

0001

1 NEW YORK CITY TEACHERS' RETIREMENT SYSTEM
INVESTMENT MEETING

2 Held on Thursday, February 4, 2016
at

3 55 Water Street
New York, New York

4

5

6 ATTENDEES:

7 JOHN ADLER, Chairperson, Trustee, Finance
SANDRA MARCH, Trustee, TRS
8 THOMAS BROWN, Trustee, TRS
CHARLOTTE BEYER, Trustee, Finance
9 DAVID KAZANSKY, Trustee
SUSANNAH VICKERS, Trustee, Comptroller's Office
10 MICHAEL SOHN, Trustee
ANTONIO RODRIGUEZ, Finance
11 PATRICIA REILLY, Executive Director, TRS
THADDEUS MCTIGUE, Deputy Executive Director, TRS
12 VALERIE BUDZIK, Legal Counsel, TRS
LIZ SANCHEZ, TRS
13 SUSAN STANG, TRS
SHERRY CHAN, Chief Actuary
14 MILES DRACOTT, Comptroller's Office
SCOTT EVANS, Comptroller's Office
15 ALEX DONE, Comptroller's Office
JOHN DORSA, Comptroller's Office
16 MELVYN AARONSON
ROBIN PELLISH, Rocaton
17 CHRIS LYON, Rocaton
DAVID MURAD, Rocaton
18 MICHAEL FULVIO, Rocaton
DAVID LEVINE, Groome Law Group
19 RENEE PEARCE, TRS

20

21

22

23

24

25

0002

1 P R O C E E D I N G S
2 (Time noted: 9:47 a.m.)
3

4 CHAIRPERSON ADLER: Good morning,
5 everyone. Welcome to the February 4, 2016
6 investment meeting of the Teachers' Retirement
7 System of the City of New York.

8 Patricia, will you call the roll?

9 MS. REILLY: John Adler?

10 CHAIRPERSON ADLER: Present.

11 MS. REILLY: Charlotte Beyer?

12 MS. BEYER: Present.

13 MS. REILLY: Thomas Brown?

14 MR. BROWN: Here.

15 MS. REILLY: David Kazansky?

16 MR. KAZANSKY: Here.

17 MS. REILLY: Sandra March?

18 MS. MARCH: Here.

19 MS. REILLY: Thomas Brown?

20 MR. BROWN: Here.

21 MS. REILLY: Raymond Orlando?

22 MR. SOHN: Michael Sohn, in for Ray

23 Orlando.

24 MS. REILLY: Susannah Vickers?

25 MS. VICKERS: Here.

0003

1 MS. REILLY: We do have a quorum.

2 CHAIRPERSON ADLER: Okay. We'll start
3 with the Passport public agenda. Let me turn it
4 over to Rocaton.

5 MS. PELLISH: Thank you.

6 I will start to set the stage for
7 discussions we will have about the Passport funds
8 and asset allocation, by reviewing events in the
9 capital markets in 2015. So you should have copy
10 of the 2015 annual market review, and it was also
11 sent out to you earlier in the week.

12 I'm going to go fairly quickly through
13 this and highlight what I think are the interesting
14 points. So please stop me if we skip over
15 something --

16 So if I can ask you to turn to page 2,
17 we've highlighted the themes, capital market
18 performance in 2015 on page 2. And I think that
19 everyone is well aware of these facts, I think it's
20 still useful to sort of look back at one point in
21 time over what was very volatile environment during
22 the past 12 months.

23 So flat or negative returns across
24 global capital markets, a search for safety, the
25 risk in many markets, the first U.S. rate hike in a

0004

1 decade. That's an impressive fact. The continued

2 decline in energy prices, and of course Chinese
3 equity market volatility were really the dominant
4 factors driving capital markets during the course
5 of the past year.

6 So if we look at page 3, we can see the
7 major market indices.

8 We can see that, as you know, most
9 markets were either flat or down for the year. The
10 standout were U.S. REITs at 2 1/2 percent
11 positive return for the year, as investors, a flat
12 yield.

13 Large cap U.S. equity was up slightly in
14 U.S. dollar-denominated emerging market debt, was
15 up slightly, and Core fixed income was essentially
16 flat.

