that
11 it's easier to diversify so risk aversion is
12 perhaps less of an issue, Siegel's argument that
13 we had artificially depressed bond yields because
14 of underestimation of inflation, survival
15 analysis, and so on and so forth. There's lots
16 of reasons that you can find in the literature
17 why history might give you an overstatement of
18 the market risk premium.

19 So it's not perfect, but in my book it's
20 still the best option because I don't know of any
21 way that you can reliably track changes in the
22 MRP. That brings us on to slide 2, which is
23 looking at one of the alternatives that you might
24 use, which is the dividend growth model. So we
25 get the implied cost of equity out of the
26 dividend growth model.

27 Now, I usually give the dividend growth
28 model a good kicking, but it's not all bad. It's

1 a well-developed theoretical model. And it has
2 some current use. It gets some use in practice
3 in estimating the market risk premium, and you
4 can't entirely discount that. And applications
5 of the DGM can be transparent. It may be a
6 little bit contingent on which model you use and
7 how you do it.

8 However, there is a big negative with the
9 DGM and that is that it gives estimates that have
10 substantial upwards bias. The first problem is
11 what I call incurable optimism. When you look at
12 DGM models, they almost invariably seem to be
13 cases where we are trending down from an above
14 average growth rate to get to the long term
15 average. It's very rarely the other way round.
16 So clearly you can't always be coming down from a
17 high growth rate to the long term average. So
18 that's the incurable optimism problem.

19 A practical problem is that it's well-known
20 that analyst's forecasts of earnings and
21 dividends are upward-biased. They are also
22 sluggish to adjust. So, you know, the market
23 changes, it takes some time for that to turn up
24 in the analysts' forecast, and when it does turn
25 up in the analysts' forecast, the earnings
26 estimate or dividend estimate that you're going
27 to get is too high. If the earnings or dividends
28 forecast is too high, and if that forecast is too

1 high, you need a bigger discount rate to equate
2 the current price to the higher cash flow.

3 The measurement of dividends often appears
4 to be wrong. The cash flow to investors is given
5 by the net dividend. That is, the dividend you
6 receive less the dividend you don't receive,
7 because you have participated in a dividend
8 reinvestment plan so the cash never leaves the
9 company, less of the capital that you've
10 contributed to the firm, plus any share
11 repurchases that take place.

12 Now, you might think, "Well, you know, are
13 these just minor adjustments?" No, they are not.
14 They are large, relative to the dividend. In
15 fact, when I just recently looked at some data
16 I was very surprised to find that recently on the
17 ASX the capital raisings would have almost
18 matched the magnitude of the total dividends. So
19 if you don't use net dividends, you've got very
20 substantial mismeasurement - overestimation, in
21 fact - of your actual cash flows. So bias is a
22 big problem.

23 There's another problem, and that is that
24 you can get quite widely varying estimates. You
25 regularly see this. It's not at all unusual to
26 see dividend growth models which will give you a
27 range of MRP estimates of 6 per cent. Is that
28 useful to the regulator that, you know, you've

1 got a choice of numbers which vary by 6 per cent
2 or sometimes more, maybe 8 per cent?

3 And then you've got the problem with sticky
4 dividends. I have already described this
5 problem. The point is that this problem is worst
6 when you most want to detect changes in the
7 market risk premium. That is, when the market is
8 changing rapidly. I've pointed out how that can
9 induce a negative correlation between the market
10 risk premium implied by the dividend growth model
11 and interest rates.

12 Jonathan defended against that by saying,
13 "Well, I also use the earnings yield." We
14 shouldn't get into a tit-for-tat debate here, but
15 I will just point out that the earnings rate is a
16 poor proxy for rates of return because it's a
17 confounded by the payout ratio and the growth
18 rate. And what happens to either historic or
19 prospective earnings yields when markets fall?
20 They go up. Historic earnings yield go up,
21 obviously, because prices have fallen. The
22 historic earnings don't change. Prospective
23 earnings yields increase because prices have
24 fallen, and because of the upward bias in
25 analyst's forecasts, you haven't sufficiently
26 reduced the earnings numbers so your market risk
27 premium inflates in a similar way to the
28 inflation if you use the dividend growth model.

1 On to the next slide. I'm still not walking
2 alone here. I picked this particular quote
3 because it's in a submission by networks and
4 pipelines to the AER. Basically, this is
5 commenting on the Bloomberg DGM, and the point
6 they make is, "Look, it's too volatile to be of
7 any use." And they more generally make the point
8 in their paper that the dividend growth model is
9 much more volatile than the historic market risk
10 premium.

11 Now let's move on to the inverse
12 relationship between the interest rate and the
13 MRP, which is often called "the Wright approach"
14 in Australia, which is the assumption that the
15 return on the market is a constant. Right?
16 Well, if we take that literally, there has to be
17 a one-for-one offsetting movement in interest
18 rates and the MRP. Interest rates go up
19 1 per cent, MRP goes down 1 per cent and vice
20 versa.

21 Now, I find this fundamentally implausible,
22 because if that was the case, you would find
23 prices would respond very little to changes in
24 interest rates because there should be no change
25 in the discount rate. You'd also have to ask,
26 are central banks wasting their time? Right?
27 Good news for investors; interest rates have gone
28 down. Bad news for the central bank; they've

1 inflated their risk premium. So the discount
2 rate doesn't change, so changing interest rates
3 doesn't change the incentive to invest.

4 So I think the one-for-one argument's
5 fundamentally implausible. I think we are all in
6 general agreement on that. And indeed, even
7 Wright says that it's not one-for-one. Well,
8 what is it? I've looked at the evidence on and
9 off over the years. You can find an inverse
10 relation, you can find a positive relation, you
11 can find no relation, you can find regime shifts.
12 There is no consistent reliable evidence for the
13 direction of the relationship. And if it's not
14 one-for-one, you also need the magnitude, right?
15 If we can't get the direction, what chance have
16 we got of getting the magnitude? You are wasting
17 your time. And I won't waste any more time.
18 Thank you.

19 MS BRAKEY: Did any of the experts want to add
20 anything before I go to the board members for
21 questions? Martin?

22 DR LALLY: Were we going to go around each of us?

23 MS BRAKEY: Not for this one. I think it was just
24 Jonathan and Graham as the leads. But kick off
25 with a comment.

26 DR LALLY: Okay. I agree with everything Graham has
27 said about the dividend growth model. It reminds
28 me of Churchill's famous comment about democracy,

1 that it was the worst form of government ever
2 invented apart from all the others that have been
3 tried. So just because a method's awful doesn't
4 mean you throw it away. You have to look at the
5 alternatives.

6 And the alternative that the AER seems to
7 most strongly favour and has for a long time, the
8 historical averaging methodology, I agree with
9 Jonathan's point that there's a false precision
10 to it. You get this number, and more or less any
11 analyst who would go through the exercise would
12 come up with much the same number, and they don't
13 change much over time. So that must give
14 enormous confidence to regulators that this is
15 something they can hang their hat on.

16 But it is useful to look at the confidence
17 interval on the estimate. The AER uses numbers
18 from 1988. They favour most strongly numbers
19 from 1988 to 2020. So that's 40-odd years. The
20 95 per cent confidence interval on your estimate
21 of around about 6 per cent runs from 0 to
22 12 per cent. Now, that's just huge. That range
23 dwarfs any sort of variation that the DGM is
24 accused of.

