RH-4-92 - Volume 3

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NATIONAL ENERGY BOARD

OFFICE NATIONAL DE L'ÉNERGIE

Order No. RH-4-92

Ordonnance N^o RH-4-92

Trans Quebec & Maritimes Pipeline Inc.

an Application by Trans Quebec & Maritimes Pipeline Inc. for certain orders respecting tolls specified in a tariff pursuant to Part IV of the National Energy Board Act;

Hearing held at
Audience tenue à

Montreal, Quebec

3 December 1992
3 décembre 1992

Volume 3

I

ORDER NO. RH-4-92

ORDONNANCE No RH-4-92

IN THE MATTER OF the National Energy Board Act and the Regulations made thereunder; and

IN THE MATTER OF an Application by Trans Quebec & Maritimes Pipeline Inc. for certain orders respecting tolls specified in a tariff pursuant to Part IV of the National Energy Board Act;

RELATIVEMENT a la Loi de l'Office national de l'energie et ses reglements d'application; et

RELATIVEMENT a une demande de Gazoduc Trans Quebec & Maritimes Inc. concernant les droits en vigeur au 1er janvier 1993 et au 1er janvier 1994.

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Hearing held at Montreal, Quebec on Thursday, 3 December 1992

Audience tenue a Montreal, Quebec, le jeudi 3 decembre 1992

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PANEL:

J.-G. Fredette	President/Chairman
R. Priddle	Membre/Member
A. Cote-Verhaaf	Membre/Member

II

I N D E X

- - -

TRANSCRIPT CORRECTIONS/
CORRECTIONS A LA TRANSCRIPTION

Volume 2 - 2 December 1992

Page	Line	
201	20	"a" should read "an"
203	13	"views" should read "view"
203	14&20	"posity" should read "paucity"
244	10	"chancellor finances" should read "Chancellor Finances"
248	23	"industry" should read "sample"
257	22	"a" should read "of"

- - -

III

E X H I B I T S
PIECE JUSTIFICATIVES

IV

E X H I B I T S

PIECE JUSTIFICATIVES

\- - -

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Montreal, Quebec
Thursday, 3 December 1992
Le jeudi 3 decembre 1992

--- Upon commencing at 8:00 a.m./A l'ouverture de l'audience a 8 h 30

LE PRESIDENT: Bonjour, mesdames et messieurs; good morning, everyone.

Maitre Leclerc...?

Me LECLERC: Bonjour, monsieur le President, madame Cote, monsieur Priddle.

J'ai trois questions preliminaires ce matin. Vous vous souviendrez que monsieur Morin s'etait engage a faire une mise a jour de la piece RAM-7. J'aimerais deposer cette mise a jour.

Pourrait-on avoir un numero de piece, s'il vous plait?

LA GREFFIERE: Ce document portera le numero de piece B-26.

PIECE No B-26: Mise a jour de la piece RAM-7, page 1

de 3, produite pa
RAM Exhibit 7, pa

R.A. Morin

Me LECLERC: On avait demande a monsieur Morin de confirmer que la troisieme colonne etait la somme des deux premieres, et effectivement il confirme que c'est le cas.

Monsieur le President, vous vous souviendrez qu'au debut de sa preuve monsieur Morin a change ses

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recommandations, les ayant effectivement baissees de 25 points. Eu egard a ce changement dans les recommandations de monsieur Morin, la Compagnie a decide elle aussi de faire un changement dans sa propre requete, et demande maintenant que lui soit accorde un rendement pour l'avoir de 13 1/8 pour cent pour l'annee 1993 et de 13,25 pour cent pour l'annee 1994.

Je depose donc ce matin les pieces qui refletent ces changements dans la requete de la requerante.

LA GREFFIERE: Ce document portera le numero de piece B-27.

PIECE No B-27: Reponses a la demande de renseignements No 3 de l'Office, Responses to NEB 72-74

Me LECLERC: Je viens de vous deposer, monsieur le President, le mauvais document. En effet, il s'agissait des reponses de TQM a la demande de renseignements No 3 de l'Office.

On peut cependant garder cette cote.

La troisieme piece que j'ai a deposer est une revision de la demande de Trans Quebec & Maritimes pour refleter les dernieres recommandations de monsieur Morin.

J'aimerais avoir un numero de piece pour ce

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document.

LA GREFFIERE: Ce document portera le numero de piece B-28.

PIECE No B-28: Revisions a la demande de TQM pour refleter les derr de R.A. Morin sur Revisions to Toll reflect changes t of Dr.Morin (Tr.

Me LECLERC: Ce sont la les questions preliminaires que j'avais, monsieur le President. Je vous remercie.

LE PRESIDENT: Merci, monsieur Leclerc.

Mr. Yates...?

MR. YATES: Mr. Chairman, I am a little surprised by the revisions to the Application. Perhaps I can look at them before we adjourn the evidentiary portion of the Hearing, to see whether there is anything that I need to raise in that respect.

I must say that I am pleased with the direction, but I have not seen any of this material before.

Me LECLERC: Nous n'aurions pas d'objection a rendre monsieur Heider disponible si monsieur Yates avait des questions a lui poser.

LE PRESIDENT: D'accord.

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CAPP/APMC Panel
in-ch (Yates)

MR. YATES: Mr. Chairman and Members, Dr. Waters is seated at the Witness Table. He is appearing as a witness on behalf of the Canadian Association of Petroleum Producers and on behalf of the Alberta Petroleum Marketing Commission.

The exhibits to which Dr. Waters will be speaking and which might be useful to have at hand are: Exhibit C-1-4, which is his Direct Evidence, the main exhibit; C-1-5, being the Responses of CAPP and the APMC to an Information Request of TQM; C-1-6, which is a Supplemental Response of CAPP and the APMC to a TQM Information Request; and C-1-7, which was filed at the outset of the hearing today, that being an Update of Dr. Waters' Table 15.

I would ask that Dr. Waters be sworn.

W.R. WATERS: Sworn

EXAMINATION-IN-CHIEF BY MR. YATES:

Q. Dr. Waters, do you have in front of you a copy of a document which has been marked as Exhibit C-1-4, which is the "Direct Evidence of William R. Waters on Fair Rate of Return, on behalf of the Canadian Association of Petroleum

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CAPP/APMC Panel
in-ch (Yates)

Producers and the Alberta Petroleum Marketing Commission", dated October 1992?

A. Yes, I do.

Q. Was that document prepared by

you or under your direction or supervision?

A. Yes, it was.

Q. Do you have any corrections, additions, or updates to make to that document?

A. Yes, I do. The first matter would be an update to page 5. I have prepared a sheet with the updated numbers added by hand.

MR. YATES: Perhaps I could distribute that sheet now, Mr. Chairman.

--- (Document distributed/Document distribue)

MR. YATES:

Q. Would you like to lead us through that sheet now, Dr. Waters.

A. The changes, as one can see from the extreme right-hand column, are generally in the direction of somewhat higher rates, particularly at the short end, for Canadian issues.

These increases in the Canadian short-term rates reflect primarily the efforts that the Bank of Canada has initiated over the

last three weeks or so to ensure that the Canadian dollar is maintained -- apparently -- at a level in the order of 77 1/2 cents or more for the indefinite future.

The rates in the United States have changed very little since my Testimony was prepared six weeks ago, and so the changes that we see for Canadian issues can be primarily ascribed to Canadian conditions per se.

MR. YATES: Perhaps, Mr. Chairman, we could mark this as the next exhibit, rather than trying to have Dr. Waters read these changes into the record.

THE CLERK: That will be Exhibit C-1-9.

--- EXHIBIT NO. C-1-9:
Update to page 5 of Exhibit C-1-4 re changes in interest rates (Cdn.) Over the period October 16-December 1, 1992.

MR. YATES:

Q. Are there other corrections, or additions, or updates that you wish to make to

Exhibit C-1-4, Dr. Waters?

A. Yes. Continuing in the vein of

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in-ch (Yates)

updates, there is an update to Table 14, which I will just read into the record.

I would like to add a line to that Table, and I would suggest that it could be inserted immediately under "October 16", which is the second-last entry of figures, and the entry would be for December 1.

The first column would have an entry of 8.42 per cent; the second column would have an entry of 8.66 per cent; the third column would have an entry of 8.76 per cent; the fourth column, which is the average of the three that I have just read, would be 8.61 per cent; and the fifth column would be 8.55 per cent.

These values represent the levels of yields, as of two days ago, for the major subset of issues that I utilize in coming to a conclusion as to the long-term bond rate that exists today.

There is an averaging process here because when one is looking at the alternatives that an equity investor has, there are a series of long-term bonds which that investor could acquire, and the values here are indicative of the broad spectrum of issues that the investor has available.

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in-ch (Yates)

The next set of changes are essentially corrections of minor errors.

The first correction is at page 20, in the first full Answer, the fifth line, where it should read "the bulk of these costs represents...".

The next change, in the same vein, is at page 31. In the first line of the Question at the bottom of the page, "What is" should be "What are".

And finally, at page 62, the Answer in the middle of the page which begins "Based on the midpoint of 2 3/4 percent", that should read "Based on the midpoint of 2 5/8ths percent".

Those are all of the changes that I

have.

Q. Dr. Waters, with the corrections that you have made to Exhibit C-1-4, do you now accept and adopt it as your Written Testimony in this proceeding?

A. Yes, I do.

Q. And do you accept and adopt Exhibit C-1-9 as the updated version of page 5 of Exhibit C-1-4 and as part of your Direct Testimony?

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CAPP/APMC Panel
in-ch (Yates)

A. I thought it had been marked as "B". But, yes, I will accept that as part of my Testimony.

Q. Do you also have in front of you a copy of Exhibit C-1-5, which is entitled "Responses of the Canadian Association of Petroleum Producers and the Alberta Petroleum Marketing Commission to Information Request No. 1 of Trans Quebec & Maritimes Pipeline Inc., dated October 26, 1992", and the date on which is November 1992?

A. I do have that.

Q. Is that a document which was prepared by you or under your direction or supervision?

A. Yes, it was.

Q. Do you have any corrections or additions to make to that document?

A. No.

Q. Do you accept it and adopt it as part of your Written Testimony in this proceeding?

A. Yes, I do.

Q. Do you also have a copy of Exhibit C-1-6, which is entitled "Supplemental Response of the Canadian Association of Petroleum

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CAPP/APMC Panel
in-ch (Yates)

Producers and the Alberta Petroleum Marketing Commission to Question 3(b) of Information Request No. 1 of Trans Quebec & Maritimes Pipeline Inc., dated November 23, 1992", this document also being dated November 1992?

A. I do have that.

Q. Is this also a document which was prepared under your direction or supervision?

A. Yes, it was.

Q. Or by you?

A. Yes.

Q. And do you have any corrections or additions to make to that document?

A. No.

Q. Do you, therefore, adopt it as part of your Written Direct Testimony in this proceeding?

A. Yes, I do.

Q. And finally in respect of documents, do you have before you a copy of Exhibit C-1-7, which is the Updated Table 15 from your Direct Evidence, which is Exhibit C-1-4, this Updated Table 15 being dated November 28, 1992?

A. Yes, I do.

Q. Is that a document which was

prepared by you or under your supervision or control?

A. Yes, it was.

Q. Are there any corrections or additions to make to that?

A. There are no changes.

Q. Do you, therefore, adopt it as part of your Written Direct Testimony?

A. Yes, I do.

Q. Dr. Waters, yesterday, at about transcript page 311, there was a discussion between Dr. Morin and Counsel for the NEB, Ms. Champagne, which involved an interpretation of Dr. Morin's in respect to your evidence relating to the market risk premium.

Do you recall that?

A. Yes, I do.

Q. And do you recall Dr. Morin expressing the hope that a question would be asked of you to make sure that Dr. Morin did not misrepresent your position on this issue?

A. Yes, I do recall that.

Q. That was at page 313 of the transcript?

A. Yes.

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CAPP/APMC Panel
in-ch (Yates)

Q. Could you advise us whether, in your view, you think that Dr. Morin got your position correct on the record?

A. Not quite. Dr. Morin spoke of my making an adjustment for the fact that long-term bond investors, on average, had not achieved as high a rate of return as they had prospectively anticipated, that latter item being measured by the yields prevailing on bonds at the beginning of each year.

While I have, in some testimony that I presented before this Board made an explicit adjustment for that consideration, in this particular Testimony I have treated that as a qualitative element which has implications for which end of the range of observed market realized risk premiums I have adopted.

There is no explicit change made to the observed values from the cited sources to reflect this factor.

That is discussed in my Testimony at page 50.

MR. YATES: Thank you, Dr. Waters.

Mr. Chairman, Dr. Waters is available for cross-examination.

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CAPP/APMC Panel
cr-ex (Leclerc)

THE CHAIRMAN: Thank you, Mr. Yates.

Mr. Leclerc, please.

CROSS-EXAMINATION BY MR. LECLERC:

MR. LECLERC: Good morning, Dr. Waters.

THE WITNESS: Good morning, Mr. Leclerc.

Q. The first area that I would like to go over with you, Dr. Waters, is a comparison between your 1990 Evidence and your 1992 Evidence.

Is it correct to state, sir, that in 1990 your DCF results for non-utilities were 12 1/2 per cent?

A. I will accept that, subject to check.

Q. And that this year, the result is 11 per cent?

A. That is correct, yes.

Q. And in 1990 you had adjusted these results by a factor of 50 to 70 basis points to get your results for pure utilities?

A. I will accept that, subject to check.

I am saying that simply as a

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cr-ex (Leclerc)

formality, because these numbers seem very reasonable.

Q. Do you have it with you?

A. I have it upstairs.

Q. Therefore, your DCF result for pure utilities was in the range of 11 3/4 to 12 per cent?

A. Yes.

Q. And that this year, the adjustment from non-utilities to pure utilities is in the order of 60 basis points to 80 basis points.

Is that correct?

A. 60 to 80 basis points, yes.

Q. Is there a particular reason why you raised it from a range of 50 to 70 to a range of 60 to 80?

A. 10 basis points difference?

Q. Yes.

A. I believe the calculation is made starting with the equity risk premium for the market as a whole and then taking the relative risk values for the first septile low-risk non-utilities and for the utilities in the sample and establishing what is the implied risk premium

for both of those groups, and then simply taking the difference and using that difference in the context then of the DCF Test, as well as using it in the context of the Equity Risk Premium test.

So the magnitudes at which we speak here -- 10 basis points difference -- could come from either a slight difference in the relative risk value established for non-utilities or in the equity risk premium value.

I do not think either have changed very much from 1990. 10 basis points is very easy to get just within the rounding, almost, of the data.

Q. Are you suggesting that this is just a mathematical result of the application of the same theory, the same approach?

A. Yes.

Q. So to continue where we were, sir: this year your DCF result for pure utilities is 10-1/4-to-10-1/2 per cent?

A. That is correct.

Q. And I take it, sir, that you view these results as being very low.

Is that correct?

A. I regard them as being low.

They are, I think, the lowest values I have computed in some 14 years on the DCF Test. They are not much lower than they have been for the last couple of years now.

Q. Is that the reason why you appear to have discarded them, sir?

A. The reason that I discarded the DCF values -- and "discard" perhaps is a strong word.

I did not utilize them formally in coming to my recommendation because I noted that they were slightly below the value of the low end of the range of the Equity Risk Premium test, and I felt that, in light of the volatility of capital markets over the last year and a half in particular, it would be appropriate to focus on the Equity Risk Premium results, which do reflect more directly and more immediately the changes that occur in capital markets.

So I regarded the DCF values as indicative of that.

The Equity Risk Premium results were not unreasonable, but I felt that, in light of the, can I say, "stickiness", perhaps, of the DCF values, it was best, in uncertain times --

"particularly uncertain times", as all times are "uncertain" -- to concentrate on the results of the Equity Risk Premium Test.

Q. Is it fair to say, sir, that, stated differently, for all practical purposes, you have given no weight to these results?

A. The end result of my recommendation suggests that I have given no weight -- and I will accept that characterization, if it will help you get along here.

Q. Let's move on to your market risk premium analysis and the comparison between the two years.

Will you accept that, in 1990, your market risk premium for the market as a whole, prior to adjustment, was in the range of 5.7-to-5.9 per cent?

A. Prior to adjustments being made?

Q. Yes.

A. Yes.

Q. And that this year, the same value is 4.7-to-4 per cent?

A. I did not quite hear you.

Q. I said that for this year, the

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same values are 4.7-to-4 per cent -- your range of the market risk premium, prior to adjustment.

A. 4.0-to-4.7 per cent.

Q. Yes. And that in your previous testimony -- and I think this is what you were alluding to in your response to Mr. Yates' question -- you had performed an adjustment of 1.4 per cent, to reflect what you perceive as a shortfall between achieved and expected returns for long-term bond holders?

A. That was in the 1990 Testimony, yes.

Q. Correct. And that you have also then performed ---

A. Just one comment. It is simply that I do not recall, for the moment, whether or not that 1.4 was applied to both the 5.7 and the 5.9, or not.

If your advice is that it was, then I will accept that.

Q. No. We will get to that later on. I am not suggesting that is the case.

But you had considered a 1.4 adjustment ---

A. I did.

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cr-ex (Leclerc)

Q. -- to go from your market risk premium to the market risk premium that you use for the determination of your recommendation?

A. Yes.

Q. And then afterwards you made an adjustment of 1.5 per cent for what I believe is called the "purchase power premium"?

A. The "purchasing power risk premium", yes. I made an adjustment for that factor, also.

Q. Which was at the level of 1.5 per cent. Correct?

A. I accept that, subject to check.

Q. And that your ultimate estimate of the market premium for the market as a whole was in the range of 3-to-4.2 per cent?

A. 3.4 to...?

Q. 3-to-4.2 per cent.

A. 3.0 to...?

Q. To 4.2 per cent.

A. Okay.

Q. Would it be fair to say, sir, that you took the upper range of your risk premium, prior to adjustment, of 5.9 per cent and that you applied literally the two adjustment

factors to that range in order to reach the lower end of your estimate of the market premium?

A. It would appear that that was the mechanics of it, because the two adjustments add to 2.9 per cent.

Q. And it would also appear that you have not performed exactly the same exercise for the other end of the range?

A. That is correct. That is the point that I raised with you as one of clarification earlier. I agree that I did make that particular adjustment in only one end of the range.

Q. If I use the mathematics of going from 5.7 to 4.2, would it be reasonable to assume that you had only made, then, for the upper range, the adjustment for the purchasing power risk premium?

A. Yes.

Q. Is there a particular reason that you recall why you had not made the adjustment of 1.4 per cent, then, for the upper range?

A. There was a reason. The 1.4 was deducted from the value of 5.9 per cent, which

applied to the period 1950 to 1987. I made the adjustment to reflect the fact that, over that particular period, the shortfall between investors' anticipated yields on long-term bonds and their actually-achieved yields was very substantial.

It reflected, in a structural sense, the substantial degree of unanticipated inflation that was experienced in the latter part of that 1950 to 1987 period.

So I felt that the anomaly, or the shortfall, that we observed was largely concentrated in that particular period of time and was most appropriately made to that time.

In 1990, when I undertook this analysis, I did not have data on the observed differentials between prospectively required yields and achieved yields going back to 1926, but I made the -- what I thought plausible -- assumption that inflation levels had not been as dramatic, and certainly unexpected inflation had not been as prevalent in the earlier period and, hence, the adjustment was less necessary for the earlier period of time.

Q. Do I understand from that, sir,

that in the period going from 1950 to 1987 we experienced unusual inflation and, therefore, that has produced the 1.4 result, but that prior to 1950, you had anticipated, back in 1990, that there was no unusual inflation and, therefore, that you would not have experienced it?

A. It is all a matter of degree. I would not say that I anticipated none but that, relatively speaking, there was much less and that as a result, and not having any data, the reasonable approach to take was to make the adjustment to the 1950 to 1987 period only.

Q. Would you normally assume, sir,

that at least there would have been some element in there, for the following reason: the period goes from 1926 to 1987, and surely in there you would have found your higher inflation?

A. Sure, I accept that. The point was to make the adjustment on a relatively conservative basis, given that the data for the entire period was not available. And, also, it is a controversial adjustment.

Frankly, the number 1.4, while arithmetically sound, if I can put it that way, is one that can be argued about as to its direct

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applicability.

Q. But I take it that this year you did find some information to permit you to calculate what would have been the adjustment for the period prior to 1950?

A. Yes, I did. I have added that -- I do not recall the first case. Certainly it ---

Q. I believe it is on page 49 of your Testimony, sir.

A. -- would be there, I think, for this case. It has been added before this case; that is to say, this particular information.

Q. But it was not added in 1990?

A. No.

Q. It has been added since that case, in other evidence?

A. Yes.

Q. And I take it, reading the first full answer on the top of page 49, that you have obtained, now, the information from 1937 to 1991.

Is that correct?

A. That is correct.

Q. And that the result that you obtained for that period is now a .9 per cent

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difference?

A. Yes.

Q. So if we come back to ---

A. Excuse me. The .9 is for 1937 to 1991; and then to fill out the information on the footnote, I computed a value of .7 for the entire period. That was based on the assumption that the differences were zero for the period 1926 to 1936.

Q. But that is just an assumption for the earlier part, prior to 1937?

A. Yes.

Q. To come back, sir, to what you have done this year, we start off from your range of 4-to-4.7 per cent for market risk premium -- and you highlight in your Evidence what the adjustment would have been.

I take it that that would have been a range from .9-to-1.3 per cent?

A. Yes. Actually, .7-to-1.3 per cent.

Q. On the assumption, of course, if we go back to 1926, that it was zero from 1926?

A. Back to 1926, that is right; and that we would make the adjustment to the full

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period, 1926 to 1991.