17 But if you look toward the right of the
18 chart on page 3, you can see negative returns for
19 small cap U.S. equity high yield, emerging market
20 equity, and most notably commodities. So we'll go
21 into a little more detail on most of those markets.

22 I think it's worth going to page 4 for a
23 minute. One of the discussions we will have later
24 this morning is in regards to potential portfolio
25 mixes for the Teacher's pension fund. And one of

0005

1 the hallmarks that we consistently stressed in the
2 asset allocation process is the importance of
3 diversification.

4 But diversification doesn't always work,
5 and in 2015 you were better off in a U.S. stock
6 bond portfolio than you were in diversifying among
7 global capital markets and various sectors such as
8 high yield and emerging market debt.

9 So owning U.S. stocks and bonds was the
10 best bet in 2015. It didn't generate significant
11 returns, 65 and 35, the U.S. equity Core fixed
12 income portfolio got to about 130 basis points for
13 the calendar year. But if we added additional
14 asset classes, including non-U.S. developed equity
15 and high yield, we were up about half of that.

16 So it was difficult to generate
17 significant returns and in 2015 again, being
18 diversified out of U.S. stocks and bonds was not
19 beneficial.

20 If we look at page 5, we can see a
21 visual representation of where we are in the U.S.
22 economy, our interest rate cycle versus the rest of
23 the world.

24 So if you look at the last central bank
25 move in interest rates, you can see that among

0006

1 major markets the U.S. stands alone with a recent
2 hike. So the U.S. led the way out of the credit
3 crisis and hopefully will continue to do that, but

4 really is in a different part of the interest rate
5 cycle than the rest of the world.

6 And that policy divergence, as we know,
7 on the bottom of page 5, has in particular affected
8 the U.S. dollar significantly in 2014 and in 2015;
9 and had a significant impact on the experience of
10 U.S. based investors investing in securities
11 denominated in non-U.S. dollars. We'll see that
12 when we look at non U.S. equity and the fixed
13 income markets.

14 Page 6 highlights the effect of
15 anticipation of the Fed rate hike on U.S. interest
16 rates. So we note here that a modest but real rise
17 in both short and long term Treasury yields in
18 2015, the yields on two year Treasury notes were up
19 almost 40 basis points. And during the year they
20 were up 85 basis points from the 2013 low.

21 If you look at long term Treasury
22 yields, slightly higher over 2015, but still very
23 close to historically low levels. So the ten year
24 Treasury ended the year at 2.3 percent, and that is
25 up 10 basis points from year-end 2014.

0007

1 Lending money to the U.S. Treasury for
2 30 years will earn you 3 percent. So still at
3 historic lows, but up slightly over the calendar
4 year.

5 Both the low level of interest rates and
6 low level of inflation creates concerns about
7 deflation in many countries, a note on page 7, and
8 that's a significant economic risk for you to be
9 aware of. So it's primarily due to falling energy
10 prices.

11 So if we look at the rising U.S. EPI in
12 2015, it was slightly lower than the 80 basis
13 points rise in 2014 and the second smallest annual
14 increase in the last 50 years.

15 The U.S. CPI has averaged just about 2
16 percent over the last ten years. And elsewhere in
17 developing markets we saw similarly low levels of
18 inflation. So the risk that we're looking at today
19 is not too much an inflationary concern, but
20 deflation.

21 Let's look at page 8 and look at energy
22 prices. I know everyone is well aware of this, but
23 I think it's worth looking at the chart, the
24 dramatic decline in energy spot prices.

25 For the calendar year, if you look at

0008

1 one gauge, West Texas intermediate oil futures,
2 they declined by almost 40 percent during calendar
3 year 2015. And, of course, that has an effect as
4 we talked about, in virtually every aspect of the
5 capital markets.

6 The decline in energy prices certainly
7 affected, as I said, all capital markets; but in
8 particular high yield spreads. So many of these
9 companies were companies financing themselves
10 through the high yield market, and as prices fell
11 the viability of these companies was at risk.
12 Spreads associated with bonds issued by these
13 companies fell significantly.

14 If you look at the high yield energy
15 index, that fell almost 24 percent; and so the
16 broad high yield index declined by about 150 basis
17 points through calendar year 2015.