25 And the AER may get some comfort from the
26 fact that if you go back to 1988, you get
27 6.3 per cent. If you go back even longer, you
28 get more or less the same result. Well, that's

1 just pure luck. Absolutely pure luck. Just to
2 illustrate what actually is going on, I noted
3 some numbers in my notes. If you go to the 15
4 West-European equity markets they would, we would
5 expect, have pretty similar MRPs. And likely
6 Australia would be somewhere around the same
7 ballpark. But the historical average numbers
8 going back to 1900 - so that's 120 years of data,
9 not just 40 years of data - from Dimson, Marsh
10 and Staunton, the results range from 3 per cent
11 for Spain to 9.7 per cent for Austria.

12 It's just not plausible that Austria has an
13 MRP three times Spain. So what that data is
14 showing you is that most likely Spain was way too
15 low and most likely Austria's number of 9.7 was
16 way too high. So once you look at that kind of
17 data, then the historical averaging technology
18 with its 6 per cent number that doesn't change
19 much from year to year, that's giving you a
20 degree of comfort that just is not warranted.

21 So I would say to you the DGM is a terrible
22 model; everything Graham says is right. But you
23 are getting a false sense of security, as
24 Jonathan says from the historical averaging
25 model. And so what I would say to you is rather
26 than ask yourself the question, "What's the best
27 method?", we don't have to pick one. If we were
28 picking one, we'd have to face this awful

1 conundrum. I would say to you, "All methods are
2 imperfect. So choose a set of methods that you
3 think are, for all their imperfections, worth
4 putting weight on, and then equally weight those
5 methods." And the set of methods that I would
6 recommend is not only historical averaging and
7 the dividend growth model, but this Wright
8 estimator. And I would also strongly urge the
9 AER to look at the results from foreign markets.

10 Otherwise, you know, if the regulator in
11 Spain and Austria did exactly what the AER is
12 doing, basically using historical averages, the
13 regulator in Spain would be coming up with an MRP
14 of 3 and the regulator in Austria would be coming
15 up with 9.7. And that variation cannot possibly
16 be reflective of the underlying differences in
17 those markets.

18 Now, I should add that it's very fortunate
19 that in that Dimson, Marsh and Staunton data
20 Australia comes out at about in the middle. So
21 whether you put some weight on the foreign data
22 or not doesn't make much difference. But the
23 general point is that for many regulators
24 following the methodology that the AER would, the
25 regulator in Spain or Austria, the results would
26 just be preposterously low or preposterously
27 high.

28 MS BRAKEY: Thanks, Martin. Dinesh?

1 MR KUMARESWARAN: I agree with most of what Martin
2 has just said. I want to pick up on a couple of
3 points that Graham made. Firstly, Graham has
4 quite rightly pointed to some concerns and
5 limitations with the dividend growth model.
6 I think that in those circumstances, the
7 appropriate course of action for the AER would be
8 to see if we can improve the model to address
9 those concerns. And as an example, the
10 calibrated DGM proposed by the ENA is an honest
11 attempt to try and address the two main concerns
12 that the AER expressed in 2018 about the dividend
13 growth model. And those are the same concerns
14 that Graham outlined.

15 So some concern that the dividend growth
16 model produced upwardly biased estimates, and
17 secondly that there's uncertainty about how to
18 choose the long-term growth rate in those models.
19 There may be some other concerns as well, but
20 I think the appropriate course of action would be
21 to just be really clear about what those concerns
22 are and then see if we can address those
23 concerns. I don't think the AER should throw the
24 baby out with the bath water, which is what
25 Graham is suggesting, and just completely throw
26 the DGM out.

27 Graham said that he thought it was
28 implausible that the Wright method, which

1 required constant required return on equity and a
2 one-for-one relationship between the market risk
3 premium and the risk free rate, was implausible.
4 I agree that that is an implausible assumption,
5 but it is as implausible as assuming that market
6 risk premium is fixed, which is currently what
7 the AER is doing.

8 And then finally the historical excess
9 returns approach, which is what Graham appears to
10 favour, what does that actually mean? What does
11 that estimate actually mean? It is an estimate
12 of the risk premium that an investor can expect
13 over the long run, over all sorts of market
14 conditions. So pandemics, financial crises,
15 booms, busts, dot com bubbles, everything. But
16 the AER's task is to determine what the market
17 cost of capital is over a future period, the
18 prevailing market cost of capital. So I think
19 that's why I agree with Martin that exclusive
20 reliance on the historical excess returns
21 estimate gives you a false sense of precision,
22 because it's not really, except in very
23 exceptional circumstances, going to give you a
24 good estimate of the prevailing market risk
25 premium.

26 MS BRAKEY: Thanks, Dinesh. Glenn?

27 DR BOYLE: I think it's important here to keep in
28 mind the distinction between the conditional and

1 unconditional MRPs. We seem to be mixing them up
2 a bit at times. In terms of the question that
3 was asked here, you know, is the long run
4 estimate of historical excess returns the best
5 estimate of the MRP? Well, which MRP? If it's
6 the unconditional MRP then if the excess returns
7 distribution is stationary and ergodic, which can
8 be tested, then the law of large numbers
9 basically tells us that the sample average over a
10 long time series converges to the unconditional
11 mean, in this case the unconditional risk
12 premium.

13 So there's not an assumption here about the
14 future looking like the past, it's simply do the
15 underlying excess return distributions, do they
16 have the right statistical properties? If they
17 do, then it follows that the best estimate you
18 can get of the unconditional premium is the
19 historical average.

20 Now, Martin points out quite rightly that
21 there's a lot of noise associated with such an
22 estimate and indeed over 30 years the confidence
23 interval is from 0 to 12 per cent. Well, my
24 response to that is that 30 years is far too
25 short. The law of large numbers doesn't kick in
26 over 30 years, and there's no corresponding small
27 sample property that says, "If the distribution
28 is such and such then you'll get a good estimate

1 of the current market risk premium and the
2 conditional market risk premium using five years
3 or 10 years or 30 years of data." There is no
4 property of that kind. That really is just akin
5 to taking a pick and a poke.

6 The only way historical averaging can be
7 used is over a long time series. And in order to
8 justify that, you need to test that series for
9 stationarity and ergodicity. If it passes those
10 tests, then that will give you a good estimate -
11 or the best estimate we can get anyway - of the
12 unconditional risk premium.

13 Now, of course you might say, "Well, that's
14 not really what we want. We want the conditional
15 risk premium, the one that reflects current
16 conditions." That's certainly true, but I can
17 still think of relationships why you might prefer
18 to stick with the unconditional premium, and one
19 is the obvious one that trying to go beyond that
20 and estimate the conditional risk premium, as for
21 the reasons that were outlined in the previous
22 set of questions, is that it's not worth the
23 candle. We don't know how to estimate the
24 conditional risk premium with any precision
25 whatsoever, and so trying to do so could just
26 introduce more noise, or more particularly error,
27 into the process than sticking with what will
28 work in the long run.

1 What else has come up? One point I guess
2 I'd make is Martin said this confidence interval
3 of 0 to 12 per cent is really wide, and far wider
4 than anything you would get with, for example,
5 the dividend growth model. Now, to me that's a
6 slight confusion of confidence intervals
7 associated with a single point estimate and the
8 volatility of point estimates. With the dividend
9 growth model you get a whole lot of different
10 point estimates. That's the whole point of it;
11 you get a different point estimate at each point
12 in time.

13 But with the dividend growth model, that
14 says the expected return or the market risk
15 premium is a linear function of the dividend
16 price ratio, where the slope is a bit more than
17 one. How much more depends on what you choose
18 the long-term growth rate to be. So that means
19 that your dividend growth rate estimates are
20 going to be proportional, or more than
21 proportional, to whatever the dividend price
22 ratio turns out to be.