Q. I take it, sir, that this year you would again highlight the 1.5 per cent purchasing power risk premium adjustment?

A. I identify it.

Q. At the top of page 50 ---

A. At page 50, line 6, I suggest that perhaps the 1 1/2 percentage points "is an overstatement of the currently required purchasing power risk premium".

Q. You nonetheless refer to it?

A. Oh, yes. I think it is an important consideration. It is one of these difficult items to measure, but nevertheless relevant.

Q. So this leads you to the result of an estimate of the market risk premium as a whole of a range from 4-to-4.5 per cent?

A. When you say "this" ...

I did not make either of these adjustments. The 4.0-to-4.5 is based on the observed average values for two different periods, the 1926-to-1991 period and the 1950-to-1991 period.

Q. So going from 4.5 to 4.7 is just

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rounding out?

A. Yes, basically.

Q. And in your calculation, you have not made any adjustment for the two adjustments that you had made in previous testimony?

A. That is so.

Q. In your last Evidence, the long-term Canada Bond rate that you had relied upon was 11 per cent?

A. Yes.

Q. And in this year, it is a range of 8 1/4-to-8 3/4 per cent?

A. That is correct.

Q. And your estimated risk premium for the lowest-risk utilities in 1990 -- on the assumption that utilities are half as risky as the market -- was 1.5-to-2.1 per cent?

A. I will accept that, subject to check.

Q. And this year, your range has gone from 2 to 2.3 per cent?

A. That is correct, yes.

Q. Your investor-required return in 1990 was 12.5-to-13.1 per cent?

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cr-ex (Leclerc)

A. Yes, I will accept that, subject to check.

Q. And the result this year is 10 1/4-to-11 per cent?

A. I am sorry, the number you gave me was...?

Q. 10 1/4-to-11 per cent?

A. To 11 per cent, yes. That is on page 61.

Q. From that point on, sir, to reach your final recommendation in 1990, you had added to your range, I believe, 25 basis points to the lower end, and nothing to the upper end of your range in 1990.

Is that correct?

A. The suggestion is that it was added to the lower end of the range?

Q. That is correct, sir.

A. But not the upper end?

Q. Correct.

A. That was not quite my recollection. I thought it was added to both.

Q. This is what we have taken out of the Testimony, sir.

A. That is fine.

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Q. And that you had deducted 10 basis points from the upper end: you have gone from 13.1 to 13 per cent?

A. That, I suspect, is rounding, going from 13.1 to 13.

Q. And in the determination of your final recommendation in 1990, you added to the required rate of return for TQM the range of 13 3/4-to-13 per cent, what I gather is 1/8th of a per cent to the upper range and also 1/8th of a per cent to the lower range, to account for financial market conditions.

Is that correct?

A. That is the adjustment that I thought you were mentioning earlier. I think I would agree with the 25 basis point upward adjustment to the lower end for 1990. That was not TQM-related; that was simply my establishment of the appropriate range for low-risk utilities.

I believe you are now speaking of the specific adjustment added for TQM, when you mention the 1/8th.

Q. I had thought, sir, that the earlier adjustment, from 12.5 to 12 3/4, was for the unique circumstances of TQM, and that, beyond

that, you had made a further adjustment to account for the financial market conditions, which brought you from 12.5-to-12.78 at the lower end, and from 13-to-13 1/2 for the upper end?

A. I am sorry, I am just not able to confirm each and every one of those steps at the moment.

Let me put it this way: I typically round the estimate of the investors' required rate of return for utilities, and I then add an upward adjustment for the slightly higher risks of TQM; then I further add what I call a "cushion" to reflect the circumstances in financial markets at the time, to ensure that the ultimate recommendation that is made is high enough, in my view, to provide the Company with the investors' required return, no matter what happens in financial markets over the test period, with a high degree of probability.

Q. This is what I had understood you to do, sir. And I thought that you had indicated that TQM's unique risk was 25 basis points?

A. I thought I had as well.

Q. That is why I was trying to

figure out what the total for the other financial conditions was, to go from 12.5 to your final recommendation of 12.78.

A. Then I guess it was 25 to 50 basis points, given the range that we have here.

Q. Looking at what you have done this year, sir: as we said earlier, your investors' required return for utilities, as a whole, is 10 1/4 to 11 per cent?

A. Yes.

Q. And your final recommendation is 11 1/2-to-11 3/4 per cent.

You will find that at page 2 of your Evidence.

A. Thank you. It is also at page 10.

Q. Correct.

A. I have the same number in both places. I will not say that I have it "right", but I have the same.

11 1/2-to-11 3/4 per cent, that is correct.

Q. Can you explain to us what you have done this year, sir, to go from a range of 10 1/4-to-11 per cent as your investors' required

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return for utilities as a whole to your 11 1/2-to-11 3/4 for TQM?

A. As I indicate at page 62, in the first full answer, the upper end of the range of my estimate of the investors' required rate of return for TQM includes a 25 basis point add-on. There was not an add-on to the lower end of the range. Then to go from 11-to-11 1/4 to 11 1/2-to-11 3/4 involves adding to both ends of the range the 50 basis point "cushion", as I describe it, that is discussed at page 10.

Q. As I see it, sir -- and correct me if I am wrong -- the adjustment that you are making to your lower end is 125 basis points?

A. That is taking literally the 10 1/4 at page 61, line 3, which is the range formally established on the basis of working through the numbers associated with the Risk Premium Test, and then on page 62, at line 3 also, I have narrowed the range implicitly for all utilities, and also TQM, by using a range of 11-to-11 1/4 rather than what otherwise would have been a range of 10 1/4-to-11 1/4.

Q. I gather what you have done is essentially change the 10 1/4-to-11 to

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11-to-11-1/4?

A. That is correct. And the 1/4 on the 11 is for TQM's unique risks.

The fact that I was rounding up or narrowing the range by slicing off the 10 1/4 and going higher I felt incorporated an adequate allowance at the lower end for TQM's special risk.

Q. Then you go from 11-to-11 1/4 to 11 1/2-to-11 3/4?

A. That is correct. And that is the "cushion" for financial market conditions seeming uncertain and my concern that the recommended fair rate of return be sufficiently high to permit, under all but the most unusual conditions, TQM to earn the investors' required rate of return over the two-year test period.

Q. I take it, sir, that these adjustments are judgments on your part, and not empirical computations?

A. I think that is fair -- oh, the 50 basis points is not. That is an empirical computation. That is based on my examination of the volatility of long-term interest rates over the past seven or eight years.

What I do is I look at monthly data

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and see to what extent actual values of long-term interest rates deviate in subsequent months from the value that prevailed at the beginning of the year.

I am looking at the extent to which long-term bond investors could have been wrong in their forecasts of interest rates for the full year, and then I have taken, I believe, one standard deviation from the mean value, and that is approximately 50 basis points.

So the 50 basis points is empirically determined.

Q. Would it be fair to say, sir, that an overall comparison of the last Evidence to this Evidence is that your long-term Canada Bond interest rates have fallen from 11 per cent to 8-1/4-to-8-3/4 per cent, and that your risk premium has increased from a range of 1.5-to-2.1 to a range of 2-to-2.3 per cent.

Is that correct?

A. So the increase in the risk premium is something like 20 basis points at the top end and 50 basis points at the bottom end. Yes.

Q. But, nonetheless, an increase in

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the risk premium?

A. Yes.

Q. Does that mean, sir, that you view that conditions have changed, and that they are now riskier than they were back in 1990?

A. It may be so. The process that I went through to establish the risk premium for the utilities is essentially the same as the process that I undertook in 1990. However, the market risk premium that I have utilized is somewhat different.

As you noted earlier, in 1990 the market risk premium was 3.0-to-4.2 per cent; this time it is 4.0-to-4.7 per cent.

Q. Does this also indicate that it has gone up, as opposed to last year?

A. The difficulty I am having in answering you directly is that the process that I went through established a particular value for the risk premium. That value was established making adjustments of the sort that we described earlier.

If either of those adjustments were formally made again this year, then we would have a lower range for the market risk premium than

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before, which would ---

Q. I will discuss that with you later on, Dr. Waters.

A. Okay. But what I am suggesting is that I think you can fairly ascribe the difference in the risk premium for utilities this year to the difference in the estimate that I have of the market risk premium, which in turn, this year, does not reflect the downward adjustments that I made in the previous case but which, qualitatively, I feel act to reduce the market risk premium from the value that is given.

In terms of the data that you see, there is a larger utility risk premium. It is generated by virtue of the fact that there is a slightly larger market risk premium. But I qualify that "slightly larger risk premium" by saying that it does not reflect the two adjustments which I made explicitely to reduce it last time and which I only note qualitatively this time.

So that is why I say I am not sure I can say that there has truly been a change in the risk environment for utilities.

Q. But your end result is that, not

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having done these adjustments, your risk premium is higher this year?

A. That is true. So reflecting the adjustments then, we could get back to my previous risk premium.

On that basis, you could say that my recommendation today is not reflective of two factors which I consider are bases for reducing the risk premium.

Q. Yet, you had made these adjustments in the past?

A. Yes, I did. I indicated in my Testimony that I have not made them because I found that they have been a matter of considerable controversy.

I acknowledge that they are very hard to measure, and rather than continue to have substantial discussion about the merits, or otherwise, of the particular numbers that I have arrived at, I have simply taken out those adjustments, but noted that, qualitatively, they are conceptually and, I think, practically relevant to me.

Q. But nonetheless, in past evidence you have made these quantitative

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adjustments?

A. I did. I did not make them this time, for the reasons that I have indicated.

Qualitatively, I think they should be made. But in terms of the mechanics of making them, there is enough controversy that I feel I will just leave them as qualitative items.

Q. I propose to get back to that a bit later on, but I would now like to compare your "TQM 1992" Evidence with the Evidence you filed in the 1992 TransCanada case.

Would that be fair, sir?

A. I have it. It is a smaller book. It fits more easily into my bag than the "TQM 1990" material.

Q. Why is that?

A. Because I stripped down the TransCanada material just to contain the Evidence, whereas the 1990 TQM material has all of my back-up material in it as well.

Q. Would it be fair to say, sir, that, other than the adjustments for the particular circumstance of TQM, your 1992 TransCanada Evidence and your 1992 TQM Evidence are almost a carbon copy of one another?

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A. They are certainly very similar. My client is grateful for that, because the incremental cost was very low.

Q. I take it if we were to go over your results for the DCF test, we would get the same numbers?

A. I hope so.

Q. And the same for the market
risk?

A. Yes.

Q. And it is only in your final
recommendation that you went from, in our case,
11 1/2-to-11 3/4 ---
A. Yes.

Q. -- and in the other
11 1/4-to-11 1/2 per cent?

A. Yes. That is with respect to
the investors' required rate of return.

There is a little more work that went
into the capital structure, I suspect.

I am justifying my fee here, as you
can understand!

Q. I would like to briefly go to
your adjustments at the outset. I believe it was
Exhibit C-1-9.

Do you have that before you, sir?

A. I think so.

Q. I gather what you are telling us
is that since you prepared your Evidence,
long-term Canada Bonds have gone from the mid
range of what you had expected to the upper end of
your range.

Is that correct?

A. On Table 14, the mean is 8.61.

Q. That is why I am suggesting,
sir, that your range in the discussion we just had
went from 8-1/4-to-8-3/4. And 8.61, is that not
close to 8 3/4?

A. Actually, no. It is closer to 8
1/2. But it is certainly closer to 8 3/4 than it
is to 8 1/4.

Q. And I gather that these changes
have not brought you to change your
recommendation?

A. No. Interest rates, as we know,
these days, unfortunately, are moving around very

substantially on a day-to-day basis. We have had moves of as much as 15 basis points.

Even with Mr. Mazankowski's rather wishy-washy "economic comment", I think it was

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called, interest rates fell by five basis points. So my 8.61 would be 8.56 if I had done it this morning instead of yesterday morning.

I am only suggesting that the volatility of interest rates is very substantial these days.

So wherever we are in the range, I think it is prudent to continue as if there was no change necessary in the recommendation.

Q. Would that bring you to emphasize one end of the range as opposed to the other?

A. Not really. The difference is not enough for me to do that at this time.

Q. I take it that your answer is: Notwithstanding this volatility, you believe that, for the future, they will remain at basically the same, in the range of 8 1/2?

A. That is the basis for my recommendation. But then, as you know, I add the 50 basis points "cushion", and that "cushion", particularly in the context of TQM, is primarily for volatility that we know exists and which might take us, for an extended period of time, above 8.75 per cent.

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I have a 50 basis point allowance for that consideration.

Q. And I believe, sir, you have pointed out the extreme volatility in short-term interest rates in Canada.

That is an understatement. Is it not?

A. Yes. The volatility in short-term rates is driven largely by concerns with respect to maintaining the stability of the exchange rate for the Canadian dollar.

To the extent that the speculators "get on our case", if I can use the vernacular, then the moves that the Bank of Canada has to make are even larger than they otherwise would be.

So it is not surprising, frankly, that we have seen interest rates, at the short end, change as quickly as they have.

The reason for these changes is because there is an incredible amount of liquidity in the world economic financial system today. There are literally billions of dollars which will go from Country "A" to Country "B" for a 10 basis point overnight differential.

Depending on the pressures in the

global markets, and the extent to which the money is moving away from Canada, the response has to be rather dramatic.

I mentioned a 10 basis point differential. In fact it will go for a 1 basis point differential on an exchange-hedged position. But sometimes it is difficult to arrange the hedges. And even if you do, they are potentially expensive -- although, in theory, arbitragers are working both sides.

So you have to have the currency differential in the rate that is available for Canadian short-term money as well.

All of those factors make for extreme volatility. But it is essentially foreign exchange rate driven at this point.

If it were not for that, we would be down in the 6 per cent area for short-term money today, bank prime; and even well below that for commercial paper.

Q. Is it reasonable to suggest that the Bank of Canada will keep on doing these interventions in the future?

A. Yes.

Q. This is not a spot event that we

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are now going through?

A. As long as it feels (a) that it has to do so in order to protect the dollar; and (b), it has the currency reserves to carry that out.

Q. Is your expectation that the volatility that we have just gone through will keep on through the two Test Years 1993 and 1994?

A. With respect to short-term rates?

Q. Yes.

A. No. I believe what you would call the "purchasing power parity rate" -- that is, the rate which would exist in foreign currency markets for the Canadian dollar under conditions of free flow of currencies and free flow of goods without intervention by central banks -- would be in the range of 75 to 80 cents.

I made that position clear about nine or ten months ago in a case in British Columbia, and I have seen no reason to change that.

The underlying fundamental structural circumstances of the competitiveness of the Canadian economy suggests to me that 75 to 80 cents is a sensible location. And 77 1/2 which I

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mentioned this morning -- which might have sounded like an odd number at the time -- is simply the midpoint of that 75 to 80 cent range. The Canadian dollar is selling at approximately 78 cents today.

I think we have seen, finally, a change in the relative value of the Canadian dollar, which now brings it into relatively long-run equilibrium with the U.S. dollar at least, our principal trading partner.

So I think the volatility that we saw over the last three or four weeks was what you normally see when you are moving from an untenable position -- which our dollar was in, even at the 82 cent level, or so, that it was at at that time -- to what is a more sensible position, consistent with normal trade flows, rather than with a policy strategy implementation set of activities, which is what we have been observing as the dominant feature of the Canadian dollar relative to other currencies; that is to say, Mr. Crow and the Central Bank have been pursuing a policy of maintaining a relatively high Canadian dollar in order to fight inflation. I think they feel the fight has probably been won, and

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certainly to a sufficient extent to permit, now, letting the dollar fall to the point where our exports can be pushed up again, with a resulting improvement in the employment level.

I think we have gone through the phase of emphasizing monetary and foreign exchange policies directed towards containing inflation to now an emphasis on employment-generation policies. And the level of the dollar being at 78 cents, and perhaps going to 75 cents, is consistent with that.

Q. That was very long, sir. Let me see if I understood what you are saying.

Is it correct to state that what you are saying is that so long as the dollar remains within a certain range, we should not expect volatility?

A. That is correct. I believe that we are in that range now. And, yes, 75 cents is the lower end of what I think is the equilibrium level under easy trade and foreign currency flow conditions. So, I do not think there is much more that will happen in terms of the Bank of Canada attempting to maintain higher interest rates in order to maintain flows of foreign currency.

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Q. Provided the dollar remains in that range, of course.

A. Yes. But I think that it should because of the basis upon which Canadian goods are competitively priced, which I believe is at 75 to 80 cents.

If they are competitively priced, then we will have the flows of currency from foreigners who want to buy Canadian dollars, generated sufficiently through their desire to buy our goods, and we will not have to have high interest rates in order to attract those dollars.

Q. Did I hear you correctly to say

that you had taken this decision in a British Columbia case?

A. Yes. Ten months ago, 11 months ago.

Q. When you look back, were you right with respect of the volatility that we have just encountered?

A. I did not speak of the volatility at the time. I was surprised that there has been as much volatility as there was.

If we get low enough, there will be no volatility, except in one direction.

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Q. Dr. Waters, did you use the same techniques as you did last year?

A. Do you mean in 1990?

Q. That is correct, when I said "last year".

A. Yes.

Q. Essentially we have gone over that.

Is it fair to say that you are using only one technique this year?

A. I am relying on only one. I have done a lot of work on the other one. But I have relied on only one.

Q. You heard Dr. Morin yesterday, did you not?

A. Yes.

Q. And do you agree with him, sir, that the building up of a recommendation of a fair return involves an exercise in both judgment and the use of techniques?

A. Yes. And a careful examination of the underlying data.

Q. Correct. There is no doubt there.

When does one use the techniques, and

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why do you use them?

A. Perhaps it is a matter of personal preference. If I were ---

Let me give you an analogy: If I were NASA, 20 years ago, and wanted to get someone on to the moon, I think what I would have done is essentially examined, in minute detail, the various possibilities for accomplishing that, and I would have settled on the one technique or the one algorithm that would have done the job, in our considered opinion -- because NASA, of course, is many people.

The alternative would have been that instead of sending up one manned spaceship -- which in fact got there, as was intended -- you would send up, say, seven, without quite so much analysis, and hope that one of them hit.

Somehow or other I prefer the very detailed approach to rate of return analysis and rely on what I think has provided the best base for a recommendation, rather than looking at a lot of data and saying: "Well, it is not perfect, but it has some potential value. Let's see what it says" -- and then start throwing them out. That is a little bit like saying: "Let's send up seven

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space ships, and as we see some of them going out of orbit, we will just fire a particular device and let it explode."

My analogy relates to Dr. Morin's statement when he spoke of throwing out the Canadian energy companies.

That is sort of like hitting the switch as the thing is going -- it got halfway there and you just explode it and it goes away.

Q. Dr. Waters, are you not referring to the material that is going into the technique itself?

A. I am. I am referring to the technique and the material, both. I am talking about the data that you use for the analysis, and I am talking about the extent and the care with which the analysis is undertaken.

Q. Is it correct to say that when you focus on the data that you use, that is where the judgment call comes in?

A. Well, the judgment call probably is data driven to a large extent. In the Comparable Earnings case, or the situation of the comparable earnings, I say I do not know what to make of the data that the accountants create,

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given their purposes and what they are trying to accomplish, in the context of these rate of return analyses. These data are not created by the accounting profession in the expectation that people are going to take them literally for establishing what a real company should be allowed to earn.

Knowing the fragility of those data, and the bases on which the accountants make their allocations of depreciation, and so on, it seems to me that I have no base on which to start. And I, for the life of me, do not know how to make the adjustments to make those input data to the Comparable Earnings model useful for fair rate of return recommendation purposes. So I just give up.

Even if I did not, if I soldiered on, as it were, and tried to make something out of these data, I then have to decide whether or not the values reflect what I will call disequilibrium conditions -- which is to say that the companies in those samples are earning rates of return which are consistent with their risks or inconsistent with their risks.

They may be inconsistent because of

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recessionary conditions or restructuring, or whatever it is; they may be inconsistent because the companies have opportunities to earn above competitive rates of return for some significant time on some product lines.

Both could apply to any given company in any long enough period of time.

So, there is a conceptual difficulty then, even if you believed the numbers, of deciding whether or not they are competitively-determined numbers, or numbers that are consistent with competitive conditions.

Q. Is that responsive to my question, sir? I am not sure it is.

I will probably ask it again.

I had asked you whether the data portion that goes into a technique is where a judgment is called, and I believe your answer, in summary, would be: "yes, at least for the Comparable Earnings technique".

A.   Yes, certainly. I just wanted to explain why the data would be relevant and the consideration of them would be relevant. But also, even after you have looked after that part, you have the conceptual issue of the

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interpretation of the data.

Q.   Once it has gone through the process, if you wish; once it has gone through the machine of the technique?

A.   Yes.

Q.   Why do economists like yourself develop these techniques? Is it not to comparatively verify the results of your judgment call? Why do you rely on them?

A.   Before I got involved in studying economics and studying finance and teaching them, I had no idea of what would be an appropriate rate of return for a utility. So I did not have a preconceived judgment at that point.

I studied the issue, and one gets closer to some notion of what a plausible number might be. But it is only through empiricism, if you like, looking at data, that you can come to a conclusion as to what the number might reasonably be.

As you know, in teaching economics -- and as Dr. Morin said yesterday -- we often assume away much of the problem. You are always dealing with hypothetical numbers.

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I remember a number of years ago I had as my dissertation supervisor at the University of Chicago, Professor Merton Miller, who won the Nobel Prize in Economics in 1990.