18 If you turn to page 10, you can see, we
19 mentioned before that the divergence in interest
20 rate cycles and economic cycles affected the
21 dollar, the continued rise of the dollar. Page 10
22 gives you some statistics about that.

23 If you look at a basket of emerging
24 market currencies, they declined 7 percent versus
25 the U.S. dollar in 2015; while a basket of

0009

1 developed market countries declined by about 6
2 percent versus the dollar during 2015.

3 And if you turn to page 11, you can see
4 a focus on emerging market asset classes. So local
5 currencies -- the red line on page 11 -- you can
6 see that emerging market equities denominated in
7 local currencies declined by over 5 percent during
8 2015.

9 But if you add on the currency decline
10 versus the U.S. dollar, or, said another way; if
11 you add on the effect of the U.S. dollar
12 appreciation versus virtually all currencies, you
13 can see that emerging market equities from a U.S.
14 dollar based investors' perspective declined by
15 almost 15 percent during the year.

16 So, a little more than half of that
17 decline is due to U.S. dollar appreciation.

18 Page 12 focuses on the effect of the
19 Chinese equity market on virtually all capital
20 markets. And sort of interesting to note that,
21 because during the first half of 2015 the Chinese
22 equity market rose about 60 percent, even after the
23 correction in the second half of the year, which
24 was about a 43 percent decline from June to late
25 August, the Shanghai composite index over the

0010

1 entire calendar year was actually up about 9
2 percent, surprising from the perspective of folks
3 who lived through the second half of the year.

4 But the key characteristic here is the
5 volatility that we experienced; which of course has
6 not had that effect in virtually every other
7 capital market.

8 Turning to the U.S. equity market for a
9 minute on page 13, there is notable dispersion
10 between U.S. growth stocks and U.S. value stocks.
11 So for the calendar, the Russell 1000 growth rose
12 about 6 percent; and the Russell 1000 value
13 actually lost almost 4 percent. So you have a
14 dispersion there of about 9 1/2 percentage points.
15 That's an unusually wide dispersion.

16 And this has been a persistent pattern.
17 If you look at the last 7 calendar years, large cap
18 U.S. growth stocks have outpaced value stocks. And
19 the driver behind the impressive performance of
20 U.S. growth stocks is often attributed to the names
21 you hear so often: FaceBook, Amazon, Netflix and
22 Google. And an equal weighted basket of those four
23 stocks was up 70 percent in 2015.

24 I would like ask you to flip a few pages
25 forward to the last page I'm going to provide

0011

1 comments on, which is page 16. This is a chart
2 that I think some of you have seen us present
3 before. And what this chart displays is the return
4 of different indices in calendar years. And we
5 assign different colors to different indices.

6 And the the point of this chart is to
7 show you the shares, the rotation of capital market
8 returns by asset class over time. So to contrast
9 with the previous slide in which I talked about the
10 fact that diversification outside of U.S. stocks
11 and bonds wasn't helpful in 2015.

12 This chart highlights the fact that
13 relying on just a few asset classes to generate
14 competitive returns is a difficult task, because
15 there is a significant rotation among asset classes
16 in terms of real performance. The capital markets
17 are cyclical, and the asset classes that are at the
18 top of the column -- emerging markets during 2006,
19 2007, 2009 and 2012 were at the bottom of the
20 stacks in 2008, 2011 and 2013.

21 And there is more detail here, but I
22 think that that probably is sufficient, at least
23 from my perspective, my prepared comments. If
24 there are any questions I'm happy to focus on
25 anything else.

0012

1 (No response.)

2 Thank you.

3 MR. FULVIO: We will move into the
4 December 2015 Passport fund performance report. I
5 will focus most of my comments on the calendar year
6 2015, but make some reference to the month of
7 December.

8 December for the U.S. markets was
9 another negative month to round out the year.

10 Unfortunately with that, it brought the U.S. equity
11 market return down to a positive level of around
12 half a percent for the year, after what was a
13 pretty strong half of the year. Again, as Robin
14 said, the second half was somewhat disappointing.

15 We saw further in the calendar year the
16 diversified equity fund lagged the broad U.S.
17 equity markets, the return of the fund was negative
18 60 basis points, with the Russell 3000 returning
19 positive half a percent.