23 Now, dividend price ratio, we know, varies a
24 lot. I haven't got the figures in front of me,
25 but I think in Australian data it's at least from
26 2 per cent to 7 per cent. So that's five
27 percentage points right there. And so, it will
28 vary more than that. And then associated with

1 each of those will be a confidence interval. We
2 don't know what it is, because we don't know what
3 the standard error is of our DGM estimates.

4 But what we can say is that the point
5 estimates vary from 2 to 7, or proportionally
6 from 2 to 7. The confidence intervals around
7 those will vary by an awful lot more indeed.
8 Even 0 to 12 looks quite good compared with that.

9 And the final thing I would say is that I'm
10 not completely averse at all - don't get me
11 wrong - to the use of the dividend growth model
12 or survey methods or conditioning variables
13 models. I think in the absence of anything
14 better, they have probably got a role to play.
15 They've got a role to play in estimating the
16 conditional market risk premium.

17 But because we can't observe, as I said
18 before, even ex-post, the true market risk
19 premium, we've got no way of knowing how well
20 these methods work. No way at all. And so,
21 unlike with the historical averaging where we can
22 appeal to the law of large numbers, with these
23 numbers there's no corresponding thing we can
24 hang our hat on.

25 And so, essentially using those models
26 basically involves justification by faith alone.
27 Now, if you are a Calvinist, that's probably
28 fine. A regulator, probably not. So if you are

1 going to use these models, then here I agree with
2 Martin. You should mix them up; you should use
3 all of them and not rely on one of them.

4 MS BRAKEY: Thanks, Glenn. Everyone's making this
5 sound like an impossible task, but we need to
6 find a way through. Dinesh?

7 MR KUMARESWARAN: Just very quickly two points. The
8 first is that Glenn says that there's no way of
9 testing the reliability of the estimates of the
10 conditional MRP derived using the dividend growth
11 model. I agree with that. That's certainly
12 true.

13 But exactly the same thing can be said about
14 the capital asset pricing model. So we can never
15 really know what true expected returns investors
16 really require, but the AER chooses to use the
17 capital asset pricing model. And it seems to me
18 that the reason that the AER is using the CAPM is
19 precisely the reasons that the dividend growth
20 model would be useful to use. There are strong
21 theoretical foundations to both of these
22 frameworks. So that's the first point.

23 The second point is both Graham and Glenn
24 have talked about the volatility of the estimates
25 produced by the dividend growth model. Yes, the
26 DGM estimates certainly can be volatile, but
27 that's because they are reflecting prevailing
28 market data.

1 We talked earlier about volatility in the
2 market being an indicator of the risk premium.
3 If you take plots of the volatility of the
4 market, so the volatility index, and plot that
5 against estimates of the dividend growth model,
6 you get a much better relationship between DGM
7 estimates and the volatility index than you do if
8 you use just the historical returns.

9 So I'm not saying that you can get a precise
10 estimate of the true market risk premium by using
11 the dividend growth model, but I'm saying that
12 the volatility that you see in the estimates
13 isn't necessarily a bad thing. It may be
14 actually be exactly what you want in a good
15 estimator.

16 MS BRAKEY: Dinesh, when you were talking I just
17 wondered whether you wanted to elaborate a little
18 bit further on why you would use a CAPM and a
19 dividend growth model, and what the kind of
20 theoretical underpinnings of using both would be?

21 MR KUMARESWARAN: I was just drawing a parallel
22 between the dividend growth model and the capital
23 asset pricing model. The AER has explained that
24 there are strong theoretical foundations for the
25 capital asset pricing model. It's widely used,
26 but we also know that there are problems with the
27 capital asset pricing model.

28 There is empirical evidence that CAPM tends

1 to underestimate returns for low beta stocks and
2 over estimate returns for high beta stocks. So
3 there are some empirical problems identified with
4 the capital asset pricing model. But the AER,
5 notwithstanding those concerns, still uses the
6 capital asset pricing model and I think that's
7 appropriate, because the CAPM is a good
8 theoretical framework. All I was saying was that
9 the dividend growth model is exactly in the same
10 boat, that there are strong theoretical
11 underpinnings to the dividend growth model. Yes,
12 there are implementation problems with it, but
13 those implementation problems are not so
14 catastrophic that we should just completely throw
15 the DGM out.

16 MS BRAKEY: Okay, thank you. I might go to Glenn,
17 and then I wonder whether Toby might come in with
18 some views after Glenn.

19 DR BOYLE: Just very quickly on what was Dinesh's
20 second point about the volatility of estimates
21 produced by the DGM, I absolutely agree. If they
22 really are picking up rational-based risk pricing
23 movements, that's a good estimate. But of course
24 we don't really know whether that's true or not,
25 which is my point. And clearly the fact that
26 they track observed movements in risk better than
27 the historical average does, well that's true by
28 definition because the historical average doesn't

1 try to do that.

2 I suppose my concern is more a practical
3 one, is that as a regulator, would a regulator
4 want highly volatile allowed rates of return
5 which the highly volatile market risk premium
6 would contribute to? Because that way you end up
7 with high energy prices during one period, low
8 the following, back to high the one after that
9 and so on.

10 Now, networks won't like that; we know
11 uncertainty decreases investment. And I'm pretty
12 sure consumers wouldn't like it either because it
13 makes it difficult to budget. So I guess I'm not
14 really disagreeing with you at all, Dinesh.
15 Subject or conditional on the assumption that the
16 DGM is a good model, my complaint there is more,
17 well, even if it is, is this the sort of thing a
18 regulator would want to promote? I guess that's
19 probably the best way I can think of putting it.

20 MS BRAKEY: Thanks, Glenn. Dinesh, did you just want
21 to respond to Glenn?

22 MR KUMARESWARAN: Yes, just on the point about should
23 the regulator promote volatility in prices.
24 I think what you'll find is that if you applied
25 the dividend growth model, even if you gave some
26 weight to the dividend growth model estimates,
27 you'll actually get more stable prices because
28 what you would find is - the suggestion is not to

1 use the dividend growth model to estimate the
2 required return on equity for the businesses
3 directly, it's to estimate the market risk
4 premium. And if, as the data suggests, there's a
5 negative relationship, what you'll find is that
6 as the risk free rate goes down, the market risk
7 premium will go up a bit, and as the risk free
8 rate goes up, the market risk premium will go
9 down a bit. And so, these two things will offset
10 each other to some extent and the overall allowed
11 return on equity will be more stable than if you
12 gave 100 per cent weight to the historical excess
13 returns alone.

14 So going back to the chart that I presented
15 before, you can see how volatile the return on
16 equity estimates were if you just add a fixed
17 premium to the prevailing government bond yield.
18 You won't get that sort of volatility in the
19 allowed return on equity if you use something
20 like the DGM.

21 MS BRAKEY: I might just quickly go to Graham. Toby,
22 I am coming to you because I think you might have
23 a proposal, but Graham, did you want to go?

24 PROFESSOR PARTINGTON: Yes. Okay, if we say, "Okay,
25 there is possibly some information in the DGM so
26 we should use it," which DGM should we use?
27 Because there are lots of them. And which
28 assumptions so we use. Right?

1 It's not that there's just a single number.
2 There's not just a DGM which will give you a
3 single number. There are lots of different DGMs
4 and you can put lots of different assumptions
5 into those models, and you will get very
6 different results. So maybe the proposal should
7 be if you use the DGM that you use the whole
8 range of DGMs with a whole range of input
9 assumptions?

10 MS BRAKEY: I think that's the IPART approach.
11 But --

12 PROFESSOR PARTINGTON: And I don't mean a few; I mean
13 lots.

14 MS BRAKEY: Right, okay. I think IPART's using six,
15 maybe? Something like that? Five? Five. Toby?

16 DR BROWN: Thanks, Anna. I'm pretty convinced that
17 we've got different models here and we should use
18 them. I don't think it's a case of picking the
19 right model or the best model and then and then
20 forgetting about everything else.