I hope there are some baseball fans here, because what I have done is very similar to what Manny Lee, who is a shortstop for the Toronto Blue Jays, did when Fred McGriff was also with the Blue Jays.

Fred McGriff for those who do not know, is a very high-powered hitter. He hits 40 homeruns a year, or something like that. And Manny Lee hits one or two.

It happened that on the same day they both hit home runs. Manny Lee, in the post-game interview said: You know, I think this is going to be a great season for the Blue Jays. I would not be surprised if Freddy and I hit 50 homeruns!

And I say I do not think Dr. Miller got his Nobel Prize because of the insights that I provided him through the dissertation work that I did, but perhaps a little part of his Nobel Prize was attributable to that.

Q. Can we get back to the question, Dr. Waters?

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A. Yes. But I just wanted to indicate that when we talk in economics or finance about the models and the concepts, we introduce numbers that are often just off the top of our heads, sometimes.

I brought up Professor Miller because he always used as a cost of capital 10 per cent. Then when he got into the empirical work, someone said facetiously to him: "Why are we doing all of this? We know the cost of capital is 10 per cent. You have been telling us that all year, and every example you have used to date has been 10 per cent."

So, one does not have any preconceived notions out of their study of economics and finance as to what the appropriate fair rate of return is. One has to look at the data that exist, and it is in the analysis of the data that I think your notions about what is a relevant piece of information and what are relevant orders of magnitude come to the fore.

That is the long way of saying you need to look at the data at the same time as you are forming your judgment. The judgment is in the context of today's data and today's information.

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I would not like to suggest that one starts off with their preconceived notion of the number, and then says: "Oh yeah, I will find some data that will go along with that."

Q. That is not what I was suggesting at all, sir. What I was asking you is: What is the usefulness of the techniques?

A. The usefulness of the techniques is to tell you what type of data to look for and how to utilize that data in coming to a conclusion.

Q. But the techniques themselves have very set parameters to establish how they work.

Is that not correct?

A. Conceptually, there is very little to say; but when it comes to the implementation of the techniques, there can be novel approaches, I think, that will not be applied by all who are using those particular techniques.

So there is room for discretion or for imagination, also, in the application of those techniques.

Q. Would that not be the result of

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someone having found a flaw in a technique and suggesting a modification to improve the results?

A. A flaw in the technique...? I guess I would accept that characterization.

For example, the purchasing power risk premium aspect that I consider, for a number of years there was skepticism as to its existence. In the early 1980s there were a number of articles written on the subject, and a number of participants in the regulatory arena warmed up to that idea. I recall that I introduced it in my discussions, if not in my measurements, in 1980, and I believe Dr. Sherwin explicitly noted the existence of the technique and the difficulty of measuring it somewhere around 1985.

So, a flaw...? Let's say that there are nuances or there are elements of the application of the technique which certainly can change, and should change.

Q. Do I gather from that, sir, you are in general agreement with me that judgment is applied in respect of the data before putting it through the technique and judgment is applied when you look at the results of these techniques, and with respect to the technique itself, you analyze

whether there is a flaw in it -- you may want to use another word; and if so, then you suggest changes to the technique?

A. I think that iterative process does go on, yes.

Q. But the technique itself is rather mechanical?

A. It's conceptually simple, typically. If that means that it is mechanical, then, all right. But there are obviously different mechanics applying it here.

Q. That is the point I was making to you earlier, sir. You were relying, in your estimates, on essentially two mechanics, the Risk Premium and DCF technique.

Is that correct?

A. Yes.

Q. Are you aware of others, other techniques than the DCF -- setting aside the Comparable Earnings, of course, that you set aside and do not use?

A. There was, as Dr. Morin mentioned yesterday, or the day before, the Arbitrage Pricing Model.

That became very fashionable eight or

nine years ago when Professor Stephen Ross of Yale University developed it. Then he, who is as entrepreneurial as most finance professors in business schools, decided to try to make it operational. He and Professor Richard Roll of UCLA formed an organization to market analyses for regulated utilities, which would incorporate that information.

Their marketing vehicle for this information was Ibbotson & Associates, which is an organization that you will be talking to me about later, probably ---

MR. LECLERC: You are absolutely right.

THE WITNESS: I think their brochures came out in about 1987 for this, and I thought: "This is a new and very interesting service. I should subscribe to it."

So we paid our $1,300 (U.S.) for a year's subscription, and six months later we got a letter asking whether we would like our $1300 back because they were are finding difficulty in implementing this product.

My point, simply, is: Yes, there are other techniques which people are attempting to

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introduce -- and to some extent they are successful, and to some extent they are not. I was surprised, although I do not follow the individual witness in the United States, that anyone in fact was using the Arbitrage Pricing Model. I think it is something that can be -- well, you would have a fine time discussing that with a witness. I think you would destroy them.

So I was surprised it was in play, if I can put it that way.

Q. My last question in this area, sir: Would you agree that you feel comfortable with DCF and Risk Premium, and you do not see a need to change.

Is that correct?

A. Not at this moment. I will be glad to change if there are some new paradigms that come along that I can understand and utilize.

There is -- and I do not mean to be facetious, but there is a "great interest in chaos" theory as a basis on which to model what is going on in financial markets. That may result in some insights that were as valuable, or more valuable, than the insights we obtained when

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Professor Sharpe and Professor Markowitz did their work on the Capital Asset Pricing Model. I will be perfectly happy, if that work seems to have direct application, to adopt it. I am open.

Q. And to reach the conclusion that you are perfectly happy with the DCF and Risk Premium, I take it you must also conclude that there is no difficulty with these techniques. You see no problems with them?

A. No, I do see problems with them. When I say "I am perfectly happy", I am perfectly happy to use them, given that I find that the Comparable Earnings technique has the problems that it has -- given that the Arbitrage Pricing Model theories, I do not think, have been developed sufficiently for practical application, and the "chaos" theory has certainly not been developed for practical application here, I am happy to use what is available, and which I think is a useful point of departure, and it is those two techniques.

I am not saying there are no problems with implementation. There are.

Q. This is what prompted you in the past to make the two adjustments we were talking

about earlier, with respect to the Risk Premium analysis at least?

A. I am still, conceptually, of the mind to make those adjustments. I say quite explicitly that I think they are relevant.

Q. I am not disputing that at this time. All I am suggesting to you, sir, is that the Risk Premium produces a result, and you feel the need to adjust that. Therefore, surely there must be something wrong with the technique itself.

A. The Risk Premium technique is simply something as simple as: I would like to establish the appropriate premium associated with the incremental risk of an investor going from a riskless security to a risky security in the equity grouping. And the reason for all of this fooling around or fiddling around with the purchasing power risk premium is because there is no such thing as a risk-free security to start off with.

The model is perfectly easy to articulate and -- one might almost say naively -- to implement; but to do it well, and to do it in order to best reflect what you are trying to

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accomplish, which is to add 'X' to a risk-free rate, you have to do significant adjustments, and that is where the purchasing power risk premium comes in.

Q. I would like to move on, sir, to the notion of risk.

What are your expectations with respect to the Canadian economy in the future, sir?

A. I would not be surprised if we have 8 per cent unemployment for the next five years.

I am very negative, I think, on the prospects for the Canadian economy. I am negative because I do not believe that Canadians yet understand that our prosperity, over all of our history to date, has been largely a function of our being able to appropriate for ourselves as human beings and individuals what, if I can put it this way, "nature gave to us". We just happened to land on the shores -- our ancestors did -- land on the shores of a country which was incredibly well-endowed with resources that nature had provided and which happen to have great value in use by human beings.

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We were are able to grow grain, cut timber, harvest fur -- if I can put it that way -- in the 19th century at costs which were incredibly low by world standards, and we could ship all of this great distances and everyone became, as a nation, quite prosperous.

We have built in Canada a social structure to maintain people in need at levels of decency of housing and incomes, starting in the 1920s in particular, which were unparalleled in most of the civilized world.

All of this was because we had an endowment from nature which was there just to be had and to be resold to others.

Well, we are running out of that easy source of wealth for Canadians. And because we are, we have to adapt to a different set of trading conditions and a different set of activities.

Canadians have not been used to the idea that you actually have to work hard in high school and learn something. You cannot go off and work in the factories of the motor parts suppliers in southwestern Ontario any more. Those factories are all going, first to the United States and

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secondly to Mexico.

We are going to have a lot of adjustments that we have to make structurally, not only to the way in which Canadian industry does business, but in the way in which Canadians think about what is worth doing and how they are going to do it, and how they are going to equip themselves.

This whole notion of getting involved in communications industries and information industries is good. It is going to take a long time to get people redirected to all of that.

I have a company that is in the computer software business, and our sales, this year, will be probably 40 per cent represented by United States sales.

Given the type of products we have, we could have ten times the market in the United States as we have in Canada, eventually. It is a perfectly fungible application, if I can put it that way.

When Canadians get the idea that they should work hard at systems development, as well as just learn it, which is something we are having to deal with, then we will get the economy back in

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shape.

But in the meantime -- five years, I think, at least -- we are going to have difficult times. The rest of the world is recognizing the difficulties that exist and are adapting to changing needs, to changing circumstances -- and some of them are more adept and are going to be faster off the mark.

We are going to have a recessionary set of conditions for a long time.

Q. Is it fair to summarize that as saying that you believe there are structural problems with the Canadian economy and that you do not believe that, in the short term, they will be corrected?

Is that a fair summary?

A. That certainly is true, yes.

Q. Do you think that Canadians can in fact work harder?

A. On average, I think they weigh 165 pounds, and they are nutritionally capable. I guess the knowledge is there to be nutritionally competent.

We have an educational infrastructure which is very high-ranking, worldwide. So as long

as they get their heads around the attitudinal aspects soon, I think they can work hard.

Q. So, it is not that they are incapable of doing it.

I take it you do not share Dr. Morin's optimism that they can be shaken into doing it.

A. They can, eventually. I guess I am saying there is going to be five years of dissonance before that shake-up occurs.

It is very hard for somebody who went to work at General Motors at age 18, immediately after high school, and they are age 33 now, to understand that the old bad work habits -- and they are bad -- have to be discarded. Those people will not learn it fast enough.

But hopefully others will, those who are younger. They want the cars to drive and want that standard of living still.

Q. So in the long run you have faith but it will take a bit longer than Dr. Morin thinks?

A. I am afraid so.

Q. And given all of these "doom" situations of structural problems, added to a

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recessionary context, does that have an impact on company earnings?

A. Yes.

Q. A very strong impact?

A. Certainly for some companies it will be the end of their lives. For others, those who adapt quickly, it will be okay.

Q. So it would it be fair to say that their cashflows will be affected strongly within these circumstances?

A. Yes. And there will be bankruptcies -- and certainly in Quebec, in TQM's world.

Q. You recognize that as a fact?

A. Sure.

Q. And, of course, these reduced cashflows will have an impact on the ability of these companies to meet their financial obligations.

A. Yes.

Q. And that the circumstances -- how should I say this -- increase where one has a small level of equity and a large level of debt?

A. Oh, I do not know about that.

Q. In general. I am not talking

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about TQM's circumstance. I am talking about the economy in general.

A. Oh, sure. The ones that have very little equity are the first to go.

Q. They are the first to go.

A. But as long as you are talking in general and not...

Q. I was not being specific.

And if a company in general were faced with the situation of having to refinance its debt in the next two or three years, it would also face a difficult situation. Would it not?

A. If it were having difficulty creating adequate earnings, it would find it harder, all other things being equal, to refinance.

Q. Would you agree, sir, that the impact of plant closures, et cetera, can have a more severe impact in a market where the proportion of the gas consumed or transported is for industrial purposes, as opposed to where the consumers represent the larger portion of the market?

A. All other things being equal, that would be so.

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I was surprised, in looking at the document you gave me yesterday, at the extent to which the declines were similar in throughput last year for GMi for the residential and the industrial sectors. One would expect, a priori, that the residential sector is going to be the stronger one.

Q. And you accept, based on that document, that GMi's market area is composed, roughly, at least over the last five years, of 65 per cent industrial sales?

A. That is right.

Q. And that there has been an overall decline in GMi's throughput during the last year?

A. There was in the last year. But the throughput for industrial sales is still higher than it was five years ago.

Q. I am referring to the total throughput?

A. Yes, it was lower. But it, too, is higher than in most of the previous years.

Q. Is it not a fact, sir, that it has declined in 1990, based on the document I have given you -- and unless you disagree with it, I do

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not propose to file it. This is based on GMi's Annual Reports for the last five years ---

A. That is fine.

Q. -- and the total volumes on GMi's system have gone from 189 Bcf in 1990 ---

A. That was the highest number in the 2, 4, 5 years you have shown me. So 1987 through 1989 were all below 1991.

Q. But wasn't 1990 the year when we really started feeling the effects of the recession?

A. Yes, I would expect so.

Q. And that in 1991 these volumes have gone down to a level of 182 Bcf?

A. Yes, from 189 Bcf.

Q. And based on the discussion of the "gloomy" situation that we are now facing, would it be reasonable to expect it to go down further, at least for 1992, if there are a number of plant closures?

A. In a totally general sense, I would say "yes". My expectation would be that industrial activity will be no higher for this particular area, based on my review of the Conference Board Provincial Economic Forecasts, in

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1992 than in 1991. About the same in terms of the numbers that you see for economic activity. I think Mr. Mazankowski says that, overall, he thinks perhaps the Canadian economy will grow by 1 per cent in 1992.

Q. Has he been wrong in the past?

A. I was going to say I am a bit surprised at that. I do not think the economy is growing. I would expect that 1992 would be somewhat worse than 1991, in terms of corporate profitability, or other indicators. The data that I show in Table 15, updated, for the interim earnings of the lowest risk Canadian companies are about the same level in 1992 as in 1991, roughly speaking.

I am a bit surprised by that. I thought they would have been lower still. But nevertheless, there is nothing that I have seen or read which suggests that 1992 is in any meaningful way going to be a stronger year.

So while the economic indicators that I have just described would suggest that perhaps 1992 would be no worse than 1991, I do not expect it to be any better.

Q. That is fine, sir. I take it it

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is your view that TQM is somewhat sheltered from all of this because it receives all of its revenue streams from TransCanada PipeLines?

A. It is sheltered, yes, because all of its revenues come from TransCanada PipeLines. The actual charges to the users of the system are only a small proportion of the total; that is, of the revenue requirement.

Q. In your Evidence, I believe, sir, you discuss the political environment and the effects of the "Constitutional Debate Disease" that we have in Canada.

A. I did not wish to use the word "disease" in my testimony -- but that is fine. I think it captures the idea that we have our own peculiar set of circumstances that occupy us and concern us.

Q. I believe at page 6 of your Testimony you estimate what you believe will be the effects of the Referendum .

Now that it has happened, what do you think will be the overall effect?

A. Nothing much different than what I am anticipating will be the trend of economic activity and the trend of interest rates generally

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in Canada.

Q. So you are basically saying "business as usual", just as though nothing has happened?

A. Well, something happened a long time ago with respect to Constitutional issues. You can pick your own date, as it were, depending on what kind of student of political science or history you happen to be. But certainly since 1970 the issue has been one that we have had to grapple with.

So when you say "just as though nothing has happened"...

I would say, basically, it is an aspect to which a large segment of the population and a large segment of the investment community, be it Canadian or foreign, have become somewhat inured to and are accepting that that is part of the Canadian world.

Its particular manifestation at any given point in time could well be different from what it was before. We have never had a referendum for all of Canada like this, to my knowledge, before, on this kind of issue; but it is yet just, if you like, another manifestation

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that the larger issue is there. It's like Meech Lake. It is a manifestation of the issue being there. Of itself, I do not think it has a particular consequence, from an economic perspective.

Q. I have given you, through your counsel, a copy of the November 3, 1992 update of the credit rating of the Province of Quebec and Hydro Quebec by the CBRS?

A. Yes.

Q. Do you have that, sir?

A. I do.

Q. Would you agree with me, sir, that, at least in the view of this agency, the effect of the referendum is something to watch carefully?

A. Yes, in their view. But I do not think it is so much the effect of the referendum; I think it is the whole issue of Constitutional relationships, and in particular how we deal in Canada with all the disparate interests that we want to see formally considered and recognized.

Q. It is a fact that they have reduced the credit rating of the Province of

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Quebec?

A. Yes.

Q. Invoking, amongst other reasons, and I quote:

"This uncertain political climate, if it persists, could hinder investment spending and consumer confidence in Quebec during what has so far been a period of fragile economic recovery. It remains to be seen how the recent rejection of the Charlottetown Accord will affect political and economic conditions in Quebec over the next several years."

Is that a fair ---

A. That is their position.

Q. At least some participants in the market may consider that there is increased risk. Would that be fair to say?

A. I think they have suggested that, clearly, with their downgrade. The issue -- and I am afraid I have not looked at it, and perhaps should have -- is what are investors saying about Quebec as a risky type of investment, rather than the bondrating agencies.

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I am never sure whether investors pay a lot of attention sometimes, a little attention other times, and no attention part of the time to what the rating agencies say, and whether or not the rating agencies are ahead of investors or behind them in their assessments.

So I am saying the ultimate test, the crucible, if you like, is the investor reaction, rather than one of an analyst.

Q. What you suggest is that you do not know whether they rely or not, but you are not suggesting that they do not?

A. I am suggesting that a lot do not pay much attention to them. I know that for a fact.

I talk to investment counsel, investment managers, a great deal, in various capacities: one as a professor and a person who, therefore, has at least the opportunity to talk to people of this sort; another as a member of the Presidential Investment Advisory Committee of the University of Toronto; and another as President of a financial models company which provides investment analysis and accounting software to these organizations.

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I talk to a lot of these people. Some are totally indifferent to what the rating agencies have to say, except to the extent that it makes a difference to the formalities of what they can hold or not hold, as to any of the trustee provisions. But in terms of what they have to say, many of them are totally indifferent.

Q. That is what I was going to get into with you, sir. Some investors are obliged to follow the credit ratings with respect to what they hold?

A. Yes. They are obliged in the sense that some minimum level has to be held.

Q. And these investors are fairly large investors, are they not?

A. Some are; some are not.

Q. Basically, insurance companies?

A. No. Insurance companies can, through their basket clauses, or for their own account, invest in things which have no ratings, for example. We are hearing about the investments, the huge investments, that many life insurance companies have made in real estate on their own account.

Q. On their own account. Not with

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the funds they hold on behalf of someone else?

A. When I say "on their own account", I mean on behalf of the policyholders, not when they were managing segregated funds for a pension fund, let's say, of XYZ Corporation.

They have a lot of discretion and

freedom.

It is the ones that are in the category, typically, of trustee plans, such as a number of pension funds, where the Funds, per se, do not have investment expertise on hand. They contract-out the job to an investment counselling firm.

That is where you usually find the prohibitions on low-quality investments, such that the trustees can say, if something goes wrong: "Do not blame us. We were careful about what we put in the portfolio."

MR. LECLERC: Mr. Chairman, before I move on to the next question, I would like to file the CBRS report that we were referring to.

THE CLERK: That will be Exhibit B-29.

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--- EXHIBIT NO. B-29:
CBRS Credit News Report, dated November 3, 1992, re Rating Downgrade for the Province of Quebec and Hydro Quebec.

MR. LECLERC:

Q. Dr. Waters, I think it is a reasonable expectation that we will have elections in Canada in the next two years?

A. I think we must have one next year.

Q. And is it not the same in the Province of Quebec, sir?

A. Mr. Bourassa has been around for some time. So I think that is true, yes.

Q. Will you accept, subject to check, sir, that he was elected in 1989?

A. Fine.

Q. And that provincial legislatures must go to an election four years afterwards?

A. I agree.

Q. Do elections have an impact on uncertainties, sir?

A. They usually replace one

uncertainty with another. We just had the

election south of the border, as we all know, and Mr. Bush's policies were unclear to a lot, or they were dissatisfied with them, even if they did not know what they were. Now we are going to have Mr. Clinton's policies -- and we are not sure what they are -- and we are not sure what the Congress will say about it all, and so on.

I think it is just rolling over the uncertainty, if you like.

Q. That is overall, sir. If we look particularly at the Province of Quebec, are you familiar with the position that has been taken by the "No" side?

A. I think I am -- but perhaps you could inform me of the position you want me to respond to.

Q. I would like to know what your understanding is. If we coincide, I have no problem.

A. I see. Well, the "No" side with respect to the referendum was that they were not going to go along with the framework -- which was written up quickly -- in the Charlottetown Accord.

Q. That was for Canada as a whole.

But in the Province of Quebec, would you agree that the leader of the "No" side was the leader of the Official Opposition in the Province of Quebec?

A. Yes, okay.

Q. And that their platform, of course, is the sovereignty of the Province?

A. Yes.

Q. Would you agree, sir, that in past elections, when the now existing Opposition was elected to office, that they had set aside, for the purposes of the election, their sovereignty platform?

A. That is true. In other words, they were not proceeding with their agenda, with that particular agenda, while the Referendum issue was in play.

Q. Would you agree, sir, that during the Referendum the Opposition maintained that, in the next election, that will be the debate?

A. Yes.

Q. If there is an election in the Province of Quebec during the next two years, do you not believe that that would increase tremendously the uncertainty?

We are not dealing with a normal election here, sir. We are dealing with an election where one of the issues will be, as I believe your words were, "the changing of the relationship between Quebec and the rest of Canada"?

A. Yes. But that position, as you described it, has been well-known to financial market participants. So that should be reflected in the risk premia that they require in order to invest in Quebec-related businesses at this time.