20 Over the same time period the hybrid
21 benchmark, which represents the underlying
22 allocations of the fund invested passively,
23 returned positive 30 basis points. So what we saw
24 during 2015, particularly in the last nine months
25 of the year, was active manager results that

0013

1 unfortunately detracted from the relative returns
2 of this fund last year.

3 You can see that in the numbers below.
4 The passive composite, as we would expect, kept
5 pace with the markets. Unfortunately, the
6 defensive composite had a return of negative 80
7 basis points versus its proxy of a modestly
8 positive nature of 20 basis points.

9 The actively managed U.S. equity
10 composite underperformed by about 160 basis points.
11 And what I will note there is, as Robin said, we've
12 seen volatility in the equity markets in this
13 portfolio and others, we've seen volatility in the
14 results of active managers.

15 So I was actually looking back, and it
16 was only back in April or May that we were
17 presenting positive relative results for the
18 trailing 12 month period for the active manager
19 composite of positive 1.75 percent. And now we're
20 looking at negative 1.6 percent.

21 So the returns do move around for active
22 managers. What we have seen over the last ten
23 years is that they've sort of moved within a plus
24 or minus 2 percent range relative to the benchmark.
25 So the performance is somewhat cyclical, and

0014

1 unfortunately we're at a point at the end of 2015
2 where it has not helped for the trailing 12 months.

3 Just below that you can see the
4 international equity composite which, as a whole,
5 given also the general allocations to international
6 equities, international equities were down about 40
7 basis points and this composite was down about 70
8 basis points.

9 So, again, a modest detracting in terms
10 of the allocations to international equity, but
11 also on the active management side. And again,

12 what we saw last year within non U.S., a lot of it
13 could be attributed, as Robin said earlier, to the
14 currency impacts.

15 What I will make note of here, it's not
16 shown in the numbers, but towards the middle and
17 end of December you began transitioning the portion
18 of the international equity composite to emerging
19 markets. When we talk a little about the January
20 results you will see, even though January was a
21 challenging month for equity markets as a whole; on
22 a relative basis the emerging markets exposure was
23 better than just the plain developed market for
24 equity exposure, and we can show that.

25 Below that you can see the bond fund,
0015

1 assets were \$300 million. Last year that fund was
2 up about 85 basis points, even though December
3 itself was a negative month to the tune of 22 basis
4 points.

5 The international equity fund was about
6 \$100 million, down about 1.25 percent as mentioned
7 earlier, lagging the EAFE benchmark.

8 The international inflation protection
9 fund, which unfortunately, even though we had
10 modest deflation last year, as Robin mentioned, of
11 about 70 basis points, the fund itself did not
12 protect against the 70 basis points, negative
13 return of negative 7.3 percent.

14 And a lot of that performance was due to
15 the commodities exposure within that strategy. The
16 commodity market challenges had material impact on
17 that fund.

18 The socially responsive equity fund,
19 about \$115 million. The assets were flat last year
20 versus the S&P 500, which was up 4 percent.

21 That was the performance of the Passport
22 funds. Were there any questions on that?

23 (No response.)

24 I'll flip ahead then. I handed out --
25 unfortunately this is black and white, I didn't

0016

1 have color copies with me this morning. This is
2 the January benchmark report.

3 (Indicating.)

4 You can see at the top of the page the
5 Russell 3000 during January was down about 5.6
6 percent. Just below that your international
7 composite benchmark was down about 6.7 percent.
8 The defensive strategy benchmark did protect
9 somewhat, a return of negative 4 percent. And all
10 told, the diversified fund hybrid benchmark was
11 down about 5.5 percent.

12 That brought the fiscal year return for
13 the Russell 3, that's seven months beginning of the

14 fiscal year, to maybe 7 percent for the Russell 3
15 index.

16 What we did, you will see just below
17 that the bond fund. That fund was up about 90
18 basis points in January. And below that the
19 international equity fund.

20 What we did here was broke out the
21 passive components that are now part of that
22 strategy. So I noted the addition of emerging
23 markets strategies. You can see the custom
24 emerging markets index, that was down about 4.4
25 percent for the month. And above that the EAFE

0017
1 index was down about 7.2 percent. And between
2 those two, the S&P developed SUS, that's the small
3 cap developed benchmark, that was down about 7.3
4 percent.