21 I did just want to say something about what
22 it means to use different models. We've heard
23 that various people have said that we should
24 "give weight to", and I think that's right.
25 I think there should be an explicit commitment to
26 a non-zero weight. There's some kind of bringing
27 together of the results of different models, and
28 that involves not putting a zero weight on any of

1 them. I'm not sure that it's sensible to
2 pre-commit to exactly equal weighting on
3 everything that you're going to look at, but none
4 of the models should have a zero weight.

5 And sort of related to that, I do think it's
6 a little bit different if we are kind of where we
7 are right now in the rate of return instrument
8 process and we are doing the best that we can to
9 draw together these different models and all the
10 different information, and the AER is going to
11 use its best judgement to sort of bring all that
12 information together.

13 That is a little bit different than what
14 happens over the next four years as time passes,
15 I think. And then if you were to implement some
16 kind of updating of the MRP then of course you
17 would have to specify exactly upfront what kind
18 of models you were using, exactly how to
19 parameterise them, where you were going to get
20 the inputs from and what weights you were going
21 to be using.

22 And that, I think, is pretty challenging,
23 because it's hard to be sure that that's going to
24 give you sensible results for the whole of the
25 next four years. So I think that's the second
26 best outcome.

27 Equally, given everything that we've been
28 discussing about the way that the MRP and the

1 risk free rates are not independent of each
2 other, I also don't think it's correct to update
3 the risk free rates and assume that the MRP is
4 fixed and that therefore the cost of equity moves
5 one-for-one with the risk free rate.

6 MS BRAKEY: Thanks, Toby. Graham?

7 PROFESSOR PARTINGTON: Just a couple of points. One
8 is a suggestion, and this is the suggestion about
9 weighting. Picking the weightings is a fertile
10 ground for debate and submissions to the AER,
11 right? And often my observation of regulation
12 around the world, what happens is it's all too
13 hard and we degenerate to equal weights for
14 everything, which I think is obviously
15 suboptimal.

16 This is a suggestion; I don't know if it
17 will work. It's not my suggestion, it's from my
18 colleague Steve Satchell. And that is, maybe in
19 thinking about the weighting it might be useful
20 to look at fuzzy set theory. Okay? And that
21 fuzzy set theory is about giving things
22 weightings that do provide information, but it's
23 not really at all clear where the boundary of the
24 set lies.

25 So in the current context, we might well
26 have something that we could say, "Okay," you
27 know, take Glenn's point, "Here we've got
28 something that is the unconditional estimator and

1 here we have other things which might give you an
2 unconditional estimate, but it's kind of not
3 clear. It's a bit fuzzy."

4 Normally, we would exclude those from the
5 set because they are fuzzy. But with fuzzy set
6 theory you include things in the set but you
7 weight them differently. There is a whole
8 mathematics behind this. Whether it would
9 actually be any use, I don't know. But it's
10 something that could be investigated. I had
11 another point on Toby's comments but I've
12 completely forgotten what it is now.

13 MS BRAKEY: Put your hand back up if you remember it.
14 Jonathan?

15 MR MIRRLEES-BLACK: Thank you. I think that there's
16 general acceptance that there are problems with
17 the models, and it does seem that we can
18 characterise Graham's position that we should
19 just junk all this data. And I think that what I
20 was saying in my presentation, which aligns with
21 what Dinesh was saying, is we can with these
22 alternative models improve the quality of the
23 estimates made by overcoming the concerns that
24 the AER has and by explicitly making assumptions.
25 So I think that that's really important, that we
26 don't throw out all that information.

27 But I think there's also a really important
28 point, and it relates to what Graham was saying

1 on fuzzy sets. We know that there is uncertainty
2 with each of these estimations. We know that,
3 and we know that none of them is perfect. The
4 result cannot be mechanical. So an estimate of
5 what the market risk premium is, it cannot be
6 mechanical.

7 And in the end, the AER has got to make its
8 judgement in terms of the duty of the long-term
9 interests of consumers. And given that it can't
10 be mechanical, I don't think we can say there are
11 fixed weights. I don't think we can say that
12 there's an automatic formula in terms of
13 weighting. We have to allow that the AER can
14 form a judgement as to which of those estimates
15 is the most appropriate at the time. Now, that
16 might be hard, but that's because it is hard.
17 But that's the regulator's job, to make those
18 really tough judgements. And it might be wrong,
19 but it's making the --

20 MS BRAKEY: But Jonathan, doesn't the legal framework
21 kind of make that even more difficult, given in
22 effect the AER can't apply discretion at the time
23 of making a particular decision; it has to kind
24 of apply the rate of return instrument without
25 judgement, if you like?

26 MR MIRRLEES-BLACK: Yes, so we have to have a
27 formula. You're absolutely right. We're now
28 just saying, "at a point in time." We're saying,

1 "set a framework that applies for four years
2 hence and have a mechanical approach to it." But
3 in terms of what that judgement is on that day,
4 what weights should be applied on that time when
5 you are setting the forward weight for the next
6 four years, which might then apply to network
7 decisions for a long period hence, it's still
8 judgement. It's not mechanical. And I think
9 that that's - it's an expectation that judgement
10 can be applied, I think, is important.

11 MS BRAKEY: Thanks, Jonathan. Martin?

12 DR LALLY: Let me pose a hypothetical scenario to the
13 AER. Supposing that the historical averaging
14 methodology had produced, as it had with Spain in
15 the last 120 years, a figure of 3 per cent, but
16 all other methods that could reasonably be
17 thought to be useful - the DGM surveys, the
18 Wright method, looking at foreign data - they
19 were all suggesting 8? I don't think it's at all
20 likely that in that kind of scenario the AER
21 would stick with 3, for all this other evidence
22 was pointing elsewhere.

23 And of course the AER is not oblivious to
24 this other evidence. The AER knows that survey
25 results are actually pretty much in line with the
26 historical average result of around about 6. It
27 knows that results from DGM and the Wright method
28 and foreign data are not wildly different. And

1 that must give the AER a lot of comfort that the
2 historical averaging number of 6 is about right.

3 So it kind of looks like the AER is in fact
4 using this other information. It's just not
5 doing it explicitly. And if the AER is using
6 this other information in the sense that it's
7 getting a lot of comfort from this other stuff
8 that 6 looks about right, I would say to the AER,
9 if you are gaining a lot of comfort from the fact
10 that these other methods on average are pretty
11 much like the historical averaging result, why
12 not formalise that in the way that's been
13 suggested here? Why not formalise it rather than
14 doing what you're currently doing?

15 MS BRAKEY: Thanks, Martin. Clare?

16 MS SAVAGE: Thanks, Anna. I think we've probably got
17 a fairly good grip on people's views about the
18 usefulness or otherwise of the DGM. So it would
19 be useful from my perspective if we could move a
20 step forward into some of the practical
21 application questions. And that doesn't
22 presuppose a view from me at all that we would
23 use the DGM, but I'd like to just explore in a
24 little bit more detail if we were to go down,
25 say, an option 2, option 3 approach as set out in
26 our information paper, some of the things we
27 might have regard to.

28 And some of the experts have kind of spoken

1 to weightings or regulatory judgement, but I had
2 some very specific questions that I just wanted
3 to throw out there and my board colleagues may
4 also have some. So I just wanted to put them on
5 the table, and it might be quickest if I just put
6 them on the table and then people can respond to
7 them as they wish, and maybe my colleagues might
8 want to add to them.