Q. But I thought you had agreed that in the past they had not used the platform; that this would be the first time that the sovereignty platform will in fact be debated?

A. Yes. But the point I am making here is that you and I know what that platform is all about today, and yesterday, and in the days before that. Financial market participants knew the same thing. They have the opportunity to factor into their required rates of return the uncertainty that they see with respect to the outcome of that election.

Q. You are suggesting that they have already discounted that and it is "business

as usual"?

A. It is "business as usual" at whatever rates they now require.

This sort of situation involves probability analysis, in a formal sense. I do not know whether all investors go through this or not, but there will be some bet implicit in the yields that one observes that somehow or other the Parti Quebecois would win and in fact would implement any one of a variety of, if I can put it this way, "real world" models of sovereignty.

After an election of that sort, to the extent that there was a change which investors had insufficiently discounted, then there could be an increase in yields again. But the risks that investors see today with respect to those outcomes would I think -- in the capital markets that we have today, which reflect information very quickly -- would be impounded in the yields.

Q. So I take it, from your perspective, there is no increased risk at this time; that it is only if the result was that the Opposition were to have won this election ---

A. I think it is fair to say that every event brings forth a new perspective on

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future circumstances, and there is a re-evaluation of the risks associated with investing in Quebec after the Referendum.

I would not say that those risks were identical to what they were before the Referendum for investors. But what I am saying is that, for Government of Canada long-term bonds, that set of circumstances is already impounded in the yields that are required, and we just have to wait and see what the effect would be of any kind of event of the sort that many of us would not like to see.

Q. The last question in this regard, sir: Assuming that this unfortunate -- at least to my point of view -- situation were to happen, would it not follow, sir, that there would be possibly immediate or increased pressure on the part of producers and gas purchasers to set aside the Board's Decision in RH-3-86, whereby TQM's costs are rolled into that of TransCanada?

A. It could well be. I do not know. The producers, very frankly, have a lot more to worry about than the rolling-in of TQM's costs -- these days -- to TransCanada's Cost of Service. They worry about those kinds of things when they seem to be selling lots of gas at a

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reasonable price.

The restructuring that has gone on in the Canadian oil industry has had a noticeable effect on the number of people in regulatory affairs concerned with Canada. They are all worried about California and other such possibilities. So I think it is rather low down on the list of priorities.

Q. So I take it, sir, that, notwithstanding all of the elements that we have just been discussing on risk, you do not believe that TQM's risk has changed since the last time you appeared before this Board?

A. Not really, no.

Q. Yet, your risk premium goes up?

A. That would have been the case also in TransCanada. The risk premium that explicitly reflects the circumstances of TQM is the add-on of 25 basis points. I have that add-on to reflect the possibility that the TQM system would be amputated from the total system since I first testified on the rate of return for TQM.

I think there is a higher risk associated with TQM than there is with TransCanada, and that is the reason for that

differential. But I do not think it is something that has meaningfully changed throughout this period.

Q. I was not focusing on the differential, sir; I was focusing on the increase in the market risk premium as a whole for utilities.

A. No. As I indicated to you, I believe one could say that I have, in some sense, over-estimated that premium due to not making the explicit quantitative adjustments for the factors that I have previously made the adjustments for.

Q. I would now like to turn, sir, to your DCF Analysis.

I take it you have again used current prices, as opposed to "beginning-of-the-year" prices, to estimate future growth.

Is that correct?

A. To estimate the growth rates?

Q. Yes, the growth rates.

A. I have used ---
Q. In examining your past periods, you used current share prices.

Am I not correct?

A. Not quite. I have used the

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average price, over a year, for periods ending, I believe, in the middle of 1992, and the middle of 1989 and the middle of 1987 -- something like that.

Q. Whether it is an average or not, you are nonetheless looking at today's current prices, or those that prevailed, on average, during 1992, as opposed to the prices which prevailed at the beginning of those periods?

A. Well, I used 5, 8 and 10-year periods. I guess the prices five years ago would be close to the beginning of the period for the five-year rates.

Q. I thought this would have been an easy "yes", in light of your response to our Information Request.

A. Then, I am totally misunderstanding the question.

Q. In your technique you look at three periods: 5, 8 and 10-year periods. Correct?

A. Yes.

Q. And you look at past growth rates?

A. Yes.

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Q. And the price that you use in those past growth rates is the current price of those shares.

Do you not recall having this lengthy discussion with Mr. Courtois last time?

A. The prices we are talking about, I presume, are to establish the weight that is given to each security?

Q. Yes.

A. Let me ask you to turn to page 38, and the first full Answer. In the last paragraph of that Answer, it says:

"Each aggregation" -- (that is, of the sample companies) -- "uses the share prices in a different base period as the company weights. The three base periods are 12-month periods beginning July 1991, July 1988 and July 1986."

Q. That is right. But none of those are the beginning prices of the period.

Is that correct, sir?

A. They are not current prices, either -- oh, you mean current to the start of the period?

Q. Correct.

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A. I am sorry. I was interpreting "current" as being "today's" price.

Q. Excuse me, if I was not clear, sir.

A. One is close to the five-year. But, no, the weighting periods do not conform to the beginning of the 8-year period and the beginning of the 10-year period.

I am sorry to have taken so long.

Q. And do you recall that that is the exact question that we asked you in our first question to you?

A. I did not recall it -- but I am willing to accept it.

Q. Can you take your Response to our Question, sir -- which I believe was filed this morning. It is Exhibit C-1-5.

A. Yes.

Q. I take it that your response is a Table shown as Schedule 1. If we were to compare these figures, sir, to what you have on your Schedule 2 ---

Will you take that, please. Your Evidence.

A. Table 2 of my Evidence?

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Q. That is right.

I take it, on the basis of your response sir, that if we look at the first 10-year column on the left-hand side of the page, on Table 2 of your Evidence ---

A. Yes.

Q. -- that the number that is shown as the mean, of 7.8 for historical growth in dividends, would now be 8.7?

A. If we use that particular weighting for which the results are shown in the extreme left-hand corner of Schedule 1.

Q. Correct.

A. Yes.

Q. And that the difference between the two is a full percentage point, or close to it; .9?

A. Very close.

Q. And if we were to do the same exercise for the required rate of return, the number that is shown on Table 2 as 10.7 would read 11.6.

Is that correct. At the right part and the last mean, if you wish.

A. That is right.

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Q. And if we take the real historical growth in dividends, the number that is shown as 3.2, the mean, would change to 4.1?

A. That is right. They would all

go up by the 90 basis points, sure.

Q. And if we do the same exercise for the 8-year period, the number of 7.6 that is shown for historical growth in dividends would go to 7.9.

Is that correct?

A. Yes.

Q. And the number for the required rate of return would go from 10.6 to 10.8?

A. That is right.

Q. And the last one would go from 3.1 to 3.4?

A. That is correct. They are not all 30 basis points because of rounding, I guess, in Part "B".

Q. Would I be correct, Dr. Waters, that if I had used those numbers, your DCF result for the pure utilities would have gone up by roughly 1 per cent?

A. I think I say in the Testimony that in recognition of, essentially, the rates of

inflation over the entire 10-year period being not terribly different from what investors probably expect, I would have given the same weight to the 5, the 8 and the 10-year periods.

I am just looking to confirm that. It is at page 41, the second paragraph in that Answer. I indicate that the real rates of return would be very similar due to the inflation rates not being much different, and so I would have given weight to all three of the periods.

What you need to do is to take the .9, the .2 or .3 and a zero, and average them.

Q. You are suggesting, I gather, instead of one full percentage point, where we would go from is somewhere between your result and going higher, but not a full percentage point?

A. The mechanics of it would be: .9 plus .3 plus zero, divided by three, or about .4.

Q. Is it correct to say sir ---

LE PRESIDENT: Est-ce que le moment serait opportun pour une pause?

Me LECLERC: Oui, certainement, monsieur le President.

LE PRESIDENT: Merci.

--- A Short Recess/Pause

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--- Upon resuming/A la reprise de l'audience

THE CHAIRMAN: Please proceed, Mr. Leclerc.

CROSS-EXAMINATION BY MR. LECLERC (continued):

Q. Dr. Waters, I believe we left off at a discussion about your DCF technique.

Is it correct, sir, that in your previous Testimony you had used two periods, a five-year and an eight-year period, for your growth estimates?

A. I have always had three -- five, eight and ten years. The particular period to which I gave the greater emphasis depended upon the extent to which each period's realized rate of inflation was consistent with the anticipated rate of inflation.

That meant that several years ago I used five-year growth rates exclusively. And then I believe I indicated, two years ago, that eight-year periods also had the same level, approximately speaking, of achieved inflation as what was anticipated.

Q. I take it that what you were concerned with is the high inflation encountered in the late 1970s and the early 1980s?

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A. Basically, yes. I did not want to use nominal growth rates which reflected that level of inflation, when investors may not reasonably expect the level to be as high in the future.

Q. But this year you are using the 10-year growth periods?

A. Yes. I have essentially said,

from my examination of the data, that the achieved rates of inflation over the last ten, eight and five years have been approximately the same. So all years' worth of nominal growth rates, it seems to me, would be relevant to investors.

Q. And you are giving equal weight to each of these periods?

A. Yes.

Q. Is it not a fact, sir, that your 10-year period starts in 1982?

A. Probably.

Q. And since it starts in 1982, it does not happen to have, as a part of it, the high inflation that you have just talked about?

A. I believe it does not. And if it did have a year ---

Q. You would have taken it out?

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A. No. It would have been averaged out through the other years.

I have a table in the Testimony -- actually, it is called Appendix XV. It shows the compound growth rate of inflation over the period 1982 to 1992. The compound rate over the five-year period is 4.2 -- that is, the most recent five-year period; the rate for the eight-year period is 4.2; and the rate for the 10-year period is 4.3.

Q. Yes. But the 10-year period does not include the extraordinary inflation encountered in the early 1980s?

A. That is right, it does not. While I do not know what the rate was for all of 1982, certainly from September 1982 to September 1983 the rate is only 5.0 per cent.

Q. Had we not encountered these very, very high inflation rates in the early 1980s, would you normally have used five-, ten- and 15-year periods?

A. I cannot tell you. I do not think I would have used the 15-year period. I think that is too long a time.

I have been doing this since -- 1980

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I believe was the first Testimony that I undertook. The 10-year growth rates would have taken me back, say, to 1970. I could have chosen 15-year rates, if I had thought they were relevant at the time. I did not.

Q. Would you agree that one of the precepts of this model is to assess the growth rates over the long term?

A. Yes. In theory, it is infinity. In reality, it is much shorter than that. The latter periods get discounted and not much weight is put on the dividends that are anticipated 11 years hence, if you are discounting at a rate of anywhere from 10 to 13 per cent, which is normally what I found for the DCF values in the last few years.

If you take the reality of the arithmetic, which says that there is not much weight put on cashflows after ten years, and you take the reality of how investors go about trying to anticipate what the future holds, which is that they are looking, in general, at a relatively short horizon -- perhaps three years to five years at most -- then going past ten years, it seems to me, does not add any information that is

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relevant.

In fact it might even be disinformation if the circumstances in the earlier period are meaningfully different, particularly with respect to inflation, to those which prevail prospectively as of today.

Q. What would you have done, sir, if the high inflation that we encountered in the late 1970s and the early 1980s had in fact occurred in 1988, 1989 and 1990?

A. I have a hard enough time coming to grips with the facts that you provide me with. What I would do with this hypothetical situation, I just do not know.

I think I would have gone through the same process as I was doing in 1980 through to 1992, under the circumstances which did prevail, which was to look at both nominal growth rates and real growth rates and see the circumstances under

which the implicit rate of inflation associated
with the dividends was similar to or different
from that anticipated as of the day on which I am
using this information.

Q. What I was saying to you, in a
different way, sir, is that you have discarded the

very high inflation in the past because you do not
believe it reflected what would happen in the
future, and I was asking: If this very high
inflation had occurred in the most recent period,
as opposed to the further-away period -- if I
might express myself that way -- what would you
have done?

If you chose to eliminate it in one
period, would you have chosen to eliminate it, as
well, from the shorter period?

A. I do not believe that I
eliminated it, in any sense.

Q. By not giving any weight to the
period in which the high inflation had occurred.
That is what I am referring to when I say that you
eliminated it.

A. I am sorry. Then, what you have
to do is to add in yet another consideration,
which is: Had there been high inflation in the
latter part of the 1980s, would it have been
reasonable to think that investors also thought
there was going to be similarly high levels of
inflation in the foreseeable future.

My selection of the particular period
-- whether it was five, eight or ten years --

would have been a function of the congruence of
the actual rate of inflation over one or all three
of those periods with the rate which was
anticipated at that time, under those conditions,
by investors.

So you have to add another piece of
information to the set.

Q. And the other piece of
information is that you would look at what is your
estimate of the prospective inflation. And if
that had matched, you would not tend to eliminate
that period in which the high inflation had

occurred, even if it was just recent?

A. Probably not. As I say, what I did do was to look at the congruence of the average rate of inflation over each period of time -- the five-, eight- and ten-year periods -- with the level anticipated by investors, and selected the ones which were the mostly congruent with the future expectation.

Q. Does that mean, sir, that the data is only valuable if it matches the expectation of the inflation?

A. I think so. Because it is pretty clear that ---

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You say "matches"... We are always using approximations. But I think so.

It seemed to me that it was quite conclusive that the rates of growth in dividends that I observed historically were systematically related to the rates of inflation that had been observed over those same periods, because when I reduced the nominal rates of return by the observed rates of inflation in those periods, I got very similar real return rates; that is to say, net of inflation there seems to be a rate that investors are looking for, in real terms, that is rather consistent over the many years that I have been doing this.

Q. I take it, sir, that having gone through this exercise this year, your results of 10 1/4 to 10 1/2 per cent you did not view as being reasonable?

A. They were not consistent with the risk premium values. They were lower. They certainly told me that, if anything, the risk premium values were too high. But all things considered, I did not believe them to be. So the DCF rates I ignored in the final analysis.

Q. I would like to turn now to your

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Risk Premium estimates, sir.

I gather from your last answer, sir, that you believe your Risk Premium results were too high.

Is that correct?

A. No. I felt that, if anything, the DCF results would suggest that they were, but I concluded that the Risk Premium results were reasonable.

Q. Your Risk Premium analysis, sir, I believe starts at page 45 of your Testimony?

A. Yes.

Q. The first question that I have for you, sir, is: For your historical values you have taken essentially the same information or sources that you had last year?

A. Yes, I started with those same sources.

Q. And then you added the more recent information available -- from ScotiaMcLeod, I gather?

A. No, actually it was from the Canadian Institute of Actuaries Study. I spliced that on to the end of the Hatch & White data.

Q. So you did not use at all the

ScotiaMcLeod information?

A. Not directly, no. I reviewed it, but I did not formally incorporate any of the figures in my Testimony.

Q. And we mentioned this morning, sir, that you speak of, at page 49, the achieved versus expected shortfall for bond holders over the period of 1937 to 1991.

A. Yes.

Q. And then also for the period of 1950 to 1991.

A. Yes, I do.

Q. And you go on at page 51, sir, to say -- and I do not think I will have to quote it -- that there has been some controversy in the

NOVA case in 1992.

Is that correct?

A. No. There has been controversy about this purchasing power risk premium adjustment ever since I have used it.

For the purposes of my NOVA Testimony, I concluded that I had had enough of the discussion of the quantitative manifestation, as I saw it, of these factors and that I would simply list them as qualitative issues, to be

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considered in the overall assessment of what was the appropriate market risk premium.

So in my NOVA Testimony, I had already incorporated, if you like, the type of analysis that I have in this Testimony on the matter.

Q. Previous to that, you had been quantifying it very specifically?

A. Yes, that is right. And incidentally, the Board at the same time, unbeknownst to me, said: "This is a very difficult matter to come to grips with, and we will ignore it" -- in a quantitative sense, roughly speaking.

Q. You are referring to the Westcoast Decision?

A. Yes. However, I had already taken that on my own, if I can put it that way, since my NOVA Testimony was prepared before I read that.

Q. What you are suggesting to me, sir, is that because of the controversy, you have backed off on your quantitative adjustments?

A. Yes. And I effectively said: Let me not clutter this Testimony with something that is going to cause a lot of difficulty, and

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simply treat it as a qualitative element.

Q. What do you mean by that, "qualitative element"?

A. I do believe that the purchasing

power risk premium should be adjusted for, in doing this type of analysis, and the adjustment would be to reduce the equity risk premium.

When I talk about a range of 4.0 to 4.5 per cent, I indicate that one of the considerations that bears upon adopting the 4.0 value is the purchasing power risk premium, and that another consideration that bears upon adopting the 4.0 value is the shortfall between the achieved returns on long-term bonds and the prospective returns.

Q. Do you not also state in your Evidence, sir, that one of the considerations for adopting the 4.5 value is -- I believe you state at page 48 of your Evidence, in the middle paragraph: "On average, the annual achieved real rate of return for the full period has been 8 per cent in both Canada and the U.S."

And in giving consideration for that, that would be a factor that would draw you towards the upper level. Is that correct?

A. That is correct. That is why I stayed where I was. But there were two factors which I felt advanced the case for the lower end and one factor which advanced the case for the upper end. And since I am not into quantitative aspects anymore, I did not say: "Because of two, we will adopt the lower end and because of there being one only for the upper end."

Q. Sir, your 4.0 to 4.7 range of the market risk premium as a whole, prior to adjustment -- but non-existent adjustment today -- how did you obtain that, sir? How was that calculated?

A. One of the values was the average for the Canadian market over the period 1926 to 1991, and the other value was the average over the Canadian market for 1950 to 1991.

Those were geometric averages, and they were values of 4.0 and 4.7.

Q. Is this the only explanation for the reduction from the range that you had in 1990 of 5.9-to-5.7? Or are there other factors involved?

A. There are two explanations. The 5.9-to-5.7 values used in the past were in one

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case an arithmetic average and in the other case a geometric average.

Q. Which one was the arithmetic? Do you recall?

A. The 5.7 was the arithmetic. That was for the period 1926 to 1987.

You asked me what factors were involved. There is also the fact that the data for 1988 to 1991 were also added.

Q. So essentially the reductions that we see are due to the more recent data that you have added, as well as the fact that you have changed one of the historical periods from an arithmetic average to a geometric average?

A. Correct.

Q. Is this the first time that you used only the geometric average?

A. No. I used it in the NOVA case and in the TransCanada case. And as I indicated in the TransCanada case, I should have been using it at all times. It was an inadvertent use of the arithmetic mean.

Q. Is it not a fact, sir, that you have been using the Risk Premium technique since 1988?

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A. Yes. So I was inadvertently using the arithmetic mean for four years.

Q. That is what I was getting at. The mistake had been going on for four years?

A. Yes.

MR. LECLERC: Thank you, sir.

THE WITNESS: After a while some of these tables tend to become old friends and you do not look at them that carefully, you see. That was the case with this one.

Q. I take it that you would agree, sir, with the proposition that the geometric average always produces lower results than the arithmetic average, except where returns are constant?

A. That is correct. I believe I state that in my Testimony.

Q. What would have been your estimate of the risk premium in this case, had you perpetuated the mistake, if you will?

A. The arithmetic means are in Appendix VI.

Q. For what period, sir? Did I hear you say 6? I am sorry...?

A. I meant Appendix VI.

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Q. I am sorry. Go ahead.

A. This Table does not appear to have the year 1991, I am embarrassed to say. But in any event ---

Q. What would have been the average, sir -- again, had you used the same methodology?

A. I believe the arithmetic mean for 1926 to 1990 would have been 5.6 per cent. I am reading that as the difference between common stocks and long-term bonds for the period 1926 to 1990.

Q. So what would that have equated for the full results, sir?

That is only one period. Correct?

A. Yes. And then the question is: What weight would I have given to that?

If I had simply gone ahead, as I did, with the use of the geometric means exclusively, then the 5.6 would have replaced the 4.0 in Table 8. I think the 5.6 is a little high, due to the non-inclusion of 1991.

Q. Had you used fully the -- I am sorry. Go ahead.

A. The inclusion of 1991 would have

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lowered the cumulative differential by approximately 12 percentage points. This is with respect to the arithmetic mean. This is on the basis of the data contained in the Canadian Institute of Actuaries April 1992 document.

If we reduce the amount that was achieved in total, adding up each year's arithmetic mean by 12 percentage points, and divide it by 76 years, we would reduce it by about .2.

Q. .2, did you say?

A. Approximately. Rounded to.

Q. If I understand you correctly, you are saying that the 5.6 ---

A. -- would have been 5.4 for the period 1926 to 1991.

Q. But 1.4 full percentage points above the 4 per cent that you get with solely the geometric means.

Is that correct?

A. That is correct. It is higher by that order of magnitude, yes.

Q. Had you used exclusively for both historical data the arithmetic means, I gather you would have reached the same results as

Dr. Morin?

A. I would have had 5.4 for 1926 to 1991; and for 1950 to 1991, I would have had to have taken 30 basis points off the 6, because I am dividing 12 by 41 to include 1991. So I would have had 5.4-to-5.7 ---

Q. That is fair enough, sir.

A. -- using arithmetic means exclusively for the same periods for which I used the geometric means.

Q. Did you use anywhere in this Evidence the arithmetic means?

A. Arithmetic means?

Q. Yes.

A. Yes, I have used it in a number of contexts.

Q. In this Evidence?

A. But not for the market risk premium.

Q. In your whole analysis of the market risk premium and the various adjustments that you make, do I understand you to say that you do not use the arithmetic means?

A. No. I do not believe so. I do not intend to.

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Q. Obviously, because you are a believer in the geometric means?