5 So that composite as a whole we would
6 have expected to see a negative 5.5 return.

7 Just below that the inflation protection
8 fund underlying strategy was down 1 percent during
9 January. And just below that the socially
10 responsive equity fund underlying strategy was down
11 about 6.6 percent versus the S&P of 5 percent.

12 If there are no questions we can move on
13 to the asset allocation topic.

14 MS. PELLISH: So, we're going to present
15 a discussion of various portfolio mixes and
16 characteristics associated with those portfolio
17 mixes for the Board's consideration and discussion.
18 My colleague David Murad, who is part of our asset
19 allocation team, who also happens to be an actuary,
20 was very involved as part of the Rocaton team
21 collaborating with Scott and other folks at BAM, as
22 well as Sherry Chan, in putting together this
23 analysis.

24 So we're going to lead the discussion,
25 but I assume Scott may chime in and Sherry may also

0018
1 have comments.

2 MR. EVANS: I also want to make sure I
3 introduce our team. I brought our senior folks who
4 are involved in the asset allocation discussion.
5 You all know Alex Done, the group head of private
6 markets; and Miles Dracott, the chief risk officer.
7 But you've not met Mike Harrod, the group head of
8 public and tradeable securities, he's joined the
9 Bureau of Asset Management over the last few weeks.
10 We're thrilled to have him here with us, he's
11 already made a big contribution as we consider some
12 of the big investment issues.

13 MR. MURAD: I think everybody has an
14 asset allocation study in front of them. On page 2
15 we're introducing our objectives and what we've

16 done, new materials, and in addition to the things
17 that will be commented on by Sherry and Scott's
18 team, I'm sure there will be questions. So please
19 feel free to interrupt with them.

20 Basically what we've done here is looked
21 at a variety of different types of portfolios that
22 meet three different types of restraints. We also
23 looked at your current policy target. And then for
24 each of those portfolios we have looked at various
25 risk and reward type of characteristics.

0019

1 All of these portfolios were designed to
2 be efficient and make sense from a risk versus
3 return perspective. But they all also reflect the
4 restraints of the basket clause, which is in fact a
5 restraint.

6 We break out the choices into three
7 different types of categories, and you will see it
8 on the next page. We look at sort of a plain
9 vanilla portfolio I'll call it, which is no private
10 equity, no non-core assets. Then we look at a
11 second alternative which does allow what we're
12 calling non-core assets, pretty much anything else
13 except private equity, and the third tier is also
14 about private equity. So we'll see those
15 portfolios in a moment.

16 An important note about these
17 portfolios, I think we talked a little about this
18 last year now, is all of these alternatives we have
19 incorporated long bonds into them. We think long
20 bonds serve a very important purpose, they have a
21 very strong role in portfolios as diversifiers,
22 safety assets. And they're essentially, in the
23 same way that not long bonds are diversifiers and
24 quite a safety asset, they're the high octane
25 version of that. So you do have more interest rate

0020

1 sensitivity for long duration bonds, but that's
2 exactly the objective in some ways, to get a higher
3 octane form of that diversification from interest
4 rates.

5 It is important to note that we're not,
6 especially with long bonds for instance, suggesting
7 we would dump all the money into those allocations
8 that we're showing right away. These would be
9 implemented in a more step-wise fashion.

10 And a similar note, these are not
11 portfolios that we would believe to be permanent
12 longstanding portfolios. They could be, but we
13 would always encourage a continuous review of asset
14 allocations of 18 to 24 months, a standard time
15 frame, to look at any decisions that have been made
16 and reassess them.

17 So, the objective today is to discuss

18 these portfolios, better understand the Board's
19 risk tolerances, maybe hone in on a portfolio.
20 Why don't we turn to page 3 unless there
21 are questions on what we tried to do?
22 MR. EVANS: A point of emphasis. David
23 covered it; but Roca-ton is perhaps more thoughtful
24 and more analytical about the current state of the
25 markets and how they impact the asset allocation.
0021

1 And so they've given us something here that is very
2 sensitive to the overall condition of the markets.
3 And if we were to adopt a portfolio like this, we
4 would have to have -- David said it, but to
5 emphasize -- a more regular formal asset allocation
6 rebalancing, 18 months or so. Because the markets
7 are not in a normal state right now.