9 I think the information paper makes a bit of
10 the fact that DGMs can give a negative estimate
11 of the market risk premium. So I'm interested in
12 expert views on that and whether they would agree
13 with that and whether it's problematic. I'm
14 interested in views about whether a stable market
15 risk premium is more desirable than an unstable
16 one with the potential for volatility.

17 Dinesh, I heard your comments about the fact
18 that if it's varying with the risk free rate
19 return then it would be more stable, but noting
20 how would we actually vary it through the four
21 years with the risk free rate. So I'm interested
22 to understand if you think it should vary with
23 the risk free rate, how could that be done
24 formulaically to produce that level of stability.

25 I am very interested, Martin, particularly
26 in your views about unexpected inflation and the
27 views of other experts, and what implications
28 that might have for the reliability of historical

1 excess returns. And I particularly call that out
2 given where we are currently at in terms of the
3 RBA's inflation expectations and where the
4 central bank or where the US inflation is
5 currently at.

6 I'm interested in thoughts on a starting
7 point for the historical excess returns, and I
8 note, I think, Martin, you were effectively
9 saying, "Have we really chosen a time period that
10 gives us an answer that sort of then looks like
11 the other information?" So I'm interested in if
12 there is a view about the time period.

13 I'm interested in any thoughts on the RBA's
14 new series and any views other experts other than
15 Dinesh might have on that. And not that I'm not
16 interested in your view, Dinesh. You've already
17 spoken about it, about the calibrated DGM that
18 the ENA has proposed.

19 So they are the kind of things I'm
20 interested in. I don't know whether my board
21 colleagues might like to add to them, and then
22 whether experts wish to sort of come ask and
23 speak.

24 MS BRAKEY: Jim?

25 MR COX: I mean, there are a couple of issues I'd
26 like to hear a bit more, and I think we've had a
27 good go on DGM versus historical excess returns
28 and which is the least worst model. But I'm

1 interested in Martin's idea, supported by other
2 experts, that we should look at a range of
3 information. I guess I would be interested in
4 views on what is the boundary of information that
5 we should consider? How reliable does the
6 information have to be before it is worth
7 considering, or is there another consideration?
8 And I think a related point gets back to the
9 sorts of things we were talking about last week,
10 so reliability versus precision and so on. But I
11 suppose a related point, he mentioned the role of
12 surveys as useful information. We actually
13 haven't talked much about surveys this morning,
14 but it would be interesting to have your views on
15 surveys and why you think there might be useful
16 information in making this difficult decision.
17 So they are a couple of extra things I'd like to
18 hear about as well.

19 MS BRAKEY: Thanks, Clare and Jim. I think that's
20 given us a very long list of questions to deal
21 with. And I just wonder what the best way to go
22 through it is?

23 MS SAVAGE: It might be worth seeing if Eric or
24 Catriona or Justin had anything. And I'm happy
25 for experts to pick the bits they're interested
26 in. I don't need to hear comprehensively from
27 everyone. But I just - they are the kinds of
28 things that I've been thinking about.

1 MS BRAKEY: All right. In that case, we might make
2 it a little free for all. Catriona?

3 MS LOWE: Thanks, Anna. I was also interested in the
4 question around the stability point that Clare
5 has raised, so I'm happy at this stage to hear
6 what the responses are and if there's an even
7 time to follow up.

8 MS BRAKEY: Thanks. And Eric or Justin? No? Okay.

9 MR GROOM: Sorry, Anna. I guess it really picks up
10 on the question 6 that Clare put forward: I'd be
11 interested in the approach that RBA and the Bank
12 of England say they use in looking at dividend
13 growth models, where they state all the problems
14 with DGMs but essentially come to a view that
15 they'll look at the changes in levels rather than
16 the absolute values and look through short-term
17 changes, which all sounds fine but how would you
18 implement that in practice if one were to say
19 that that's sensible advice?

20 MS BRAKEY: And Justin?

21 MR OLIVER: Look, probably not. Nothing more for me
22 to add, thank you.

23 MS BRAKEY: Which of the experts would like to start
24 somewhere on that laundry list? Martin?

25 DR LALLY: Quickly having taken a note of some of
26 these things, the first point: The DGM estimate
27 was negative. I presume that was back when
28 interest rates were very high, sort of risk free

1 rate 5 per cent, the estimate of the expected
2 return 14 per cent, so your MRP is minus one.

3 I would have to see the details of that to
4 see whether in fact that's just sort of some
5 error in the model or not, but if you are
6 accessing information from half a dozen different
7 models - and my view is you then take the median
8 result, not the mean. The mean can be dragged
9 all over the place by a very extreme result such
10 as a negative number - if you get a freakish
11 number from one of those six methods, it's not
12 going to materially alter the median. So I don't
13 think you have to worry about freakish results
14 from one model if you've got a wide range of
15 models.

16 The question about unexpected inflation,
17 I believe that's a reference to the historical
18 averaging method as a result of all this
19 unexpected inflation in the 20th century having
20 produced an overestimate. And Graham gave a very
21 comprehensive list of things that might cause the
22 historical averaging method to have overestimated
23 true value. I concur with all of that from
24 Graham, and it's just one more reason why you
25 don't want to rely on just one method, because
26 they're all imperfect.

27 What is the set of methods that should be
28 used? In my view, it's historical averaging,

1 DGM, surveys, the Wright method and use of
2 foreign data from all of them.

3 And finally, a question about stability.
4 Unquestionably, the historical averaging
5 methodology gives you stability. From regulatory
6 point to regulatory point, it's not going to vary
7 much from 6 per cent. But my experience in doing
8 these kind of exercises for regulators where
9 I come up with estimates for half a dozen
10 different method and then take the median
11 estimate, my experience is that median doesn't
12 change a heck of a lot as well. So if regulators
13 are concerned that by moving away exclusively
14 from historical averaging they would be exposed
15 to horrendous variations from regulatory reset to
16 regulatory reset, I do not think the historical
17 experience that I've had in doing this kind of
18 thing would lead to that kind of fear.

19 MS BRAKEY: Thanks, Martin. Toby?

20 DR BROWN: Thanks. One thing I'd like to say is that
21 the types of implementation I've seen of DGM
22 models in North America, there are different ways
23 of implementing the models and a model that seems
24 to work well at a certain point in time doesn't
25 always stand the test of time. Some regulators
26 have tried to be very sort of prescriptive about
27 the model specification, and that sort of worked
28 for a time and then it becomes clear that it

1 doesn't work for one reason or another.

2 So I think it is difficult and dangerous,
3 perhaps, to be very specific about the model you
4 are using, particularly if you are using only one
5 model. I quite like what Martin said about
6 having several models and using a median
7 approach, and that that's less likely to be
8 pulled around.

9 That being said, what does that mean in
10 practice for the AER and for the rate of return
11 instrument? I think if you do your best and use
12 the different models and weight them together and
13 come up with a number for the MRP, and then that
14 number is fixed for the next four years and
15 therefore a determination that you do in sort of
16 three and a half years' time is going to use
17 today's MRP as good as you can get it, and then
18 there's sort of this follow-up risk free rate in
19 three and a half years' time, that's the worst
20 that I think we could do.

21 An improvement would be to have a formulaic
22 way of updating the MRP in three and a half
23 years' time so that it's not inconsistent with
24 whatever the spot risk free rate is in three and
25 a half years' time, but the best way of dealing
26 with all this is set the MRP now, set the risk
27 free rate now and then apply that immediately to
28 everybody. And then in four years' time or five

1 years' time, just repeat. Do the same thing
2 again.

3 And I don't see any difficulty with, in
4 effect, setting the rate of return parameters for
5 everybody in the rate of return instrument
6 process and on a completely different timetable
7 setting all the other building blocks. I don't
8 see any difficulty and I think it solves some of
9 the problems that we're confronting now.