A. Yes. But since I also believe I make mistakes from time to time on this very matter, I am not sure that there is not another one.

Q. We all make mistakes, sir.

Let me backtrack a bit, sir, and come back to what I will call the "purchasing power premium" adjustment and your achieved versus expected.

I want to see if you will agree with me in this regard, sir: Had we used these adjustments to your data of today with respect to the market risk premium as a whole, had we quantified them and used them as you were suggesting in the past, your estimate of the market risk premium would have been 1.9-to-2.5, as opposed to 4.0-to-4.5?

A. You are having me start with 4.0-to-4.5 and then ---

Q. No, I am starting with your 4.7-to-4.0.

A. 4.0-to-4.7, fine.

Q. From which I would have deducted

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your past adjustment of 1.4. Let's use 1.3 this year as opposed to 1.4.

A. For the shortfall. Yes.

Q. And then you use the 1.5 adjustment.

A. That is for the purchasing power risk premium?

Q. That is correct. I know you are not suggesting that. You have explained that.

A. I understand. If you did that arithmetic, you would then get 1.2 to -- to what...?

Q. I have 1.9-to-2.5.

A. To 2.5?

Q. The 2.5 is because I have used the same methodology that you had last year and I am not deducting ---

A. I am sorry, you are not deducting it from both.

Q. -- it from both sides.

A. Okay. So you end up with...?

Q. 1.9-to-2.5.

A. That would be the arithmetic.

Q. And on the assumption -- and I believe that it is the same in both Testimonies --

that utilities are just half as risky as the market as a whole, we would divide that by half, to reach the risk premium for utilities?

A. Yes.

Q. And if we had done that this year, we would have obtained a risk premium, I believe, in the range of .9-to-1.2, roughly?

A. Yes. I should mention one thing about the purchasing power risk premium adjustment -- which I only mention because you raise it as an arithmetic exercise that you are undertaking here.

It is appropriate to only adjust for what I would call the "incremental purchasing power risk premium" which was not already earned by long-term bond investors.

I will freely make that as a qualification to all of the testimony that has previously been filed which discusses this matter.

If the bond investor has achieved that purchasing power risk premium, then we would expect to see that in the realized rates of return.

There would already be recognition of

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that in the higher rates of return that the bond investor achieved.

So the narrowed risk premium for equities would be appropriate to take as your add-on to the long-term government bond rate -- but only to the extent that it had in fact been achieved.

Q. Do I take it, sir, that you had not recognized that in the past, though -- what you have just said?

A. That is right. The more I thought about it, the more that seemed to be an appropriate qualification to make to the analysis.

Q. If we follow to the end of the process and add the utility risk premium of .9-to-1.2 to your 8 1/4 and 8 3/4 bonds, we would reach a return of somewhere between 9 1/2 and 9 3/4s?

A. That is correct.

Q. And I believe you would recognize that that would be unreasonable?

A. It is certainly very low.

Q. And is that precisely why you have not made these adjustments this year, quantified them at least?

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A. No. The reason that I made the adjustments was that I recognized the error that had been made in the use of the arithmetic mean.

Q. I am talking about the adjustment, the 1.4 versus the 1.5.

A. No. Those were adjustments that I made on the basis of the contentious nature of the analysis -- which in fact was borne out by the Board's own comments, later on.

Q. I understand.

I believe, sir, that your Appendix XIII is your response to the Board's concern in TQM's last rate case, or request?

A. Yes.

Q. When was the first time that you used this Appendix, sir, in your response? In what case?

A. The first case in which I appeared after the Board's Decision in the 1990 TQM case was issued.

Q. Would it be fair to say that you have been using it since?

A. Yes.

Q. That was basically what I was getting at, sir.

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A. I am sure I was in a case early in 1991, after the Board had issued this Decision, and I used it at that time.

Q. Is it fair to say, sir, that nowhere in Appendix XIII do you refer to financial literature in support of the position that you are taking?

A. I think that is true.

Q. Is that because there is not any? Or is that because you chose not to?

A. I think the nature of the financial literature on the geometric versus the arithmetic mean was well-canvassed by your predecessor. To my knowledge, there is not a discussion of it, in the sense that I have it here, in the literature.

The materials that you provided at that time were materials that approach the matter in what I would call a general sense; that is to say: This is a rule that you should follow in making project investment decisions or establishing cost of capital because of the marked differences between the arithmetic and geometric means that will materialize typically under the circumstances that most textbooks treat of.

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So what I found when I proceeded to write this Appendix -- and I had not thought of looking at the debates before the FERC with respect to the arithmetic and geometric mean which Dr. Morin has spoken of, but I will -- is that the literature did not seem to discuss, or at least I could not find any which discussed, the circumstances of what I would call "atypical" investments decisions, in which the geometric mean gives you very similar results as the arithmetic mean, or vice versa. And that is the situation where the prospective and achieved rates of return are very, very similar to one another.

Q. Are you referring to the situation of utilities?

A. Yes. And in particular I notice, for example, in one of the materials that you kindly gave me a couple of days ago to review, that the type of example they have is one where the differences that an investor or a corporation might anticipate materializing from one period to the next were in the order of plus 10, minus 10, plus 30 per cent.

Q. Would they be similar to the example that you have given in your Appendix XIII,

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sir?

A. They would be similar to the first example, Case B, yes.

Q. Sir, having stated that, would you agree that none of these authors or authorities that I have referred you to make a distinction between utilities and common stocks?

A. No, they do not, because they are talking in sort of general terms as to what is the normal way to view things. They are not talking about the situation of regulated utilities, and in particular utilities regulated by this Board, where the difference between the achievable and the achieved rate of return are likely to be a few basis points.

Q. Are you not in fact, then, sir, segregating utilities from the market as a whole?

A. Absolutely -- because the circumstances of these utilities is what we are dealing with. To the extent that this generalized statement of what is the appropriate mean to utilize does not fit well, then we should look at it in considerable detail.

Indeed, the Board, in its 1990 TQM Decision, said in particular that it "would like

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to look at the empirical aspects of the low variability associated with utility outcomes of which Dr. Waters spoke" -- and I have done that in the attachment for that very reason.

Q. Are you not a bit concerned with circularity, sir?

A. No. I am concerned with the circumstance that we are dealing with, which is one where the prospective risk premium that is achievable and the one in fact that is achieved are typically only a few basis points different.

There is no circularity there. I am looking at what is the result, in terms of the congruence between the prospective and the actual risk premium, in the context in which we are applying all of this analysis.

Q. Are you not in fact modifying, fully, the whole technique, which I thought was that you look at what has happened in the market as a whole -- and utilities are a part of the market -- to assess what the risk premium is, and then go on to do your adjustments for the situation of utilities.

What I hear you say is that you are doing that beforehand, and possibly twice.

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A. Oh, this double-dipping which I heard about in TransCanada, which is not double-dipping at all. It is making a decision about which is the appropriate mean value, given what your objective is as a regulator, and then, after you have established what is the appropriate mean value, based on the circumstances of the utilities being unique relative to those of other corporations generally in this regard, you make a decision about what fraction of that mean value you would like the utility to have. That is where the relative risk of the utility, per se, comes in.

Q. If we go to our earlier discussion, sir, are you not in fact saying that had you used the arithmetic average you stated earlier for both examples, it would be somewhere in the area of 5.0 to 5.7?

A. I believe so.

Q. I take it that by using the geometric as opposed to the arithmetic, you are in fact making an adjustment of 1.4 to 1.7 percentage points to account for the particular circumstances of utilities?

A. Absolutely. If I were using

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this type of analysis in the context of my own company, or that of corporations that are subject to normal levels of uncertainty -- if I can put it that way -- about what they can achieve, I would certainly use the arithmetic mean. But the circumstances are totally different that we are operating in here.

Q. Yet, you again adjust for the particular circumstances of utilities by giving them half the risk of the market as a whole?

A. That is right. The reason for that is that I am, first of all, making sure that I get a mean value for the market which, if used in this context, is going to give me a mean value for the investor's achieved wealth level over a period of time -- which is the intended level, whereas the arithmetic mean would give me the unintendedly higher level -- and then I would look at what fraction of that amount of wealth increment for the market I would like the utility to have.

And if the utility is half as risky as the market, then, over a cumulative period of time -- and we are assuming the regulatory is in place for an indefinite period of time -- I want

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to give the utility half the risk premium that is earned by investors on the market portfolio, and that is the geometric mean.

Q. Is this not a way of changing the risk premium technique?

A. It is a way of using the risk premium technique in a fashion consistent with the circumstances in which we are applying it.

Q. For the utilities only, and not the market as a whole?

A. No. We are trying to establish what is the fair rate of return for a utility, and we are using, among other things, in order to do that, the achieved return on the market portfolio. But we have to identify the appropriate achieved return measure.

Q. You are trying to establish a fair return for the utility on a prospective basis. Are you not?

A. Yes. And I want to make sure that, as this process is applied year after year after year, the investor who holds that utility security will get a cumulative addition to their wealth which is the fraction of the market portfolio addition that the regulator had in mind

when they started the process and continued it.

Q. Are you not already accounting for this, sir, in your measure of share price volatility and your measure of share price earnings volatility?

A. Yes. That is how I get the relative risk. But I am not accounting for how I determine what is the appropriate market term benchmark.

I do that in the context of: What, ultimately, do I want to provide by way of total increment in wealth to the investor?

I want to provide an increment which is consistent with the increment that the investor in a non-utility would get, and that will only be consistent if I use the geometric mean, given that there is so little variability in the achieved returns relative to the allowed. And then I want to establish a particular fraction of that, and that is where the relative risk comes in.

Q. I take it that you obviously do not agree that there is double-dipping?

A. I do not agree.

Q. Do you know of anyone else, sir, that uses your approach?

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A. No.

Q. Don't you feel lonely!

A. So did the first explorers to the Antarctic.

Q. Sir, I think you have agreed with me that the authors we have referred you to in the past do not use your approach, and they all suggest that it is always appropriate, when assessing prospective rate of return, to use arithmetic means?

A. That is right. And as I say, that is in the context of a general statement of what is an appropriate approach.

I do not have any trouble with that as a general statement. But I am not dealing in generalities. I am dealing in the specifics of utilities. And when you come to that situation and look at it carefully, then you say: For all practical purposes, the arithmetic mean value that you give will convert into a geometric mean of the same magnitude.

Q. If the returns are constant?

A. There is all of the data that I have shown in Appendix XIII, which confirms what I have just told you.

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I said it will approach; I did not say it would be identical. I acknowledge that there are a few basis points difference -- and I do mean "few". The indicators there are about 3 to 5 basis points.

Q. But nonetheless, you acknowledge that the authors that we have referred you to do not make that distinction?

A. I do not think that they were contemplating that there were circumstances of the sort that we are dealing with.

Q. I do not want to debate this too long, sir. I would just like, for the purpose of the record, to file these authors, to make sure that it is complete.

You have before you, sir, the documents that I provided to you, through your attorney, two or three days ago?

A. Yes, I do.

Q. I am referring, first, to the "Instructor's Manual to Accompany Brealey/Myers Principles of Corporate Finance."
Do you have that, sir?

A. Yes.

Q. I think you agreed last time,

sir, that all professors are reputable.

Do you still maintain that?

A. All professors are reputable. But they all make mistakes, too.

Q. Granted. But you still have the same views?

A. Yes.

Q. Is it not a fact, sir, if I go to Handout C which accompanies the Instructor's Manual, this volume, at the very last Conclusion I read -- and tell me if I am right -- "Always use arithmetic mean returns as benchmarks for the opportunity cost of capital".

A. As I say, that is for a textbook, which is dealing with the general circumstances. I do not think, if I were teaching the Introductory Course in Finance, that I would bother talking about this peculiar case of regulated utilities, where the returns are so close to the prospective returns.

MR. LECLERC: May we have an exhibit number for this, Mr. Chairman.

THE WITNESS: There is a limit to

what you can put in the book. But I do not think they have even considered it, frankly. And I

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would not expect it to be in the book, even if they had.

Q. But you have no indication that they have made an exception for utilities?

A. They have not done so here. That is clear.

THE CLERK: That will be Exhibit B-30.

--- EXHIBIT NO. B-30:
Excerpt from publication entitled: "Instructor's Manual to Accompany Brealey/Myers Principles of Corporate Finance", Fourth Edition.

MR. LECLERC:

Q. The second document I want to refer you to, sir, is put out by Messrs Hatch and White.

A. Yes.

Q. And it is entitled: "Canadian Stocks, Bonds, Bills and Inflation: 1950-1983".

I believe this is information that you used in your own Evidence. Is it not?

A. Yes. I use the updated version.

Q. The updated version.

A. That is fine. I will not

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disagree with the ---

Q. I take it, sir, that you use their information, but you disagree with their logic?

A. Once again, they are in the situation of looking at a general set of circumstances. I doubt if they had thought of the case that we are talking about here today.

There are many applications. And when you get into the applications, you find all sorts of peculiar exceptions.

Q. I draw your attention to page 44, sir, of the document that I have just given you, the middle of the last paragraph, where it states, and I quote:

> "For some purposes this arithmetic return is appropriate when asking the question, what is my best guess of next period's expected rate of return?"

A. Yes. They are talking here about a portfolio of securities. When you are doing that, it is reasonable to talk about the arithmetic mean as being the relevant point of departure.

You are talking about the volatility

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in general of the market when you are talking about decisions about components of a portfolio.

Once again, in the context in which this is written, it is a reasonable statement to make. All I am disagreeing with is the particular application that we are dealing with here.

Q. I thought that the market portfolio included the utilities?

A. It does. The comment that they are effectively making is: "In a general way, do this."

MR. LECLERC: I would like to file this.

THE CLERK: That will be Exhibit B-31.

--- EXHIBIT NO. B-31:
Excerpt from a publication entitled: "Canadian Stocks, Bonds, Bills and Inflation: 1950-1983" by Hatch and White.

MR. LECLERC:

Q. The last document that I would like to refer you to, sir, is "Stocks, Bonds, Bills and Inflation: Historical Returns (1926-1987)", by Messrs. Ibbotson and Sinquefield.

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A. Okay.

Q. Do you know them well, sir?

A. Yes.

Q. If you turn to page 86 of this
handout, sir, and the paragraph entitled
"Geometric Mean Versus Arithmetic Mean", I read:

"The arithmetic and geometric means
formed by equations (28) and (29),
respectively, are of course different.
Each has a specific meaning in the
interpretation of returns; and they
should not be confused with each
other."

Then a bit further down, on the same page, under
"Change in Wealth Over Time versus Performance in
One Period", I read:

"A simple example illustrates the
difference between geometric and
arithmetic means."

And then on the next page, the Conclusion, sir:

"The geometric mean is backward-
looking, measuring the change in wealth
over more than one period. On the
other hand, the arithmetic mean is a
better representation of typical

performance over single periods, and is
the correct rate for the cost of
capital estimation, forecasting, and
discounting."

A. Yes. Again, when you are
speaking in a general sense. But not in the case
of utilities with as assured rates of return as
those regulated by this Board.

MR. LECLERC: I would like to file
this document, sir.

THE CLERK: That will be Exhibit
No. B-32.

--- EXHIBIT NO. B-32:

Excerpt from a publication
entitled: "Stocks, Bonds, Bills, and
Inflation: Historical Returns
(1926-1987)", by Ibbotson and
Sinquefield.

MR. LECLERC:

Q. My last questions in this area,
sir: Do you recall the questions asked by
Mr. Yates of Dr. Morin concerning the example of
Case A and Case 2?

A. Yes.

Q. Do you agree that the case that

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was presented to Dr. Morin by Mr. Yates is essentially the repeat, or very close to the example that you give in your Appendix XIII?

A. It is quite similar.

Q. And that Case 1, sir, was a situation where a company had earned a constant return of 10 per cent during a period of three years?

A. Yes.

Q. Which had produced a total overall wealth of 1.31?

A. Yes.

Q. And that the geometric and arithmetic means for both of those was 10 per cent?

A. Yes.

Q. The same constant.

In Case 2 we see the situation where there were more highly volatile returns: minus 20 per cent the first year, plus 51.25 per cent the second year, and plus 10 per cent the third?

A. Yes.

Q. We have agreed that we were looking at returns on a prospective basis?

A. Yes.

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Q. If an investor were offered the choice between Case A and Case 2, and were told that you were going to get the exact same return of 10 per cent, do you believe that they would be indifferent between the two companies?

A. No, they would not. But the context in which that example was developed was, hopefully, to indicate that the Case 2, as you call it, could be thought of as the market portfolio. That was intended to mimic the volatility of the market portfolio.

I think the resulting rate of return was 13.75.

Q. Correct.

A. And Case 1 was the utility type of situation that we are talking about here today. And that was 10 per cent.

The point was simply to say that, for example, if you used the 13.75 per cent as your market rate of return -- or the market risk premium, just to make it simple here. If you were to take a number, like half of that, as being the appropriate risk premium for the utility, in which case you would allow, under the use of the arithmetic mean, a risk premium of 6.875 per cent,

if you were to allow that, you would not get a premium, over time, consistent with the half of 10 per cent that you wanted to give. The 6.875 per cent, although it is the arithmetic mean that is expected to degenerate into a lower geometric mean, would not, because the context in which you are applying it is one of virtual certainty.

So you would make the mistake of using a 6.875 per cent premium when you should have used a 5 per cent premium.

Q. Are you not making the assumption, sir, that Case A has virtually no risk?

A. Yes.

Q. How can that be a utility, sir?

A. It is no risk with respect to the mathematics of getting your rate of return prospectively year to year.

It is risky in the longer term. That is what we allow the risk premium for. But that is what the second adjustment is made for.

Q. But in going through your mathematical calculation, you have to assume that Case A has no risk at all.

Is that not what it reflects?

A. No. That is simply establishing that the volatility or variability, as you know it in the context in which you are making this recommendation, is virtually zero.

The risk adjustment that you make is in the context of adding something over the risk-free rate, which is what fraction of this market risk premium do you provide.

Q. Does your example not show that you will earn the same return over three years?

A. Yes. By convenience, it showed that. But you can see from the materials that are in Attachment B of Appendix XIII that even with a differing return from one year to the next -- you can look at Westcoast Energy from 1979 to 1990, and the arithmetic and the geometric means are virtually identical for the achieved rate of return.

So, even though you do not have the same rate of return being earned in each and every period, you still get almost exactly the same arithmetic and geometric means, due to the consistency of the return.

Q. But doesn't this Appendix XIII, Attachment B, only show that the utility is

allowed to earn up to what is allowed ---

A. Yes. Sometimes it earns more. But yes.

Q. -- and nothing more?

A. Well, 65 basis points was earned in 1988 over the allowed return, according to the Annual Report.

Q. I fail to see the relationship between the achieved versus the allowed return and the assessment of risk on a prospective basis.

For example, if a utility were to have in fact earned what it was granted from year to year, if I understand your example correctly, I would see no difference at the end of the table?

A. For all practical purposes, you would not. In order to get differences between the arithmetic and the geometric mean that are meaningful, you have to have variations of the orders of magnitude you see in the examples that are given in the textbook or the examples that you would get from a normal type of corporate stock.

Q. Are you not comparing the return in a given year versus what was allowed in that year?

A. Yes. That is to establish the

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difference.

Q. And from year to year, you are telling me that one must not expect to see changes in that return that is allowed?

A. Yes, you will see changes. What I am suggesting to you is that, in order to have meaningful differences between the arithmetic mean and the geometric mean, you have to have substantially greater variation in the achieved rates of return from some expected level or from some average level than you ever see for a utility.

In order to get meaningful differences -- I recall the example. I think it was in Brealey and Myers's work. In their example, to get a difference of 1.23 percentage points between the arithmetic mean and the geometric mean -- that is 10 per cent versus 8.77 per cent, on page 471 -- you had to have a plus 30, a plus 10 and and a minus 10 for the achieved rates of return.

We just do not get those variations in the utility world. We do not get any minuses, for all practical purposes. The achieved return for any utility regulated by this Board, to my

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knowledge, has never been negative, for reasons to do with the utility per se.

MR. LECLERC: May I have a moment, sir.

--- (A short pause/Courte pause)

Q. If that is true, sir, how is it that you come up with a beta of .5 for utilities?

Would we not have expected, in those circumstances, a beta of zero?

A. The beta for the utility stock is positive because the investor who is buying the stock has uncertainty about what the stock will be worth in any given period.

What we are dealing with here, however, is: Is there uncertainty with respect to what this company will earn?

We are not trying to mimic, in the context of what we allow, the circumstances of the utility investor, except to the extent that we provide them with the risk premium, which is .5.

What we are talking about here is the selection of which is the more appropriate mean value to use. And that is because what we are trying to accomplish is to provide a rate of return which will cumulatively provide an

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increment in wealth to the corporation, on behalf of the shareholder, which is of a particular level.

Q. I will leave it at that for the time being, sir. We are in disagreement in that regard.

Briefly in regard to the purchasing power premium adjustment, I believe you stated earlier that you were familiar with the Board's Decision in RH-1-92?

A. That is the Westcoast Decision.

Q. In August of this year?

A. Yes.

Q. And in that Decision, the Board chose not to consider this adjustment?

A. That is essentially correct.

Q. And the reason for having done so is that it did not expect the magnitude of such premium to be very large in the context of expected low inflation?

A. I think, with all due respect, that the Board got to the right answer though perhaps for the wrong reason.

The reason is, as I gave it earlier, that one should be looking at the incremental

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element rather than the actual purchasing power at any given point in time.