8 So it comes paired with it, a more
9 frequent look at it. But I will have to say that
10 they've been unusually thoughtful as I look across
11 all the consultants that have come back. I think
12 it's very powerful stuff.

13 MR. MURAD: As much as we try to account
14 for what the markets have done and therefore where
15 they are, we know on any given call we can be
16 absolutely wrong, which is kind of the point of the
17 portfolio building exercise, is to buffer against
18 the possibility that you're wrong about any one
19 line item allocation.

20 So again, we feel that these are well
21 diversified portfolios that give you exposure to a
22 variety of different sources of risk.

23 And to the point earlier about
24 diversification doesn't always win, sometimes the
25 undiversified portfolio wins; that's another risk.

0022
1 But we think over a long period of time, to avoid
2 year to year fluctuations in returns, these
3 portfolios are going to do the job within the risks
4 levels we're showing here.

5 I will dive into page 3. On the far
6 left is the current policy target. And then we
7 have these three alternatives to discuss. I can go
8 through them one by one, but before I do that, I
9 want to point out at the bottom we're looking at
10 returns and standard deviations of returns as a
11 measurement of risk. So it's basically expected
12 returns versus expected risks. But later in the
13 materials we try to suss out further what risk
14 might actually translate to. Because return is
15 really a means to an end, it's to fund the pension
16 plan. And so we want to know what is the risk that
17 contributions might fluctuate further from what we
18 thought would be as a baseline.

19 And so, all of these portfolios were

20 designed with that baseline in mind. The baseline
21 basically says we think we can get 7 percent return
22 compounded over a long period of time. So all of
23 these portfolios you'll notice over the ten year
24 period have a roughly 7 percent expected compound
25 return, and we try to build a portfolio that

0023

1 achieves that with the lowest possible risk under
2 each of the types shown here --

3 MS. PELLISH: Is that clear, when David
4 is looking at the next ten years' row, and looking
5 at the compound return, because that's what you
6 actually experience. And the exercise here was to
7 see if, within the restraints, we could lower risk.
8 We didn't think we could raise expected returns
9 significantly, but we thought there might be ways
10 in which we could lower the volatility of that
11 return over the next decade.

12 MR. MURAD: So the alternative, we're
13 calling this the low cost alternative, lower fees,
14 essentially. This is allocating to mostly what I
15 call plain vanilla asset classes, and it does
16 achieve the 7 percent compound return with slightly
17 lower risk than the current policy target.

18 A lot of what's going on there is a
19 function of really a couple of major things. One
20 is the long bond allocation that I talked about a
21 little bit earlier. Current policy has this 18
22 percent allocation to Core+5, which I think has
23 actually been a strong, important part of the
24 portfolio, and is actually a plus 5 to get a little
25 more duration already than sort of a market based

0024

1 benchmark would have. We're just extending that
2 further and saying we will really go for a long
3 duration, particularly Treasuries also, and
4 corporate bonds as well.

5 So the diversification of those offered
6 in a sense allows us to allocate to riskier assets
7 on a standalone basis; so assets that come with a
8 lot of line item risk. You will notice emerging
9 markets equity being a key example, but also
10 non-U.S. developed equities, those are both going
11 up while the U.S. equity allocation is staying
12 pretty much the same.

13 We're also adding bank loans, a new
14 asset class. Again, the structural nature of them
15 is different and we think interesting and addresses
16 different risks that some of these other asset
17 classes don't.

18 In particular, bank loans have a
19 floating interest rate component. And so certainly
20 a risk of long bonds is that rates rise and nothing
21 else happens, bank loans are going to, all else

22 being equal, offer some protection of rising
23 interest rates on the short end.

24 Maybe I will stop and ask if there are
25 any questions about that alternative. We think

0025

1 this is a baseline alternative compared to the
2 other two portfolios.