10 MS SAVAGE: So just to clarify that, Toby, the risk
11 free rate does change as we make each
12 determination because we take the rate at that
13 time. So are suggesting that we would fix that?

14 DR BROWN: I'm suggesting, in essence, that you
15 should take the rate of return out of its
16 determination process so that each determination
17 would deal with - well, it would deal with
18 everything else. So OpEx, CapEx and so on. And
19 the determination would sort of have a
20 placeholder for whatever rate of return
21 parameters come out of this process, out of the
22 rate of return instrument.

23 And those parameters would feed through into
24 the calculations of maximum allowed revenue and
25 so on in an automatic way. And therefore, at the
26 time of the determination there would be no need
27 to touch any of the rate of return parameters -
28 risk free rate, MRP, nothing - because that would

1 be dealt with separately in this process. And
2 there would be a mismatch of the timetables, but
3 I don't see any difficulty with that.

4 MS SAVAGE: So we would just be updating every four
5 years instead of every five?

6 DR BROWN: Well, I don't think there's anything magic
7 about four years in an economic or financial
8 sense, or five years for that matter. But
9 I think the key point is I don't see any
10 difficulty with investigating OpEx and CapEx and
11 the other building blocks sort of one-by-one as
12 each network comes in for its determination, but
13 doing the rate of return generically on a
14 different timetable because I don't think there's
15 any interaction between the rate of return
16 building block and any of the other ones, or at
17 least all of those interactions are just
18 arithmetic that can be dealt with through the
19 existing formulas.

20 MS BRAKEY: Thanks. Eric, did you want to ask
21 something directly of Toby there before I go to
22 Dinesh?

23 MR GROOM: Yeah, it's a clarification. If I could
24 use some practical examples, Toby, I think what
25 you mean is: We come up with the rate of return
26 instrument for 2022. That applies to - at each
27 reset we make from 2022 that would be applied.
28 So would it apply about to a reset in 2023 and a

1 reset in 2024? That is, just as we enter into
2 this new regime?

3 DR BROWN: I see. Yeah, there would be (indistinct).

4 MR GROOM: So they get a fixed rate of return on
5 equity, which would be the sum of your fixed RFR
6 and your fixed MRP. 2026, we come up with a new
7 rate of return instrument with a new fixed
8 approach and that would immediately apply to all
9 standing determinations. That is, the
10 determination made in 2025 would have a rate of
11 return on equity that gets replaced by the 2026
12 return instrument. And then you'd walk forward
13 where everyone would change their return on
14 equity with the commencement of each return on
15 greater return instrument - irrespective of when
16 the actual determination was made for the reset?

17 DR BROWN: Yeah, I confess I haven't really thought
18 too much about the sort of transition. But yes,
19 what you said is exactly right.

20 MS BRAKEY: Thanks, Eric and Toby. Dinesh?

21 MR KUMARESWARAN: Thanks, Anna. Just to Toby's point
22 about essentially the RoRI fixing the allowed
23 return for the whole RoRI period and then it's
24 just reset, and so every determination within the
25 RoRI period just gets the same allowed return.

26 I'm not really sure what the objective of
27 that is other than to avoid the problem of
28 updating the estimates over the RoRI period. It

1 seems to me that under that approach you would be
2 moving further away from the market cost of
3 capital that would prevail over the RoRI period.
4 At least at the moment you have the risk free
5 rate updating within the period. So I'm not
6 really sure what the sort of practical benefit of
7 that particular suggestion is.

8 Just moving on to a few points that Clare
9 and others raised. So this concern about the
10 negative estimate of the market risk premium,
11 I think Martin's correct that those circumstances
12 would only occur if the prevailing government
13 bond yield was very high. 15 per cent, I think
14 Martin said. We haven't had that for a very,
15 very long time. And it it's very unlikely over
16 the next RoRI period to get a situation like
17 that.

18 If you go to slide 4 of the pack that I
19 presented, you've got those DGM estimates, all
20 those charts. But none of those DGM estimates
21 come close to being negative. So I think this is
22 not really a material concern. I don't think
23 that's a really serious problem.

24 Clare had a question about how the MRP
25 estimate could be varied formulaically over the
26 period. One way you could do that is at the
27 start of the RoRI period you estimate your market
28 risk premium and you use a number of methods to

1 do that. So historical excess returns, DGM,
2 whatever. And implicit within each of those
3 methods is a relationship between the risk free
4 rate and the market risk premium. Then over the
5 RoRI period you could just formulaically apply
6 that same relationship for each determination.
7 So the risk free rate would change and the market
8 risk premium would change in a formulaic way
9 consistent with the relationship implied by each
10 of the methods that you've used.

11 Now, I got the sense from the omnibus paper
12 that the AER is reluctant to make a determination
13 about the relationship between the market risk
14 premium and the risk free rate because it's very
15 hard, as Jonathan said, to determine what that
16 relationship is. We're all saying that.

17 And I think that's correct, but the AER is
18 not avoiding making at least an implicit
19 statement about that relationship. Whatever way
20 you determine the market risk premium at the
21 start of the RoRI period, you are implicitly
22 making a statement about the relationship between
23 the risk free rate and the market risk premium.

24 So if, for example, you put 100 per cent
25 weight on the historical excess returns at the
26 start of the RoRI period, implicitly you're
27 saying that there's no relationship between the
28 risk free rate and the market risk premium.

1 MS SAVAGE: I just want to make clear, are you
2 suggesting that if we were to go down this path
3 and we come up with a number and let's pretend
4 we've look at all the bits of available evidence
5 and we think it's 6, and then looking at each of
6 those pieces of evidence we see a vaguely
7 positive or negative correlation with the risk
8 free rate, are you suggesting that we would at
9 the beginning of the RoRI period say that it is -
10 I'm just making up something up, right, but let's
11 pretend that it's a 0.6 or something.

12 And then as the risk free rate rises, we
13 would adjust the market risk premium by a
14 negative relationship or 0.6 through the period?
15 Or are you suggesting that at each determination
16 there may be an agreed - and I'm not sure if this
17 is even legal - but an agreed set of models that
18 we use that we would update in the same way we
19 update the risk free rate? I just wasn't quite
20 sure what you were saying.

21 MR KUMARESWARAN: Well, my understanding of what the
22 AER proposes to do is to set a fixed return on
23 equity allowance for each determination for the
24 duration of the five-year determination. But
25 those determinations will occur at different
26 points within the RoRI period. So if that's the
27 approach that you intend to follow then the task
28 is then to estimate at the start of each

1 determination within the RoRI period what the
2 appropriate market risk premium is. Now, you
3 will have an estimate of the market risk premium
4 at the start of the RoRI period.

5 Now, let's suppose just for argument's sake
6 that that estimate was formed by giving
7 50 per cent weight to historical excess returns
8 and 50 per cent to a DGM estimate. And suppose
9 that DGM implied that there was, for every
10 1 per cent increase in the risk free-rate there
11 would be 0.5 per cent reduction in the market
12 risk premium.

13 You observe that relationship or at least
14 recognise that that's the relationship implied by
15 the DGM, and then you would update the DGM
16 estimate using that relationship for each the
17 start of each determination within the RoRI
18 period. Similarly, you would update the
19 historical excess returns using exactly the same
20 method that was used to establish the historical
21 excess returns estimate at the start of the RoRI
22 period.

23 And because you gave 50-50 weight to each of
24 those two estimates, you would apply the same
25 50-50 weights to those updated estimates and
26 there would be your new estimate of the market
27 risk premium. So that's a very stylised,
28 abstract way of conceptualising what I'm

1 suggesting, but that's essentially it. Does that
2 answer your question?