The reason given by the Board -- which was that inflation is currently low and, in general, it is expected to stay low -- I think is not a good reason, because the lower inflation is, probably there is only one direction which it can go, and that is up.

Investors can be just as nervous about the level of future inflation and the potential variation in the outcomes when inflation is low as when it is high. One has to look at the structural circumstances in the economy. While I am not predicting this is going to happen, we may very well see that a government -- and as you mentioned, we are going to have an election, federally, next year -- I suppose.

If the new government, whatever the party, decided that the only way to get out of the mess was to spend lots of money, then we would probably have inflation in a meaningful way.

Q. Is that your expectation for the future, sir?

A. No. I am saying that investors, though, may very well be nervous of that

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possibility, and even though inflation is very, very low today -- on the order 1.5 per cent -- they could be expecting, on average, 3 or 4, which I believe is generally what witnesses before this Board have suggested is the longer-term expectation at this point. But that is the average expectation, then there is the possibility of significantly larger values as well.

Q. Is it the expectation for the next two Test Years, sir?

A. Not at this time.

Q. Not at this time.

A. I am sorry. The expectation, on the part of investors, for the next couple of years is hard to detect. An easier one to detect is what they expect over the indefinitely long future, by looking at long-term interest rates and looking at index-linked securities, which do not have inflation risk associated with them. And those are suggesting, as Dr. Morin indicated yesterday, perhaps 4 per cent as the expectation for inflation and the purchasing power risk premium.

I say "and the purchasing power risk premium" because Dr. Morin used the value of 8.75

for nominally denominated bonds and 4.75 for the purchasing-power-risk-premium-bond's yield.

That 4.75, I would submit, is not a very good number. It is based on a security which trades very, very infrequently and is quite illiquid, and there is a very substantial illiquidity premium associated with it. Also, there are tax aspects. You have to pay the taxes whether you have received the money or not.

All of those things conspire against that 4.75 being a valid number.

What I have noticed, in looking at the U.K. market, is that the purchasing power indexed to bonds there have had their yields fall to about 3.3 per cent as of last week, from 4.5 per cent in early September.

So those investors are requiring substantially less by way of real rate of return, and that means that there is an another element -- the difference between, I would say, the 4.5 of September and the 3.3 of today -- which is purchasing power risk premium.

Q. I thought I asked you what was your forecast for the next two Test Years, or that assumed in your Evidence.

A. I am sorry. Excuse me. I thought you had asked me what were investors forecasting for 1993 and 1994.

Q. If that was the case, I am sorry. I had intended to ask you: What is the inflation forecast for 1993 and 1994 that you assume in your Evidence?

A. I believe I speak of a longer term than that. I suggested that for investors --

and hence myself, because I take my cue from them in this context -- the upper end of the range is in the order of 4 per cent. But I think the consensus is somewhere in the order of 2 3/4s.

Q. You agree, sir, that that cannot be characterized as a "high" inflation rate?

A. Given what we are used to, we would no longer characterize it as a "high" inflation rate.

Q. If we were to use the Board's reasoning -- with which you disagree -- would you agree with me that there would be no need to make the purchasing power adjustment?

A. If investors thought the risk of inflation being meaningfully different, in a positive sense, from say the consensus of 2 3/4s

or 3 per cent, then I would say that there is no need to make the adjustment.

If they are comfortable with this level and say that that is likely to be the level, then they will not require a risk premium, I would agree. But it seems most unlikely to me.

Q. Sir, is it not a fact that in the Westcoast Decision, the Board also ruled that it was unreasonable, for the purpose of determining the required rate of return, to assume that debt or equity investors necessarily achieve their expected returns?

I take that from page 43 of the Board's Decision.

A. Yes, I believe they did.

Q. Does it not follow from that, sir, that bond and stock investors are not to be treated any differently for the purpose of determining the required rate of return?

A. They are not to be treated differently, if that is the view that you hold. I do not hold that view.

I do believe that stock investors, over the longer term, do get compensated for whatever unexpected inflation there was.

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By definition, inflation is a measure of the prices that are charged for the commodities and services that are sold by corporations, as well as being sold by the public sector, if I can put it that way. In a well-functioning market for goods and services, over the longer term, companies should be able to, on average, recover their higher costs, whether it is due to expected or unexpected inflation, because half the time they will be unlucky and half the time they will be lucky with respect to whether their prices follow exactly, or not, the level of actual inflation.

Q. I gather you are disagreeing with the Board -- but yet you are not suggesting that they make an adjustment, other than qualitatively.

Is that not somewhat contradictory?

A. I did not think it was contradictory. I said that that is an argument for accepting the lower end of the range. I simply said that there is other information which is also available that acts in the opposite direction.

Q. But accepting the lower end of

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the range would mean, at maximum, giving it 25 per cent basis points, given that you are also giving recognition to higher returns in the U.S. market?

A. Whatever the order of magnitude might be -- you asked me if it was contradictory and I said "no", because it is, in effect, a recommendation to use the lower end of the range, all other things being equal.

Q. I am sorry if I implied "contradictory".

You are not giving any weight to it, but maintaining the principle?

A. I am giving some weight. I am saying that that is one of the reasons for accepting the lower end, rather than the higher end of the range. Without that, all other things being equal, I would recommend a higher range.

Q. At page 49 of your Evidence, sir, you state that, on average, achieved rates of return fell short of the prospective returns by an average of 0.9 per cent for the period 1937 to 1991 and 1.3 per cent for the period 1950 to 1991?

A. Yes.

Q. You are suggesting by this statement that bond holders had, on average,

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systematically achieved lower results than they had expected over the period from 1937 to 1991?

A. On average, they did, yes.

Q. Do you have the graph that I delivered to Mr. Yates last night?

A. I have that.

Q. The first graph that I would like to refer you to is a graph entitled "Differences Between Achieved & Expected Returns on Government Long Term Bonds, 1937-1991".

Do you have that, sir?

A. Yes, I do.

Q. Would you accept, sir, that all that we have done in this graph is take the information that you have provided to us in your Supplemental Response to TQM's Information Request Question No. 3(b)?

A. Yes, I understand that to be the case.

Q. Would you say, sir, that this graph systematically shows that bond holders have under-achieved over time?

A. No. Nor did I expect them to have under-achieved systematically. I concentrated on one particular period.

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Q. I take it that you accept that it shows, sir, that bond holders have sometimes achieved more and sometimes achieved less?

A. Yes. That is true.

Q. And under-achievements are the points that are shown below the line and the over-achievements are the points that are above the line?

A. Yes.

Q. To assume that over the long term bond holders have under-achieved, would we not have to see, sir, a cluster of points downward sloping?

Do you follow what I am saying?

A. Oh, yes. I thought I had identified that situation from 1972 through to 1982, with two notable exceptions. But eight out of ten, if I count them, I think are ---

Q. I thought, sir, that your 4.9 was based on data from 1937 and that the higher figure was based on more recent data?

A. Yes, I agree. But the whole analysis, the impetus for it was the circumstances of the 1950-to-1987 period, and in particular the period when the high levels of unanticipated

inflation occurred. I believe I state explicitely that this is the basis on which the conclusion to make an adjustment was made.

Q. I would like you to turn now, sir, to the second graph.

A. Yes.

MR. LECLERC: Mr. Chairman, the Clerk has pointed out that I had not asked for my first graph to be entered as an Exhibit.

May we have an exhibit number, please.

THE CLERK: Exhibit B-33.

--- EXHIBIT NO. B-33:
Graph headed: "Differences Between Achieved & Expected Returns on Government Long Term Bonds, 1937-1991".

MR. LECLERC: May we also have a number for the second graph, sir.

MR. YATES: May we wait until the witness has identified it before we mark it.

MR. LECLERC:

Q. Dr. Waters, do you have the second graph before you?

A. Yes, I do. I might just mention

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-- while you are looking for your next page -- that my comment about what period I thought was particularly affected by unanticipated inflation, and hence the one in which bond investors were most disappointed, is at page 45, in the long Answer.

Q. What you are suggesting, sir, is that the 1970s and early 1980s is the period wherein the inflation experienced was much higher than anticipated?

A. Yes, that is correct. And not only inflation, but also unanticipated inflation.

Q. Right. I take it, sir, that is why you are suggesting that the latter period has a higher number than the overall period?

A. Yes, I would agree.

Q. Sir, if bond investors had not anticipated this higher-than-normal inflation, if you wish, in the end of the 1970s and the early 1980s, would you not expect that they would have reacted to that for the future?

A. I think they probably did; that is to say, they adjusted their expectations about future inflation, probably more quickly the greater were the deviations of the actual from the

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expected inflation.

There is a learning process here, and I am sure that they finally got around to saying: "That there is a possibility of very high levels of inflation that no one can seem to predict, and let's hope we asked for enough.

Q. Do you know if that is in fact what has happened?

A. Well, certainly since 1982, inclusive of 1982, there appears to be very substantial excess of achieved over expected returns, which would suggest that interest rates were going down rather rapidly at that point.

The bonds which had been introduced earlier, and with high coupons, were now selling at significant premiums, which gave the rather high capital gain component in 1982 and subsequent.

What that suggested is that investors, even though they might still have been over-estimating the level of inflation, were finding, to their absolute delight, that as events unfolded subsequent to 1982, inflation was lower than everyone else had expected. And I think that is what has happened.

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Q. Basically, is that not what this graph is showing; that after 1991, would you accept that, on average, bond investors have made 3.4 per cent more than they had expected?

A. Yes, I will certainly accept that.

LE PRESIDENT: Monsieur Leclerc, est-ce qu'on pourrait faire le point a ce moment-ci pour determiner si on continue jusqu'a temps d'avoir termine, ou bien si on devrait faire une courte pause pour le lunch et revenir plus tard?

Pour environ combien de temps en avez-vous, encore, maitre Leclerc?

Me LECLERC: Je vous dirais, monsieur le President, que quant a moi j'en aurais peut-etre pour une vingtaine de minutes au plus.

LE PRESIDENT: Maitre Morel...?

Me MOREL: Pour ma part, monsieur le President, j'estimerais aussi une vingtaine de minutes.

LE PRESIDENT: Alors, il semble qu'on pourrait terminer a une heure qui serait quand meme raisonnable, comme une heure et demie au plus tard?

Me LECLERC: Ce serait ma preference, monsieur le President.

LE PRESIDENT: Parfait.

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MR. LECLERC:

Q. Sir, if bond holders have achieved more after 1980, is there still a reason to make the adjustment for the future? In other words, they have wisened up?

A. I was not making the adjustment for the future. I was adjusting the historical returns, to get a better estimate of the premium that was due to investors wanting, prospectively, an equity risk premium of a given amount, and I did not want to inadvertently include in that analysis a risk premium component, realized by investors in stocks, which they had not anticipated, which was simply because the long-term bond investors had got less than they were expecting.

Q. Did you not state in your Evidence, sir, that the reason for this was this unexpected inflation in the 1970s and early 1980s?

A. Yes.

Q. And had it not been for this unexpected inflation, I take it that you would agree that achieved returns would tend to be what they were expected to be?

A. They do now, perhaps. But that

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was not the point. I was really attempting to put the two historical datasets on a basis which enabled one to say that the incremental risk premium that equity investors were looking for was 'X'.

I did not want to inadvertently include any shortfall in the achieved rate of return by bond holders which had nothing to do with equity investments, which was due to them not getting what they expected.

Implicit in all this analysis using realized risk premiums is that that is an average indication of what investors think is an appropriate equity risk premium.

If they think it is 4, and over a particular period of time bond investors got substantially less than they were expecting, then you are looking at a differential calculation which includes two things: the equity risk premium per se and the disappointment of bond investors, due to a factor which I suggest is not applicable to stock investors.

Q. Do you agree, though, that over
time, the two tend to go together?

A. They probably will. And I will

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be perfectly happy to accept the data on their
face, without any even conceptual suggestion of an
adjustment when they are close.

Q. Is this not what your own
numbers suggest: that when you look at the 1950 to
1991 period, you get a difference of 1.3; when you
extend the period, you are down to .9?

A. I totally agree with you.

Q. Would you reach the same result
if you were to take a higher number of data to
make your means, if you wish; instead of taking
yearly results, had you taken monthly information,
would you still not have the end result that
achieved and expected, over time, are the same?

A. I do not think dividing the
70-odd years of data, or even 40-odd years of
data, into 12 times the number of observations
would change the overall result.

Q. But the longer period would,
though?

A. The longer period could. It
certainly does, if you go back and far enough
historically -- in which case, I would not make
the adjustment. If we ever got to zero, I would
say That is fine. Clearly bondholders have got

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what they expected, on average; therefore, on the
assumption that common equity stockholders got
what they expected, the difference between the two
achieved sets of returns will be a good estimate
of the equity risk premium.

Q. Would you refer to the third
graph that I have given to you, sir. Do you have
that? The third one is the one with the
regression lines, sir.

A. Yes.

Q. Will you accept that what we
have done, sir, is added to the former graph --

which is B-33 -- a regression line of the correlation between the differences over time?

A. Yes, you have.

Q. Would you agree, sir, that there is an upward slope to that line, sir?

A. Yes, there is.

Q. And that it tends to be close to the zero line?

A. Yes.

Q. And does that not mean that, over time, expected and achieved will be the same? Is not that what it shows?

A. If I accept that regression line

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literally, it would say, if I project it far enough, I am going to get long-term bond investors systematically achieving more than they anticipated.

We have the weight of those earlier periods -- which were not the ones of concern to me -- which pull the line down at the left-hand side, and we have the weight of the two in particular, and perhaps four, observations since 1984, which are pulling it up. Indeed, if that does include 1991 -- and I think it must, because it looks like it is about 12 ---

Q. Is does include 1991, sir.

A. It does include 1991. We have a fulcrum here around 1950, I suppose -- or 1975, more precisely -- which says that the prospective estimate of the relation between achieved and expected returns on Long Government Bonds is that the achieved will be systematically higher.

That is what the line says. But that is not a very meaningful conclusion to reach, I do not think.

Q. But does it not show, sir, that the variances between the ups and downs, notwithstanding the large variances -- for

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example, if you take the year 1981, where you have an overearning of 31 per cent -- that if you averaged them out, the regression lines, they tend to be close to the zero line?

To get to the zero line, you have to have values that are above and values that are below.

A. Yes.

Q. And isn't the latter part of the line, from 1980, simply showing that, for that period, on average, the returns were above what was expected, as we have seen in Exhibit B-34?

A. Well, it probably is. I just do not know. There is also weight, when you fit the straight line, to all of the points below the zero line in the early part of the period.

I imagine it is, but it is not shown conclusively by the regression line per se.

Q. Time will tell?

A. No. You can tell by doing the simple arithmetic mean of the points since 1982 and see whether or not they are above the line.

Q. Does this line not mean that the arithmetic mean is zero, from a statistical point of view, sir?

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A. Probably. I do not have any quarrel with that.

I was concerned with the extent of bias in the use of the numbers as they materialized for a particular purpose.

MR. LECLERC: Thank you, sir.

Can we have an exhibit number for that last graph, Mr. Chairman?

MR. YATES: Excuse me, Mr. Chairman. I do not think that we have an exhibit number for the second-last graph yet.

My concern, when I rose a few moments ago, was that we were proceeding to mark exhibits before any document had been identified. Perhaps I missed something on the way by, but I did not think that the second graph was identified on the way by.

I take it from the questions that were asked that what the second graph represents -- although there is no indication on it -- is a graphical representation of the numbers which appear on Schedule 2 of the Supplementary Response of CAPP and the APMC to TQM.

Perhaps Mr. Leclerc can confirm that for me.

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MR. LECLERC: I thought we had gone through that, sir; that when I asked Dr. Waters to review the first exhibit, that that basically is what he had acknowledged.

MR. YATES: We did that with the first exhibit. We are dealing with the second exhibit now.

MR. LECLERC:

Q. The second exhibit is the same, is it not, for identifying the period 1980 to 1991?

A. Yes, it is, I presume, the same set of data, just segregated for a much shorter period of time.

MR. LECLERC: Correct, sir.

MR. YATES: Mr. Chairman, that identification having taken place, I do not have any objection to the exhibit being marked.

With respect to the third graph, the discussion which Mr. Leclerc had with Dr. Waters did in fact identify the data, so I do not have any objection to that one as well.

I would suggest that we can now mark both the second graph and the third graph.

THE CLERK: Those will be Exhibits

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B-34 and B-35.

--- EXHIBIT NO. B-34:

Graph headed: "Differences Between Achieved & Expected Returns on Government Long Term Bonds, 1980-1991".

--- EXHIBIT NO. B-35:
Graph headed: "Differences Between Achieved & Expected Returns on Government Long Term Bonds, 1937-1991: Regression Line".

MR. LECLERC:
Q. Sir, would you turn to your Supplemental Response to our Information Request No. 3, on which all of these graphs have been based. I believe that was Exhibit C-1-6.

A. I have that.

Q. If you will turn to the last schedule of that, sir ---
A. Schedule 2?

Q. Correct.

Can you tell me how your numbers in the first column, entitled "Achieved Return", were calculated?

A. I believe I attempted to answer

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that for you in the original Response to your Information Request.

Q. Exhibit C-1-5?

A. Yes.

Q. Sir, you had referred in there to the literature of Hatch and White, I believe. But we could not figure out how that was calculated.

A. If you could just refer me to the particular pages from Hatch and White that I attached, since I seem to have mislaid, for the moment, my copy of Exhibit C-1-5.

Q. I will do that, sir. You have referred to pages 70, 71, 72, 73; and then it goes to pages 203 and 204.

I am assuming it is the same reference.

A. Yes.

Q. And then you add an Appendix C, "Report on Canadian Economic Statistics: 1924-1991".

A. As you see in the Hatch and White material that I appended to the Answer, or at least included in the Answer, starting at page 202, they have a calculation of long-term

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Government of Canada bond returns.

Is this the item that you are having trouble with?

Q. The achieved return?

A. Yes.

Q. Yes, that is the item that we are having trouble with, sir.

To make it simpler, sir: Is the figure in the left-hand column the return that one would have obtained if, in 1937, he had sold, after one year, the long-term bonds that he was holding?

Is that correct, conceptually?

A. That is my understanding of their methodology, yes.

Q. And you are comparing this, sir, with the second column.

Could you tell us what the numbers represented in that second column are, where you state the prospective return -- and you give your source as being, I believe, the Bank of Canada Review.

A. Yes. That is the return reported by the Bank of Canada on their bond series B14013. That is the yield that they report

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as prevailing on those bonds at the end of the year, which I then take as the yield that is prospectively required over the following 12 months by investors.

Q. 12 months only, and not to the remaining maturity of the bonds?

A. No -- because I am comparing what they were looking for over one year from holding this long-term bond, which is approximately measured by the yield on the bond for that year.

Q. I understand that. Because if you were not, you would be comparing short-term rates with long-term rates?

A. That is right, yes.

Q. Are you sure that this information, sir, appearing on the right-hand side column is in fact the yield that the Bank of Canada is reporting as to what they would expect for the one year only, and not the maturity?

A. No, it is the yield to maturity.

Q. To maturity?

A. Oh, sure.

Q. Then, are you not comparing in fact one-year returns with long-term returns?

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A. This is the closest estimate that I can get of what is the return that is expected by the investor over that one-year horizon.

Q. My concern with that, sir, is that that is the component of the yield one would get if they kept the bond to maturity?

A. Yes, that is the average yield over that full period of time.

Q. That is right. In that return, would not one expect to get the returns for all of the years up until maturity?

A. Going back to our earlier discussion, we have in fact the geometric mean that is expected over the entire term to maturity.

Q. That is not what I am getting at. I just want to make sure that the information you are comparing is apples and apples and not apples and oranges.

I am asking you: Is not the yield the yield that one would get to maturity of the bonds?

A. That is what you see in the Bank

of Bank Report.

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Q. That is what you see in the Bank of Canada Report?

A. Yes.

Q. So, it is not the yield that one would get if he had sold that bond, after holding it for one year?

A. No. That is the achieved return.

Q. So you are comparing achieved versus ---

A. -- versus the prospective long return, at the beginning of that year.

Q. At the beginning of that year. But you are, nonetheless, comparing the long-term return with a one-year return?

A. Certainly. I am talking about the circumstances of an investor in long-term bonds, and I am saying: "What did the investor expect to earn, on average, over the life of the bond?"

That is measured by the yield that you observe at any given point in time, and I approximate the expected return from that bond for one year as being equal to the yield to maturity that you observe, and then I calculate -- or more

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precisely, Hatch & White calculated -- the achieved return on that type of bond for a one-year period.

Q. Would you not expect the yield to be higher than the one-year bond? Is there not a "locked-in" premium there?

A. Than the one-year bond?

Q. In the yield.

A. Probably there is. I am using the yield on long-term bonds at the beginning of the year.

Q. So would you not expect that that return would be higher than the achieved for a given year ---

A. Not on a long-term bond. On a short-term bond, perhaps. But not on a long-term bond.

Q. Are these not precisely short-term bonds, the ones that you have in your first column?

A. Let me put it this way: they are not intended to be.

The prospective return is ostensibly measured, as I have described it, by the yield prevailing on long-term bonds, Series B14013, at

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the beginning of each year.

Q. Put it this way, sir: Do you not think that the market forces would force equality between the prices?

If I were to have a long-term bond and sell it at the end of a year, would not the market force equality of price with a one-year bond?

If not, is there not an opportunity for arbitrage?

A. Not in terms of realized return. Certainly there would be a marked difference, because the one-year bond matured at that point and you would have the yield that you anticipated and in fact received.

Q. But for the one year?

A. Yes.

Q. And you are comparing this to the yield that you are anticipating for the long term.

That is where we have the difficulty, sir.