3 MR. EVANS: I would note, this low cost
4 alternative is different than the one we showed you
5 last time. Remember, we showed you basically a
6 bargain basement, 2 basis points, only indexed
7 asset classes. Here, this is a real low cost
8 alternative with all the asset classes we would do,
9 except we ban assets with carried interest.
10 There's five high cost ones.

11 So you could manufacture an allocation
12 like this rather than 2 basis points, you could
13 certainly do it for 30. And with a fair amount of
14 indexing public equities and that sort of thing,
15 you could bring it down from there.

16 But we wanted, because of the
17 discussions we've had over all these times, we
18 wanted to show you a real allocation that says
19 look, we'll ban all carried interest asset classes,
20 what can you do, what sort of characteristics can
21 you build for 30 basis points?

22 The other two you will see are going to
23 cost us about double, if you consider the carried
24 interest impact and so forth. It's only 10 percent
25 of the portfolio that we've been putting it, but

0026

1 it's ten times the fees.

2 So think of this as low cost, about 30
3 basis points or \$175 million to you guys, the next
4 on is in the 330, 350 range. David will tell you
5 about the characteristics of the other two.

6 MS. BEYER: A question first. What you
7 just said, Scott, I want to make sure I'm
8 understanding. The low cost alternative expected
9 returns are net of fees?

10 MR. EVANS: Correct.

11 MS. BEYER: What about the current
12 policy target?

13 MS. PELLISH: What we incorporate in
14 these projections is, think of it as index returns.
15 Everything is net, no active management, alpha, no
16 fees.

17 MR. EVANS: Some of the asset classes,
18 high yield and bank loans, we would not recommend,
19 and I'm sure Roca-ton would not recommend you do
20 passive investing there.

21 MS. BEYER: Those are net of fees too?

22 MS. PELLISH: Yes; beta return.

23 MS. BEYER: Okay.

24 MR. EVANS: I was just telling you what
25 the fees were.

0027

1 MS. MARCH: Carried interest is one
2 issue. There is another issue. The other issue is
3 the hidden fees. And if someone could convince me
4 that we would have no hidden fees -- it's bad
5 enough the fees are so high. But if high fees are
6 going to produce a result that's going to be
7 beneficial to the fund, well then, you do what you
8 have you to do, because the object is to fund the
9 pension system.

10 But what guarantees do we have that
11 we're no longer going to be in the newspaper?
12 Because there are going to be people managing our
13 funds who are hiding what they are skimming off the
14 bottom, the middle or the top, whichever part of
15 the portfolio they are doing it from.

16 MR. EVANS: Sandy, we completely agree
17 with you and share your distaste of hidden fees.
18 We've aggressively set down the law with our folks.
19 We have required extensive disclosure, we're not
20 giving anybody money who's not giving extensive
21 disclosure both going forward and going backward.
22 We're doing everything we can.

23 As you know, the SEC is already
24 aggressive on this. We've actually talked with the
25 SEC. They were interested in some of the stuff

0028

1 we've publicized, some of the actions we've taken.

2 And I would expect there'll be more
3 managers in the newspaper over the coming months;
4 but we will do everything we can to make sure the
5 people we're dealing with have disclosed everything
6 to us, and that we can account for it and we can
7 rack it up and show you the returns before fees and
8 then after fees, and what portion of the captured
9 return is going to the manager and what portion is
10 going to Teachers.

11 That's fundamental to the way we do
12 business. But there will continue to be newspaper
13 reports, because the industry has not been brought
14 to heel in terms of this issue.

15 MS. MARCH: I want to make it clear that
16 I know that BAM is doing what it has to do.

17 MR. EVANS: Thank you; appreciate that.

18 MS. MARCH: No question about that.
19 What I'm saying to you, I don't trust the people
20 who are investing our money, because you can have
21 all the bells and whistles, and I know you do and I
22 understand that.

23 But when a mother wants to teach a child
24 a lesson, you don't teach them a lesson necessarily
25 by telling them, this is the rules. You do action.

0029

1 If you try to get your child to not eat a piece of
2 chocolate, you eliminate the chocolate from your
3 house and your life.

4 And what I'm saying is, I don't really
5 trust that the managers who are causing us to be in
6 the newspaper, it is not due to the lack of our
7 efforts or our investment advisors' efforts; it is
8 due to the environment that we're all living in.