3 To Martin's point about using a median of
4 the estimates from different methods, I don't
5 think that is a sound thing to do, because if you
6 use a median, your final point estimate is
7 determined essentially by one or at most two
8 estimates, two pieces of evidence, and you
9 essentially end up throwing out all of the other
10 evidence. I think that if you are going to use
11 multiple pieces of evidence, it would be better
12 to use information properly from all of the
13 estimates. So that would involve taking a mean,
14 not a median.

15 And finally, the point about the stability
16 of the estimates. I think the AER should
17 consider what do we really want to be stable
18 here? Is it individual parameters within the
19 CAPM or is it the overall return on equity
20 allowance? Returning to my earlier point, yes,
21 the DGM will produce more volatile estimates of
22 the market risk premium but when combined with a
23 volatile estimate of the risk free rate, you will
24 tend to get more stable estimates of the allowed
25 return on equity. I think I've never really
26 understood this issue about the concern about the
27 volatility in the estimates of the market risk
28 premium, because it seems on the one hand we want

1 extreme stability in one of the parameters that's
2 used in the CAPM, the market risk premium, but we
3 are very happy to have extreme volatility in
4 another parameter, which is the risk free rate.

5 And I've never understood why those two
6 things can coexist. I think that the overall
7 objective should be to produce the best estimate
8 of the market cost of capital, and I think we
9 should use the best techniques to estimate each
10 of the parameters in the CAPM that delivers that
11 estimate.

12 MS BRAKEY: Thanks, Dinesh. Jonathan?

13 MR MIRRLEES-BLACK: Thank you. I won't address all
14 of the points. We have had some discussion
15 around and there was a suggestion from Toby,
16 commented on by Dinesh: Should we be fixing a
17 cost of equity across the instrument or should we
18 be fixing the MRP across the instrument? This
19 was actually - there was a proposal around this
20 at the last expert session for the 2018 estimate.
21 And it does feel like it's quite straightforward
22 to say we could either have a zero weight on
23 changes or fix the MRP, fix the cost of equity,
24 or go somewhere in between formulaically.

25 I think at that point it's quite
26 straightforward to have a weighting between the
27 two. Even if we can't be sure of what the
28 difference is between the two, we can still have

1 a weighting between fixing the cost of equity or
2 the MRP.

3 So to your point, Clare, around unexpected
4 inflation, I think it's important if we're doing
5 that, that we fix the real cost of equity rather
6 than fixing the nominal cost of equity in
7 particular at the current moment where we're
8 seeing increased inflation risks, whether or not
9 they materialise. So a consideration of ensuring
10 that discussions around the real cost of equity
11 enter into this, I think, is important.

12 The second point I'll make is we have had a
13 lot of this query about should we be using - if
14 we are using a wide range of models, I think it
15 is right to use a wide range of models. That
16 allows the board to take into account all the
17 appropriate information. But should we be using
18 a median, should we be using a mean or should we
19 be using something else? I think it's something
20 else.

21 When I've been in these situations where
22 I've been taking data from a range of models and
23 then you have to update it and you've fixed
24 yourself to either using a median or mean and you
25 ask yourself the question, "What do I really
26 think the number is in this circumstance?", it
27 does depend on what those numbers are, it does
28 depend on the strength of your belief around the

1 quality of the evidence around those particular
2 individual estimates, what's driving those, what
3 are the judgements that are taken into account in
4 those.

5 And so, I'd say this it's not a fixed
6 median, it's not a fixed mean. It's a question
7 of a judgement about where the strength of the
8 evidence lies. It might be hard to formalise
9 that in a fuzzy set methodology that Graham's
10 proposing, but I think that it's quite possible
11 to make clear reasoning in words as to why the
12 board has taken a particular judgement on those
13 parameters and to where that evidence takes. And
14 I do favour, as Martin was saying, being clear
15 about how implicit information is being used.

16 MS BRAKEY: Thanks, Jonathan. Do any of the other
17 experts want to answer any of the questions?
18 Otherwise I might come back and start addressing
19 a couple of those questions a bit more
20 specifically. Dinesh?

21 MR KUMARESWARAN: I just wanted to pick up on one
22 thing that Jonathan has said. The AER's current
23 framework does in fact fix, effectively, a real
24 return on equity allowance over the period
25 because of the deduction of inflation from the
26 depreciation allowance. So effectively, that is
27 what is currently happening. And the investor
28 gets compensated for actual inflation under the

1 AER's framework.

2 MS BRAKEY: Thanks for that clarification, Dinesh. I
3 wondered whether anyone wanted to - sorry, I've
4 got Glenn. Glenn, did you want to say something?

5 DR BOYLE: Yeah, if I can. First, I think the point
6 Toby raises is a very important one although the
7 solution is not so obvious. After all, if we
8 think there is a conditional market risk premium
9 that varies through time and we set it at date T,
10 then it's not very time consistent to then say
11 three and a half years later we actually think
12 it's the same and that we should apply the same
13 market risk premium.

14 If it's time-varying then it will have
15 changed, and it could have changed a lot. So as
16 I say, the solution is not too obvious, but
17 I think I would lean towards the one advocated by
18 Dinesh, although I would use a different formula.
19 Basically, I would take the historical premium
20 and I'd say give that some weight, whatever it
21 is, and then use a combination forecast from all
22 the conditional models, the DGM, surveys,
23 et cetera, et cetera, et cetera, give that the
24 remaining weight, and then basically you've got a
25 formula.

26 Once you've set the weights, you've got a
27 formula. And so you can apply that at the time
28 that the RoRI is set and then you can just update

1 it each time there's a new network who comes up
2 for renewal.

3 I guess I would use changes in the
4 conditional models rather than their levels.
5 Their levels seem a bit suspect to me and we
6 don't really know enough about them, but changes
7 should net that out. They should at least be
8 moving in the right direction, even if they don't
9 have the level right. And so basically what I'm
10 saying is you start with a history bit and then
11 you look to see whether the conditional ones are
12 above or below their long-term mean - sorry,
13 moving above their long-term mean or moving below
14 their long-term mean, and you adjust the
15 historical one accordingly. That would be a
16 relatively simple formula to implement.

17 Somebody asked a question - I think it might
18 have been Clare - about the right starting period
19 for the historical time period. Well, that's
20 easy. As far back as you can go - as a starting
21 point. Then you have to test for stationarity
22 and ergodicity. If it passes that test, that's
23 what you should use. If it doesn't pass that
24 test and you have to - basically, it doesn't
25 until you get down to 30 years or something of
26 data, that's not long enough.

27 That would be one thing I'd definitely
28 recommend against, is using a historical average

1 based on a short period of data. You've got to
2 test to see whether the long series actually has
3 the right statistical properties, and then you
4 use that.

5 MS SAVAGE: So you thought 30 years wasn't long
6 enough?

7 DR BOYLE: No, no. I mean, as Martin's pointed out,
8 the confidence intervals go from zero to 12. You
9 can't even reject the hypothesis that it's zero
10 over 30 years. So no, you need much more than
11 that. The problem is if you go back a lot
12 further, you might find - I don't know until we
13 do it - that the relevant statistical properties
14 don't apply. Maybe there are structural shifts
15 that actually show up in the data and the
16 distribution is no longer stationary, let alone
17 ergodic. But I don't know. It might be that in
18 fact, despite all these things we think have
19 changed over the last hundred years, it's not
20 showing up in the data. In which case, you can
21 use all of it. But 30 years? I mean, that's
22 just not cutting the mustard.

23 And a last point, quickly. Graham raised
24 the point about finding weights via fuzzy sets.
25 I hadn't thought of that. That's probably true.
26 It would be quite tricky though, but the basic
27 idea traces back much more simply to quite a
28 famous paper by Bates and Granger about combining

1 forecasts.