A. I am trying to see to what extent the investor in long-term bonds had disappointment, if I can put it that way, in terms

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of how his bonds performed over that first year, and the way I do that is by looking at the achieved return, as measured by Hatch & White, for that type of long-term bond and see whether or not that is much different from the yield that the bond was selling at.

Q. Would you not compare it with the performance of the bond over the same period, as opposed to a longer period?

A. I am. I am comparing the yield at the beginning of the year to what was achieved over that full year, and implicit in that exercise is my assumption that the yield that was prevailing at the beginning of the year is the return that the investor expected to get over the course of the year.

MR. LECLERC: I will leave it at that, sir.

I am turning to my last area of questions, Mr. Chairman.

Q. I would like to talk to you about betas, Dr. Waters.

Do you recall our Question 4(a) of our Information Request, where we had asked you to confirm that you have consistently used raw or

unadjusted betas.

Do you recall that, sir?

A. Yes, I do recall the question.

Q. And do you also recall that your response was that you had consistently used beta values for portfolios?

A. Yes.

Q. So you are inferring from that, sir, that portfolios of betas do not have a tendency of regressing towards the mean?

A. Especially if they are selected, as I have selected the components of the portfolio, on the basis of measures of risk other than the beta value itself.

In other words, the process I have

gone through here is intended to establish the risk location of a particular security, on the basis of five measures of risk.

What I am trying to do, by using five measures of risk, is to make sure that I did not inadvertently characterize some security as low risk when in fact, because the data was measured with error, it was a high risk security.

Q. One of your measures is beta, is it not?

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A. It is one of the five.

Q. I understand. Is your answer to my question: Yes, that essentially you take the position that portfolios of beta do not have a tendency of regression towards the mean?

A. Only when they are selected on the basis of factors which provide you with information about their risk level which is independent of the beta values that they happen to have.

In other words, I feel very comfortable saying: I have really found low risk securities that do not regress towards the mean with respect to their beta values. They are there because they should be there.

Q. Is that basically what you explained in last year's Testimony -- and I believe it was Appendix X?

A. I believe so.

Q. And you have an excerpt of that in your Response. Is that correct, sir?

A. Yes. I see at page 2 of Appendix XII, which is attachment 2 to my Response to Question 4(b), I say:

"My approach to creating a group of

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lowest risk companies involves the use of five indicators of the company's riskiness, only one of which is the beta value. Consequently, my methodology minimizes the likelihood that a company will inadvertently be classified as a lowest risk company, should its beta value in a period happen to be extremely low due to the impact of abnormal observations in the statistical estimation process."

Q. Have you published an article in this area, sir?

A. No.

Q. Your approach?

A. No. But I do not need to publish an article to confirm that particular assessment. We know that there are securities that are truly low risk. They should not move directionally on average in future periods of time to different beta values, because they were correctly classified in the first place.

Q. But is not your approach, sir, different than what most people in the field do?

A. No. It is totally consistent

with what everyone knows in Finance: That if you classify securities accurately with respect to their risk level in the first place, half the time in the future their beta values will be a little bit higher and half the time in the future they will be a little bit lower.

There is essentially no drift if you have kept that security at the same risk level, and you have measured it in some other fashion.

Q. Do you recall a discussion you had with maitre Courtois last year concerning this element?

A. I reread it quickly, yes.

Q. Do you recall that he had submitted to you an article by Professor Blume?

A. Marshall Blume, yes.

Q. And would you agree, sir, that this article, at least in Professor Blume's point of view, demonstrates that even portfolio betas have a tendency to regressing towards the median line?

A. Sure, if the portfolios are not pre-selected on the basis that the securities are correctly classified by risk. Professor Blume talks in terms of your getting a beta value, in

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his example, of .85. If you have most of the securities truly with a correct beta value of .8 and there is 25 per cent of them that are at 1.0, they will be at .85 on average, which is a misrepresentation of their overall risk level, for the portfolio.

But if you constructed the portfolio carefully on the basis of other attributes, to make sure that they were at .8 or very close to it in the first place, then what you would expect to see in future periods is that perhaps the value for the portfolio might be .77, perhaps it might be .83, .81, .79; that in fact it would not move directionally towards 1.0 systematically.

Q. Do I take it, sir, that in your evidence the beta for utilities, in general, is half of that of the market?

A. No. The beta value that I found, I think, is .4 on average.

Q. .4, on average?

A. But I use several measures in order to come to a conclusion that .5, if it were the value adopted, would not be unreasonably low.

Q. Are you not in fact though, for all intents and purposes, using an adjusted beta

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for TQM when you state that TQM is at 60 per cent of the midpoint of the equity risk premium for the market as a whole?

A. No. I am not using an adjusted beta. I am giving a value which is equal to 60 per cent of the risk premium. And I did not do that on the basis of saying: That is consistent with an adjusted beta.

Q. But the end result is the same, is it not?

A. As it happens, the end result is as if I had done that.

Q. As an adjusted beta?

A. But, conceptually, I would not

do that with my sample in this context.

MR. LECLERC: Thank you, very much Dr. Waters.

Merci, monsieur le President.

LE PRESIDENT: Merci, monsieur Leclerc.

Monsieur Morel, s'il vous plait.

Me MOREL: Merci, monsieur le President.

EXAMINATION BY MR. MOREL:

Q. Good afternoon, Dr. Waters.

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Dr. Waters, on the first day of the Hearing, I discussed with Mr. Laforge the appropriateness of forecasted long-term Canada Bond yields used by TQM to estimate the rates for the proposed Series "E" and Series "F" bond issues, expected for late 1994.

A. I recall that discussion.

Q. The proposed rates are composed of a forecast of long-term Canadas, plus a corporate issuance spread of 145 and 130 basis points for Series "E" and Series "F" respectively.

Dr. Waters, could you please comment on the reasonableness of these spreads and on what factors come into play when you are trying to determine such spreads?

A. These spreads are higher than would apply to TransCanada, or to even Westcoast. I say "even Westcoast" because Westcoast, as a corporate issuer, is much riskier, I believe, than the utility component.

The spreads, I cannot say are unreasonable. It is fair to say that with the limited issuing capability of TQM -- that is to say, they come to the market very infrequently. They have typically gone to the private placement

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market, where they can make their case a little more easily, I think, to lenders about the nature of their business and what yield spread that should dictate.

But when you go to the private placement area, you may get a buyer of your bonds who says: This is what I have been waiting for for the longest time. I am so glad you have come. I will take the whole thing off your hands at a yield which is more attractive than what you could have done in the public market.

But, by and large, most investors who put private placements in their portfolios are cognizant of the illiquidity of those placements -- that is to say, the general public is not familiar with them; they are not traded actively -- and, effectively, look for an illiquidity premium; that is to say, "We cannot sell at any time we like; therefore, we require a higher yield on that bond."

I have a feeling that most recipients of private placements have no intention of trading them anyway. So the illiquidity premium that they can get is extra money. But nevertheless, they have given up an attribute which is typically

considered worth something in the marketplace; namely, the opportunity to sell easily into a market where the activity is high enough that the spreads between the "bid" and "ask" are relatively small.

So my ambivalence, as you can see, relates to the fact that the private placement market is not liquid; that typically investors require a premium for holding illiquid securities. And while perhaps they have no intention of ever liquifying the security, they nevertheless ask for that premium, and are typically able to get it.

That premium can vary rather significantly from one period to the next, depending on what portfolio composition the institutional investors have in mind.

If they want to be highly liquid because they are very concerned about the future course of long-term interest rates and they do not have liabilities that they want to match which are exactly of the same duration, then the premium will be larger; and conversely, when they have no concerns about whether or not their portfolio would have to be readjusted significantly unexpectedly in the future.

I am at a loss to tell you what premium I would expect for this illiquidity, other than to say that the literature suggests that it is typically on the order of 15 basis points. And if indeed it is, roughly speaking, then the Series "E" -- which is the longer-term issue, I do believe -- would have 130 basis points net of the liquidity premium, and the Series "F" would have 115 basis points net of the liquidity premium.

Both of those are on the high side -- but not dramatically so, frankly. If I were to shave it because I had an obligation to do so, I would not do it by more than 10 basis points.

But I do not have good information, quite frankly, that I can offer to you which would say that it should be shaved. It just looks like it might be a little high.

Q. Thank you very much.

Dr. Waters, you may also recall the conversation that I had with Mr. Laforge about the forecast of Canada Bonds for ten-year expected yields and five-year expected yields.

TQM used a 10-year-plus rate, although the proposed bonds would be 10.17 years

or 10 years and two months; and they used the five- to ten-year rate for the five-year bond.

I had suggested to Mr. Laforge that the 10-year-plus rate should not be used but rather the 5- to 10-year rate.

Do you have any views on this?

A. Yes. I recall that in the last case I supported just about everything that Mr. Laforge said. But here I will differ on one point.

It seems to me that the average term on long-term bonds is on the order of 17 years. The five- to ten-year comes closer to ten, than does this long-term bond group.

I just updated for you today the

values for the 10-year bond, which is actively traded in the market. That was in Table 14.

What we see is that for the 10 per cent Government of Canada bond due May 1, 2002 -- which is approximately a 10-year bond -- the yield is 8.13 per cent.

That is a little higher than a fresh bond being issued with that term to maturity, because the coupon is about 200 basis points higher than the prevailing yields. So, there are

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complications involved with respect to the capital gain at the end of the period.

Probably a 10-year Government of Canada bond would trade at a yield in the order of 8 per cent today, and one would add perhaps 10 basis points for the fact that a new issue, even of Government of Canada bonds, would have a slightly higher rate associated with it to clear the market. So you can speak of 8.1 for a 10-year bond as a base.

You can compare that to what we see for the 20-year bond, which is 8.49, with less of an adjustment due to the coupon differing from the current yield, the 9.75 of 2021, which is a 29-year bond, being about 8.6.

So you can see that if you were taking an average of the long-term bonds, you would get something perhaps 40 or 50 basis points higher than you would have for a 10-year bond today, as your benchmark.

MR. PRIDDLE: Dr. Waters, you have been reading off the original of that table. I think that the numbers that you gave us this morning are slightly different than, say, the 8.6 that you have just quoted for the very long-term

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bond. I remember that you gave us a corrected sheet.

THE WITNESS: I see that now, Mr. Priddle. I am sorry.

MR. MOREL: You gave us the October 16th, and there is a December 1st update.

THE WITNESS: I was reading that as

if it was yesterday's.

I was not reading it from the same table, either. It was from Table 14, but it was an earlier copy, which is why I am taking the time that I am.

You can see that the direction is the same -- that is to say, the yield curve is upward sloping -- and the 8.42 for the 10 per cent could be approximately 8.3 if the coupon were in the same order of magnitude as the yield; and then if we add our 10 basis points for marketability, we get to 8.4.

I think I said 8.0 originally.

And we can see that the 19-year bond is 8.66; and the 29-year bond, 8.76. So we are looking there, after making adjustments for the coupon difference on the 9.75 per cent of 2021, at probably 8.7 per cent on the longer end.

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So the 10-year end is preferable.

If all you have is a five-to-ten and a ten and over, then the five-to-ten comes closer to the 10-year bond.

MR. MOREL: Thank you.

Q. Dr. Waters, you may also recall my discussion with Mr. Laforge with respect to the cost rates associated with its forecast unfunded debt balances, and those cost rates, as proposed by TQM, are 6.5 per cent and 7.27 per cent for 1993 and 1994, respectively.

These rates would be adjusted in 1994 to the prime rate at the end of 1994.

During cross-examination, Mr. Laforge indicated that TQM thought that the refinancing of the unfunded debt in late 1994, at prime rate, would be refinanced at what he considered a competitive rate.

Do you have any views on that, Dr. Waters?

A. I am again the ambivalent economist, perhaps, on this.

When Mr. Laforge had first mentioned that the rate would go to prime, I thought: "Why on earth would any trust company want to charge a

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credit like TQM prime, when credits of TQM's character can typically borrow from banks at something less than prime?"

Then Mr. Laforge gave the reasons why Montreal Trust felt that it was going to have to charge the higher rate, and the one that sticks in my mind, that has some strength to it, is that the trust companies are now subject to reserve requirements with the Bank of Canada, I presume, and that means, all other things being equal, they are going to earn less on what is designated as reserves than they would have if they had gone out and either bought real estate or invested in mortgages.

I say they are going to earn less. That is prospectively. The real estate aspect, we do not need to talk about in terms of what has happened to trust companies.

That part attracted me to the idea that perhaps prime was appropriate. But I was not convinced totally because of the fact that it seems to me that the level of economic activity, especially in the building side, where trust companies typically invest, is going to be very, very flat for a long time, and I would have

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thought that the opportunity to have a significant investment in TQM, rather than shopping around trying to compete for scarce mortgages, would be attractive to Montreal Trust.

The climate for lending is one of, to my mind, total inactivity.

I will give you a personal anecdote -- and I hope that it does not take too long.

The Company that I am a 50 per cent owner of that is in the computer software business has a $3 million mortgage with the Canadian Imperial Bank of Commerce, and then we have another $1 1/2 worth of equipment and operating loans. So we have a grand total of $4 1/2 million of loans with the Canadian Imperial Bank of Commerce.

And very frankly, in the corporate world, I do not think that is very much.

Well, two weeks ago we had the Vice-President of the North York Region phone us and ask us if we would like to have a visit from him and one of the four Vice-Chairmen of the Bank.

We said "yes" -- because we thought that perhaps we could finally get our computer

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software into the bank's Investment Division. We have the other four big ones, and the one that we do business with, we do not.

So we welcomed this opportunity, and it turned out that Mr. Frank Logan was there just for a general we-want-to-get-to-know-you-better type of chat.

I thought: "Well, if he has got this much time to spend on us, there cannot be very much activity going on in the corporate lending area."

We like to think that we are a good credit, but I do not think that we are worth more than an hour of his time in our office, plus all the time it took him to get out to the far reaches of Mississauga from wherever it is that he is normally situated.

So, I am of the view that when push comes to shove in 1994, and TQM says, "Can't you do any better than that?", somebody else will say that they can do better than that -- unless lending conditions change rather dramatically over the next couple of years.

So, I think Mr. Laforge should have another conversation with the people at Montreal

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Trust and tell them that he understands that some people at least think that the lending opportunities for them are going to be abysmal in two years' time, and would he not like to reconsider.

Q. Thank you, Dr. Waters.

I would like to move on to the subject of the capital structure. In your Evidence you state that you have concluded that the business risk of TQM has not increased since the RH-2-90 hearing and that a deemed common equity ratio of 25 per cent continues to be consistent with those risks.

Dr. Waters, do you think that raising the equity component to 30 per cent would improve TQM's bond rating?

A. I have a great deal of difficulty answering questions about what bond raters would do. They so flummoxed me with their approach to TransAlta and Alberta Power over the last year and a half that I have a great deal of difficulty discerning what appear to be the criteria that they use.

To give you a "yes" or a "no" implies that I can infer something about the reasoning

process for the bond rating agencies. I am not able to do so.

I think they might, simply on the basis that there was change made and it increased interest coverages, and otherwise nothing else is happening. So yes.

But I am very lukewarm about saying that, because even still with a change of the sort that we are talking about, and with the rates of return that the Board has allowed relative to what has been requested, the interest coverages are not likely to enter the range that the rating agencies say are needed as a minimum for an A-level.

But we also know that the ranges, can I put it this way, violated -- in a rather meaningful way -- with respect to TransCanada PipeLines and its A-rating.

So I am once again ambivalent. I frankly do not think that Trans Quebec & Maritimes should be rated as a Triple-B, as it is. As far as I can tell from looking at the yields on its securities -- and, incidentally, these are not market yields; these are ones established by the Canadian Bond Rating Service every month -- it does not have yields that reflect a Triple-B

situation. It looks like it is already an A, from the perspective of the Canadian Bond Rating Service, which provides the bond valuations that I consult for this purpose.

Q. Thank you. With respect to TQM's business risks for 1993 and 1994, you are of the view that TQM's business risks have not changed since the 1990 hearing.

Dr. Waters, how sensitive are TQM's revenues to business cycle risks?

A. Totally incentive. TQM is paid by TransCanada. I am sure that the amounts transported will vary somewhat with the business cycle. We were looking at GMi's sales, and they were 182 Bcf for 1991, 189 Bcf for 1990, and 181 Bcf for 1989.

The amounts that are transported provide revenues for that particular service -- not directly to TQM, so to speak -- which are only a small fraction of TQM's total revenue requirements.

So (a) TQM is not dependent on these revenues per se, or the throughput to GMi for its own revenues; and (b), to the extent that someone is, then it is for only a very small proportion of

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the total.

If, for example, the amounts collected in regard to activity on the TQM system are in the order of 20 per cent of the total revenue requirement of TQM, then you can have a pretty big downturn in volumes for the industrial area, and perhaps commercial area, to some extent, and still not make much of a change in the orders of magnitude of the amounts that have to be effectively supplied by other users of the system to support TQM.

If we go down to 15 per cent, from 20 to 15 is a big drop, and it implies a drop of 25 per cent in the revenues paid for TQM's service; yet, it is only taking us from 80 to 85 per cent as to what has to be provided by others. But in any event, formally there is no effect.

Q. Would that be the same for the long term?

A. Yes. As long as TQM's tolls are collected from TransCanada by TQM, then that will apply.

My 25 basis points for the additional business risk of TQM is there to reflect the possibility of some doomsday scenario, however

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initiated. But I do not really expect it to occur.

Q. Dr. Waters, do you agree that a regulated utility with a lower interest coverage ratio may be as capable of covering interest charges as a non-regulated company which has a higher coverage ratio?

A. Yes. Perhaps even more capable, because of the fact that in the case of most utilities, certainly under the jurisdiction of this Board, where weather-sensitivity is not an issue, the revenues are essentially assured through the ratemaking process.

So what you lack in level, due to the fact that you have high leverage in the utility, you more than make up for in stability and certainty -- which is certainly prized by investors or lenders.

Q. Thank you. On page 24 of your Direct Evidence you state:

"... GMi continues to be viewed as a strong credit."

On what basis have you concluded that, Dr. Waters?

A. That was on the basis of the

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analysis of yields that was undertaken in one of the tables that I have attached.

Q. I believe it is Table 17.

A. Yes. What we are looking at here in Table 17 is the yield differences between particular corporate bonds and a Government of Canada issue which has approximately the same term to maturity.

I will acknowledge that the terms and conditions associated with each and every one of these bonds, in terms of indenture requirements and provisions, are not the same. So I am looking at them as a whole in arriving at a conclusion with respect to TQM. But you can see that the entry for GMi is currently showing a lower spread requirement than even Interprovincial Pipe Line. So GMi, at least on the basis of these data, which are from the Canadian Bond Rating Service, cannot be said to be on the edge of the abyss.

However, these data are quite approximate -- and I will readily acknowledge that -- because of the fact that they are not, in general, for publicly-traded bonds. They are the values that are presented by the Canadian Bond Rating Service. But they are the best data that

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we have.

So I am not surprised that there is an aberration or two from time to time in the values that we see.

Q. But you would conclude that in the short term -- let's say for the next two years -- there is really no significant risk that GMi's financial situation will deteriorate?

A. I do not think so, no.

Q. Dr. Waters, what, in your view, is the nature of the relationship between the business risks faced by GMi and TQM's business risks?

A. There is a very critical aspect with respect to TQM's revenue source, which is the payment of its tolls by TCPL.

As long as that contract is in force, and enforceable, the revenues of TQM are not at risk, whereas the revenues of GMi are at risk, to the extent that the rate structure that they put in place is not congruent with the set of deliveries that they ultimately make. But there is no relationship, as long as you have the TQM/TCPL contract.

There is this inferential or implicit

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risk, which relates to the idea that if GMi went down for the count, then you would not have any meaningful reason to have TQM around. And I guess there would be a significant reconsideration of what to do about that. But that is not in the foreseeable future. So I do not see that it is of any concern at this point.

Q. Thank you. I would like to discuss flotation costs at this time.

Dr. Morin, in presenting his evidence, indicated that he adds a flotation cost component in his ROE calculations to help compensate utilities for past bond issues.

A. I am not sure he did say that -- but go ahead.

He said that the process does permit recovery of the flotation costs associated with bonds; that is to say, whatever bond discount and expense was incurred on the issuance of the bonds, there is a provision for the recovery of that over the term to maturity of the bonds.

That is another line item somewhere in the revenue requirement.

Q. Yes. You are getting to where I was trying to get to.

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If I can draw your attention to page 278 of yesterday's transcript, starting at line 13, where Dr. Morin stated:

"This Board, and most Boards in North America, as a routine matter, compensates utilities for flotation costs associated with past -- past -- bond issues. It becomes part of the computation of the cost of debt."

A. Yes. That is for the discount from par at which the bonds are issued and whatever underwriting expenses are incurred.

It is a flotation cost in that sense, and it is recoverable from the time that the issue is made onward.

Q. But in determining the cost of funded debt, are those costs not also included?

A. I hope not. The Board went to the net-proceeds basis for costing debt, two or three years ago, and I became very knowledgeable of it for that particular hearing, and I promptly allowed the specifics to fade away.

It seemed to me that the process that

the Board was using in fact did permit of recovery of the appropriate cost, but not a

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double-recovery.

Q. Dr. Waters, when you are discussing the allowance, in your Evidence, for flotation costs, you point out that it applies to equity, and you justify it with respect to equity and the issuance of equity.

Given that TQM has no publicly-traded shares and no apparent plans to issue shares, do you feel that the allowance for flotation costs is still warranted?

A. The moneys were put in initially by NOVA and TCPL -- I presume to provide the equity -- and NOVA and TCPL had to raise that money in some fashion or another.

I do not know to what extent there was a concession to the market price when they issued securities in order to raise the money required for TQM. Indeed, for all I know, they did not raise any money in public markets at all, because retained earnings could have done the job as well.

So we have a difficulty, if you like, of tracing the original source of the funds, in terms of what costs were associated with those funds.

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We also have the further issue of: Was there any dilution involved for the shareholders of TransCanada and NOVA at the time any such issues were made.

So while we might have underwriting costs to concern ourselves with, we might not have any "market pressure costs" to concern ourselves with.

Recognizing all of that, and recognizing that the prospects, at this point in time anyway, for the foreseeable future for TQM with respect to raising equity are low or non-existent, then it strikes me that the flotation cost issue is moot.

Frankly, I do not hold to the idea that if you do not give it to them today, you have sent a signal that you are not going to give it to anyone whenever they need it.

They need ease of entry into financial markets.

The situation is so obvious at this point, from the minds of investors, that they accept flotation costs as an increment that is to the account of the shareholders, without any meaningful likelihood of there being a reduction

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in the value of the shareholders' investment if there were additional funds added.

I just do not think anybody expects TQM to raise any equity, and therefore there can be no dilution of the existing shareholders equity. As a result of that, I do not think capital markets and participants would get very excited if that were to be the case; that is to say, no allowance was made in their situation.

As I have structured my recommendation, it involves 50 basis points for all kinds of uncertainties, no matter where they materialize from, dilution being one.

To the extent that there are a few basis points in my usual, of late, 50 basis point "cushion" for dilution, it is not needed here. But it is there anyway.

Q. Thank you.

Dr. Waters, I gather that you are familiar with the Capital Asset Pricing Model, as well as the Empirical Capital Asset Pricing Model.

Can you comment on the usefulness of these models in determining an appropriate return for TQM?

A. Both of those models are more

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specific variations on the sort of General Equity Risk Premium Model.

The Capital Asset Pricing Model has as its contribution to our knowledge and understanding the fact that it specifies, in a very clear way, how to establish the appropriate amount of compensation per unit of risk. It has a very clear statement of how to measure the units of risk; namely, the degree to which the price of the common stock of the company varies systematically with the outcomes on the market portfolio. These are the risks that you cannot diversify away, as an investor.

The so-called "beta factor" is a measure of the degree of congruence between the outcomes on the individual security returns and those for the market portfolio as a whole.

If you establish the risk premium for the market as a whole, then, if you can establish the proportionality factor between the volatility of the security in question and the market as a whole, you can establish the fraction of the market risk premium that you should include in the return to the common equity shareholder.

The difficulty with all of this is

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that there is less than unanimity among practitioners and academicians as to whether or not "beta" is in fact the sole indicator and complete indicator of the risk of a particular security.

So while there is a systematic relationship that can be observed and can be estimated using historical data, we also have a body of literature which says: Well, maybe that is not the only part of the total risk story that you should try and absorb.

We have a very recent article, issued just a few months ago, by Professor Eugene Fama of the University of Chicago which is suggesting a great deal of doubt about the predictive capabilities of the beta factors that we describe at this measure of coherence or congruence between the outcomes on returns for security and the outcomes on the market as a whole, as the full statement of what the risk/return relationship would be.

More and more I think users of quantitative techniques and analyses of the sort that the Capital Asset Pricing Model fits into are using auxiliary pieces of information, in the same

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fashion that I used five measures of risk, to come to a conclusion about what is the relative risk of a security.

The Capital Asset Pricing Model gets us off in a very fine, formal sense. It is a very rigorous model and -- probably not the way that I have described it -- in its own way intuitive for many people, and is a good point of departure for any analysis that one undertakes. But I think it has to be severely qualified as to what you do with the results.

The Empirical Capital Asset Pricing Model is in the same category, because it depends upon the same basic risk/return relationship. It simply says that whatever it was that one did in order to estimate the systematic risk values of securities was not enough; that indeed, when you look at the relationship between outcomes for securities and their beta values, you do not find the one-to-one proportional relationship that you were expecting, and so you make some adjustments.

All of that says that you are adjusting again for something which was measured imprecisely in the first place, which in turn was not necessarily the construct that would have told

you the exact story about the relationship between risk and return anyway. It tells you something, but not everything.

Q. Thank you.

On pages 45 and 46 of your Direct Evidence you develop an argument which suggests that equity risk premiums in Canada have declined over the past two decades.

In your opinion, what is the relationship between interest rates and risk premiums?

Is it positive or negative; and has it ever changed?

A. Oh, I think it has changed. But I think it is in large part because of the purchasing power risk premium that we were speaking of earlier.

In the early 1980s, there were articles which had titles to them along the lines of "Is the equity risk premium negative?". The article is cited in one of my appendices.

This was at the time when we were having long-term interest rates for Government of Canada bonds in the order of 17 and 18 per cent, and regulators were providing -- in the case of

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TransCanada, in any event, this Board provided 16 per cent, and the market did not groan and say: "This is ridiculous and awful."

The price of the security maintained a value above book, after you made the appropriate adjustment for its other involvements.

What that suggested to me was that the equity risk premium per se -- what investors require in order to accept the additional risks associated with being a junior in the claim line -- was not necessarily different; that what was happening was that there was an additional risk associated with the so-called "risk free" bond that long-term bond investors were requiring, a return which was not paralleled by a similar requirement by investors in utilities such as TransCanada.

You knew that if you bought a long-term Government of Canada bond yielding 17 per cent in 1980 or 1982, that that was all that you were ever going to get. It sounds high by today's standards, but you could be very nervous about it then. But you also knew that if you got a 16 per cent return in 1982 for TransCanada and bond yields went up to 22, and cost rates

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generally went up, the Company would be back the next year and the Board would be able to adjust, and would adjust, the allowed rate of return accordingly.

So, the lock-in of a particular rate that required a premium on the part of long-term bond investors was not required by equity investors.

The point that I make here is that you saw very low so-called "equity risk premiums" at that time because we were poorly and badly measuring the equity risk premium. It was not just the differential between the then long-term bond yield and what investors required in order to invest in equity; it was the differential between the long-term bond yield, net of the premium which was required by bond investors for risks peculiar to them, and the equity required by equity investors.

I am suggesting that it is very hard to undertake this type of analysis if you do not properly control for the purchasing power risk premium.

Because no one has done that to my satisfaction -- and my satisfaction apparently has

not necessarily been to the Board's satisfaction even -- then I think that we are not in a position to talk about any empirical statement of the relationship between long-term bond yields and equity risk premium values. I think we are left with looking at the data as we see them and making some conclusions on the basis of those.

It is problematical as to whether there is any systematic relationship, or not.

I am not relying on one, incidentally; and neither is Dr. Morin in making his recommendation here. We measure the cost of equity independently of the level of bond yields, in the sense of undertaking the DCF analysis. Even though we both use the Equity Risk Premium test, we have an indicator of whether or not those implicit premiums are ridiculously high or low.

MR. MOREL: May I have a moment, please.

--- (A short pause/Courte pause)

Q. Dr. Waters, for your Appendix VI in Exhibit C-1-4, you used the 1926 to 1949 data from the Canadian Institute of Actuaries Study, and combined that with the 1950 to 1987 data from the Hatch & White Study, and then added the CIA

data for the period 1988 to 1991, to come up with your risk premium for the market.

Is that correct?

A. Yes, I did.

Q. Could you please explain why you have combined the studies in this particular manner?

A. The Hatch & White data for the period 1950 to 1987 utilize a database which is far broader than the database utilized for the Canadian Institute of Actuaries Study.

It is based on not just the stocks which were included in the various Toronto Stock Exchange indexes over the years, but also several hundred more securities which were listed either on the Toronto Stock Exchange or the Montreal Stock Exchange. So that you had a broader measure of the market portfolio using the Hatch & White data, and it seemed to me that it was helpful to use those data, to the extent possible.

The differences between the two sets of data, however, for the period 1950 to 1987, are not great, except for one year, which is 1950. The Hatch & White data for that period show a risk premium in the order of 27 per cent.

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Incidentally, I think there is a typo in Dr. Morin's study in that regard, in his schedule.

The Canadian Institute of Actuaries Study shows a rate in the order of 51 per cent as the achieved rate of return on the stock portfolio over the year 1950.

The various auxiliary data that I have examined subsequently, which includes the TSE Industrial Index, the TSE Gold Index, the TSE Metals and Mines Index of that period -- because there was no TSE 300 -- suggest that the Hatch & White data are preferable for that particular year.

But after you take the values out for that year, you have very little difference in the remaining ones.

So while conceptually it seems appropriate to use the Hatch & White on the basis of its broader coverage, in fact, after you make the adjustment for the error in the Canadian Institute of Actuaries Study, it does not matter much.

Q. Dr. Waters, in using the Hatch & White Study and the Canadian Institute of

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Actuaries Study, would it be inappropriate to use the historical return on the market and then subtract the current long-term Canada bond rates to determine a risk premium?

A. Yes, I think it would. If you were to do that, you are making the assumption that the achieved rates of return, over the entire period of time, for the common stock index was implicitly accompanied by a yield on long-term bonds which was approximately equal to the long-term bond rate that applies today.

While that might in fact be the case, I doubt very much that it is.

So, you would be utilizing a risk premium which reflected conditions that might not have pertained over the period that you got the historical data from.

Q. Dr. Waters, you recommend a range of 11.5 per cent to 11.75 per cent as a fair rate of return for TQM; however, you have not made any comments as to whether you would prefer or recommend the upper, the lower, or the middle of this range.

Could you please explain why you have not recommended any of those ---

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A. I did not have a basis for choosing either end. So implicitly, I am recommending the midpoint.

MR. MOREL: Thank you, Dr. Waters. That completes my examination.

EXAMINATION BY BOARD PANEL:

MR. PRIDDLE: Dr. Waters, I wonder if you could repeat your confession about your overestimation of risk premia in previous testimony.

You are on the record, as I understand it, that by using the arithmetic mean rather than the geometric mean, you now feel that, for example, in your 1990 Evidence in the TQM case you had overstated the required risk premium.

Is that correct?

THE WITNESS: Yes. I had perhaps

overstated, also, the deduction that I made from it for the purchasing power risk premium.

That is confession number 2.

MR. PRIDDLE: Thank you.

Dr. Waters, in C-1-9, which is the table on page 5 of C-1-4 of your Direct Evidence, with annotations to correct the interest rates to December 1, 1992, in responding to maitre Leclerc

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this morning I think I heard you saying that these changes do not lead you to change your recommendations, partly because your recommendations do not derive directly at all from current interest rates.

THE WITNESS: Certainly not from the short-term interest rates. They are driven by the long-term interest rates, yes.

MR. PRIDDLE: What would it have taken, Dr. Waters, in terms of a change in the interest rate which Government of Canada long-term issues presently command for you to have changed your recommendation?

There has been a change, you noted here, of 17 to 29 basis points. If there had been 100 basis points of change, would you have changed your recommendation?

THE WITNESS: I probably would have. It sounds like a set of circumstances which reflects a fundamental change in investors' expectations about something in the economy, and I would, I believe, certainly have reflected that order of magnitude.

The values that I introduced on Table 14 indicate that the average yield for 10-, 20-,

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and 30-year bonds that I utilize is 8.61 per cent, as of yesterday, and that falls within the range of 8.25 to 8.75 that I had utilized as my base, or 11 basis points above the midpoint.

That small deviation, if you like, from the midpoint, while still being within the range, would not lead me to make a change, particularly since in my fair rate of return recommendation I had included the 50 basis point "cushion", which, in turn, itself is based on an examination of just how volatile rates in the long-term markets are.

Mr. Priddle, it would depend as much on what the circumstances surrounding the change in rates was as the rate change itself.

To talk about a number which might be a harder one to deal with than 100 basis points, if the rate were 9 per cent today, which would be 25 basis points above my top value in the range, I think I would have made a change, if accompanying that 9 percentage points were indications that this was in response to a change in Canada's circumstances, vis-a-vis the rest of the world's, and in particular the United States, long-term bond yields.

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If it were just what seemed to be the happenstance of volatile markets, I probably would not have made that change.

So it would have been a function of what were the associated events.

MR. PRIDDLE: I think we have heard from you that the events that you see as being associated with the current upswing in rates do not represent a fundamental change in Canada's circumstances, vis-a-vis the U.S.A. or the rest of the world?

THE WITNESS: That is certainly my view. The volatility has largely been in the short-term end. I say "largely" because 30 basis points on the long-term end, which is one of the 29 that I show here, is not trivial, but the much larger changes -- 93, 77, and so on -- are in the short end.

I think those changes are going to dampen or become quiescent as the Canadian dollar shows strength at its present level of 78 cents, which I think it will.

MR. PRIDDLE: Dr. Waters, I think that you, like Dr. Morin, are not proposing any change in the recommended return on equity for

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1994 compared to 1993.

Is that correct?

THE WITNESS: I am certainly not recommending a change. I believe that the two-year test period, while it is twice as long as the one-year period, does not expose the Company to sufficiently higher risk that a higher return is required.

If something terribly untoward happens in markets, then you would probably observe an Application, and it would be handled that way.

Under the circumstances, as I perceive them, in economic and financial markets today, I think the rate is appropriate for both years.

MR. PRIDDLE: So you are not, therefore, persuaded by arguments about possibly higher inflation in 1994 and higher interest rates.

I think Mr. Laforge's tabulations suggested higher interest rates, and also maitre Leclerc's prompting about the possibility that both in the Province and Federally we will have a different government or administration.

THE WITNESS: I am governed by the data that I observe in financial markets. While the best data that we can observe on financial futures are U.S. data -- because the markets are far more active -- the Canadian futures markets do not indicate that investors are expecting long-term interest rates to be meaningfully higher 18 months from now than they are today.

MR. PRIDDLE: Dr. Waters, Dr. Morin made something of the greater integration of Canadian and United States capital markets. You find that at pages 320 and 321 of the transcript, and you may remember that.

I was asking him about what that meant for equity markets, and he commented that it opens up choices for investors and means that there is more competition for equity investment.

The implication, I guess, was that we have to be careful how we reward, in a public utility setting, Canadian equity investors in this much larger market.

Do you have any comments to make

about that?

THE WITNESS: I think that is so. The opening up of the markets means that the

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amount of funds that have to be invested in Canadian securities is relaxed somewhat. That is to say, the limitation on the fraction of pension fund portfolios that could be invested in foreign securities has been widened, in the sense of providing more investment. Up to 20 per cent I think will take effect next year.

But still, there are very, very substantial amounts of funds coming to the Canadian markets through, can I call it, the "forced saving" of the pension fund vehicle.

I do not think there is going to be a dramatic effect, because our RRSP and pension fund investments are taking up the bulk of the types of investments that Canadians now make in securities. So the amount that would flow across the border as a result of opening up the borders, and hence, further, if you like, ensuring that the markets are at one in terms of risk/reward mechanisms, is not that dramatically higher than it was throughout the last decade or so.

I think that is a point to consider. I think the best point to consider in all of this is what is the implication of making a particular award. How is it received by investors?

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That is our best test, if you like, as to whether or not we have the investors' required rate of return right when we are making our fair rate of return recommendation.

One indicator of that is: What has happened to the market price of the securities of utilities who have had their rates of return recently adjudicated? And when we look at those prices, we see that the companies who have been affected are still able to appear sufficiently attractive to investors to have a market price above 1.0.

BC Gas, which is one which was recently adjudicated, has a market price of about 115 per cent of its book value, and while book values, and hence market-to-book ratios, are not very interesting for industrial companies, they certainly are pertinent for utilities, given that it is the book value that is used in the economic establishment of the revenues that are required or allowed for the utility.

So while, yes, we have to be careful about whether or not the returns are in sync with what are available from foreign markets, we have a way of evaluating that. It is harder in the case

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of some utilities than others. Some are well diversified into non-utility activity, and that attenuates the clarity of the message that you get. But to the extent that they are relatively pure, then we have that benchmark to tell us whether or not we are onside.

MR. PRIDDLE: Thank you, Dr. Waters.

Dr. Waters, I had a discussion yesterday with Dr. Morin about whether the regulator should say what weight he or she has given to various approaches to, let's say, return on equity in making an award.

He took the view -- and it is at page 325 of the transcript -- that we should not. He said: "If I were a regulator, I would never divulge my recipes."

I wonder, as a well-known witness on rate of return, Dr. Waters, what you would like to see from regulators.

Would you like them to indicate what had most impressed them about the evidence that you put forward and what weighting they had given to various components of it?

Or would you rather that we just said: "Having regard to all of the evidence before

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us, we came up with such and such a number."

THE WITNESS: I am sorry, Mr. Fredette, but I will have to say that I prefer the full, true disclosure, if you like, of the process. So that your black box, I would like to see a little more of its guts.

THE CHAIRMAN: I do not have one.

THE WITNESS: You do not have one. That is too bad.

The reason is that I think you are going to get more useful responses in future cases if you indicate to the witnesses what it is that you found sensible and what seemed to be not plausible, to the extent that you feel strongly about them.

I do not want you to tell me about every nuance of my testimony and whether I score high or low.

But on the basic principles and weightings, I think that that is important to know. I do not think that locks you in or paints you into a corner in any way.

The circumstances under which you heard the evidence and the knowledge that your staff have, et cetera, et cetera, are such that

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you make a reasoned judgment and conclusion. And another day, circumstances will change.

I have no trouble telling you that I give, for all practical purposes, no weight to the DCF test today. I do not mind if you tell me the same thing, or something different.

We change because we have the view that capital market circumstances result in one test or another providing a better indicator at any given point in time, and I will change my mind as to what I think is the root or the methodology which is most fruitful to pursue and to look at in detail.

And I would like to know why you would disagree with me, on occasion, so that I could either reflect your view because I adopted it in future analyses, or tell you, on an occasion like this, that I did not agree we the reasons that were given for ignoring the purchasing power risk premium in the last Westcoast Decision.

I think it is helpful to have that dialogue.

MR. PRIDDLE: Dr. Waters, do you agree that, among Canadian utilities, TQM has probably the lowest deemed equity in its capital

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structure?

THE WITNESS: Yes. I believe 25 per cent is as low as there is for any. Foothills is formally 25, or nominally 25, but it is somewhat higher, typically, because of the process through which their rates are set.

MR. PRIDDLE: Should the presence of a very -- what some people call a "thin", in quotes -- a very "thin" equity equity proportion influence us in where we come out on return on equity? Should it shade us towards the upper end of ranges?

THE WITNESS: If I thought that anything turned on them having 25 per cent common equity rather than 30, say in the case of TransCanada, as it now has -- but which some parties hope will be lower soon -- if I thought anything turned on it, I would say "yes". But to my mind, TQM, in particular, is an "all or nothing" kind of situation. It is only going to go broke because it has been decided that, as a matter of economic policy, or reality, whatever it happens to be, it should not be used anymore.

So whether it is 25 per cent equity or 30 per cent equity, the bondholders have no

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additional comfort. They are gone either way.

So, I do not see that the shading is relevant in the case of TQM.

MR. PRIDDLE: Dr. Waters, you have a couple of times referred to the fact that TQM's revenues come from TransCanada. They are part of the provision for Transmission by Others, I believe, in TransCanada's total cost of service.

THE WITNESS: Yes.

MR. PRIDDLE: That obligation by TransCanada to make payments to TQM, where would it come, in terms of order of priority of payments, as against payments to bondholders?

THE WITNESS: By TCPL?

MR. PRIDDLE: That is correct.

THE WITNESS: If TCPL were to be in financial difficulty?

MR. PRIDDLE: Yes. Would the payment to TQM be made ahead of the payment to bondholders?

THE WITNESS: It is a payment to a supplier of services. It is like trade credit, I suppose. Frankly, I do not know -- because I am not a lawyer -- what is the relative order of trade creditors and bondholders.

I expect that there would be some meeting of the creditors and the bondholders to sort that out, frankly, rather than there being a formal ---

MR. PRIDDLE: Dr. Waters, that was really an unfair question on my part.

What I was trying to figure, in my own mind, was: Why does CBRS give TQM a lower bond rating -- Triple-B, I think it is -- compared to the Single-A for TransCanada?

THE WITNESS: I have no idea.

The logic in my mind -- and I have indicated that I have never been totally clear on what drives the bond rating decisions. But if TransCanada is a Single-A, then TQM has to be a Single-A, as far as I am concerned.

I also, incidentally, have never understood how you can have a rating for a subsidiary which is higher than the rating for a parent, which also happens in the bond rating world. It does not make any sense to me.

MR. PRIDDLE: Thank you. And, Dr. Waters, I did hear you say earlier, in response to other questions, that you found it a bit mystifying how the bond raters came up with

their evaluations.

Those are all of my questions. Thank you.

THE WITNESS: Thank you.

THE CHAIRMAN: If there are no other matters, we will adjourn until tomorrow morning 8:30, for Argument.

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|                  MR. YATES:     I should say,
|   Mr. Chairman, that I do not have any
|   re-examination for Dr. Waters; and while he was
|   being cross-examined, I reviewed the exhibits
|   filed this morning, and I do not have any
|   cross-examination in respect to those either.
|
|                  THE CHAIRMAN:  Thank you, Mr. Yates.
|
|                  THE WITNESS:   Am I excused,
|   Mr. Chairman?
|
|                  THE CHAIRMAN:  You are excused.
|   Thank you.
|   --- (The Witness Withdrew/Les temoin sont excuses)
|   --- Adjournment/Ajournment
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