2 And at least in their framework, they
3 actually give specific formulae for calculating
4 the weights. Now, I don't think you can take
5 these two literally and you'd have to - and also
6 the conditions for applying these combinations
7 are fairly stringent, but at least that would
8 give you a starting point to think about for how
9 to calculate these weights. I don't know much
10 about fuzzy sets, so I can't help much with that.

11 MS BRAKEY: Thanks, Glenn. I might just put together
12 one of Clare's questions and one of Jim's
13 questions, which is do the experts have any views
14 on the calibrated DGM, ENA's calibrated DGM, and
15 any views on surveys? Martin?

16 DR LALLY: I don't know the details about ENA's
17 calibrated DGM, so I can't comment on that until
18 I see that. As far as surveys are concerned,
19 they are rather like what the regulator's trying
20 to do. The regulator is trying to look at all
21 the available information and come up with a view
22 about what the appropriate MRP is for some future
23 period. Well, that's what survey respondents are
24 doing as well. So I think that's a very, very
25 valuable piece of information.

26 Of course, it does depend on a number of
27 things: Just who is the survey being conducted
28 amongst and how many of them are there, and is

1 there some reasonable degree of stability in the
2 composition of the survey respondents over time.
3 But in principle, I think surveys are very
4 valuable because they are doing fundamentally the
5 same thing that any regulator is doing.

6 MS BRAKEY: Thanks. Graham?

7 PROFESSOR PARTINGTON: Well, I pretty much endorse
8 what Martin has just said. You know, handle
9 surveys with care but they do contain useful
10 information. Probably the most useful
11 information comes from people who actually use
12 the MRP in the decisions that they are making.
13 The problem is if you just restrict yourself to
14 that set, you are very likely just to get a
15 result that says 6 per cent because of the
16 stability in the expert valuer's MRP estimates.

17 You may find that some people will quote, I
18 think, papers by Greenwood and Shiller that
19 actually you shouldn't use survey evidence - or
20 at least, this is their interpretation of the
21 Greenwood-Shiller results - because the surveys
22 provide poor forecasts. Well, we've already
23 discussed that, you know, forecasting returns is
24 actually a mug's game.

25 But there's another very interesting feature
26 to that research. And Shiller carried on with
27 it. And that is that what came out of these
28 surveys actually seemed to drive subsequent

1 behaviour. For example, the investments that
2 people undertook. So, you know, you can be
3 highly critical of surveys, but if you want to
4 find out about what people expect and what is
5 going to drive their behaviour, then surveys it
6 seems to me are a pretty important piece of
7 evidence.

8 MS BRAKEY: Thanks, Graham. Glenn?

9 DR BOYLE: Me too, on surveys. I view them with
10 considerable suspicion in isolation, but they do
11 represent a somewhat independent estimator of the
12 conditional market risk premium. So I would use
13 them in combination with other estimators of the
14 conditional market risk premium. There, they
15 very definitely have a role to play. As for the
16 calibrated DGM, like Martin I'm not sufficiently
17 on top of the details of the ENA one to comment
18 specifically on that. But just a point Graham
19 made earlier about the suggestion that perhaps
20 you should use lots of different DGMs, a
21 combination forecast that way. I'm a little
22 leery of that, for the simple reason that they
23 are likely to have many features in common, and
24 so they are not really independent pieces of
25 information. So my preference would be to choose
26 one and include that in a combination forecast
27 along with surveys and conditioning variables
28 models and so on, and that way.

1 MS BRAKEY: Thank you, Glenn. Jonathan?

2 MR MIRRLEES-BLACK: Thank you. Firstly, on

3 calibrated DGM, and I think as we said in a CEPA

4 paper, it can be difficult with DGMs, on an

5 individual DGM, to look at an absolute number.

6 But changes do contain perhaps more valuable

7 information. And in that spirit I think that the

8 calibrated DGM has some merit because you can be

9 using it to find changes through time, but with

10 an underlying approach which ensures that on

11 average the expected growth is in line with what

12 one might believe about returns over a long

13 period of time. So the calibrated DGM is worth

14 exploring further.

15 Second, surveys. And I echo and support

16 what's been said by the other experts on surveys.

17 But one thing I would add is there's a wide

18 number of capital markets expectations which give

19 expectations of portfolio constructors, and those

20 advising pension funds and others on what

21 expected returns will be. That's a source of

22 information which doesn't seem to be used by

23 regulators, and I think it might be worthy of

24 investigation.

25 MS BRAKEY: Thanks, Jonathan. So I'm about to hand

26 over to Dinesh for the final comment of this

27 session. I was going to say, I'm quite surprised

28 at how much agreement there is on the value of

1 surveys. So over to you, Dinesh.

2 MR KUMARESWARAN: Well, I'm just about to burst your
3 bubble, Anna. Surveys can be interesting, but
4 the problem with surveys, as the AER itself has
5 explained on a number of occasions, is they are
6 only as reliable as the survey design. So if the
7 questions that are put to respondents are not
8 well-designed, you might not get very useful
9 information from the surveys. It's also
10 difficult to interpret the results from the
11 surveys, because it's not clear whether the
12 respondents have answered the question that's
13 been put to them faithfully.

14 I think that's one of the problems with
15 surveys. I'm not discounting them completely,
16 but I think that there are some serious practical
17 problems with surveys. And I think you just have
18 to be very careful about how you use them.

19 Just a tongue-in-cheek comment. I find it
20 curious that Martin and Glenn both think it's a
21 good idea to ask economics professors, who are
22 typically the respondents to these surveys, what
23 the market risk premium is, but last week you
24 told us that we should completely ignore the term
25 that investors in these assets are actually
26 using. I find that a bit - but there's a serious
27 point underlying that comment.

28 One of the other problems with surveys is

1 that the people responding to these questions
2 often don't have any skin in the game. They are
3 just asked for opinions. These surveys go out to
4 economics and finance professors and they are
5 asked, "What do you think the market risk premium
6 is at the moment?" They are not actually using
7 that in any - for an evaluation exercise to
8 invest in a particular asset. They're just
9 expressing an opinion about something. And I
10 think investors actually have a pretty strong
11 incentive to try and get the cost of capital
12 estimate right. So the second reservation that
13 I have about the surveys is that the people
14 responding to them typically don't have skin in
15 the game like investors do.

16 MS BRAKEY: Dinesh, can I challenge you on that to
17 say if you were to include some of the investors
18 in the survey, would they have the incentive to
19 provide you with a certain number?

20 MR KUMARESWARAN: Perhaps. I mean, there are surveys
21 that actually ask investors or corporations. So
22 they are targeted at corporations. They are
23 saying, "Well, what market risk premium are you
24 using in your evaluation exercise?" Perhaps
25 those sorts of surveys might be a bit more
26 useful.

27 MS BRAKEY: Okay, thank you. Thanks. Look, I think
28 we might draw to a close this session. It has

1 been a very interesting session and quite
2 wide-ranging. We will be coming back this
3 afternoon to talk about cross checks and the
4 overall rate of return, so we will be reconvening
5 at 2 o'clock Sydney time. Clare, anything you
6 want to say before we wrap up?

7 MS SAVAGE: No. I think it's been a very useful
8 session. I'm not sure - I think it's probably
9 highlighted the challenge of the regulatory task
10 in terms of what we need to do here, but very
11 grateful for the input that has been provided to
12 our thinking.

13 MS BRAKEY: Thank you very much. And we will see
14 most of you, I would imagine, at 2 o'clock.
15 Thanks.

16 **THE SESSION CONCLUDED AT 12.28PM**

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