9 And so what I'm saying is, I truly as an
10 individual do not believe there is going to be a
11 change until all of the individuals who have the
12 assets to invest in these asset classes act like a
13 very good mother, and just stop giving them their
14 candy.

15 MR. EVANS: I hear you,

16 MR. MURAD: So, alternative 2; we're
17 adding, again, every other asset class except
18 private equity. So, that includes things, we're
19 adding back in some opportunistic fixed income in
20 the current policy target. We're also adding in
21 private real estate.

22 One notable thing there is the
23 allocation to opportunistic private real estate. I
24 think it's worth pointing out that we do like
25 opportunistic real estate, especially relative to

0030

1 core real estate. Some of what goes on with this
2 asset allocation, we're reaching for as much risk
3 reduction as we can in terms of the returns we're
4 trying to seek; but again, also in the context of
5 the basket clause. And the basket clause, or one
6 of the basket clauses, if I'm saying that right,
7 relates to private real estate. You don't actually
8 go into the basket clause over a 10 percent
9 allocation.

10 And so, frankly, it might appear a
11 little unusual to have that 8 percent opportunistic
12 allocation in lieu of some other asset allocations
13 we also feel are diversifying. But I wanted to
14 point out, we do like the asset class, one.

15 But two, it's sort of a freebie a
16 little, compared to some of the other equally
17 appealing new asset classes.

18 MS. VICKERS: Can I ask about real
19 estate quickly? If there was enough available for
20 the allocation --

21 MS. PELLISH: I do think that all of
22 these are best thinking from the perspective of
23 risk and return. I certainly think that, first of
24 all, this would be become a part of a pacing plan
25 that's implemented over many years, and I think

0031

1 that's a very appropriate question to ask the asset

2 class specialist.

3 MR. EVANS: We've already begun to think
4 about this, because all of the consultants are
5 recommending an increase in our real estate
6 exposures. This is a particularly aggressive one,
7 it was called an efficient use of the basket clause
8 restraints.

9 But there is a real question whether
10 funds of our size could actually allocate
11 effectively an 8 percent opportunistic real estate.
12 We're looking at that. As we get further into
13 discussions we will come back to you on the
14 viability of some of that.

15 MR. MURAD: One key comment worth making
16 is, we're trying to outline in pretty acute detail
17 these asset classes. But the reality is, at the
18 end of the day, there's always going to be a
19 qualitative overlay. Is there an opportunity that
20 we can pursue that does get the same kinds of
21 exposure as whatever line item is named? And if
22 so, then let's not eliminate that as an opportunity
23 --

24 So, I think a key thing that you will
25 note jumping from alternative 1 to alternative 2,

0032

1 other than the allocations themselves, is the
2 reduction in risk being shown as standard deviation
3 on this particular page. So where we had an
4 11.3-ish percent for standard deviation of risk,
5 looking at the ten year numbers, that's gone down
6 significantly to 8.4 percent.

7 So that's really a function of the
8 diversification we're able to achieve by having a
9 greater opportunity set and utilizing it.

10 Any questions on alternative 2?

11 MS. BEYER: The opportunistic real
12 estate, you said you were realistic, you couldn't
13 make that big a change and we might be too big a
14 fund and all of that. But I didn't really hear the
15 conclusion. You still feel you can do the 8
16 percent?

17 MR. EVANS: We're analyzing that.

18 MS. BEYER: It's uncertain?

19 MR. EVANS: As you can appreciate,
20 Charlotte, this is a multi-dimensional exercise,
21 we've got five different boards and we have to look
22 at what the appetite is across the boards to get
23 the real estate group and their consultants
24 starting to think about allocation in this
25 portfolio. As Robin and David mentioned, that

0033

1 would happen over a period of years, but the pacing
2 would ramp up and we have to look at the viability.

3 What we're hoping to do today is get

4 feedback from you on overall risk preference.

5 We've laid out for you several options that have
6 different levels of risk.

7 If, for instance, we find out that
8 opportunistic real estate's capacity is not
9 sufficient for an 8 percent allocation, we will go
10 back and create a similar portfolio with slightly
11 different weights and different asset classes.

12 I think, David, we will be able to
13 produce something in the same neighborhood, even if
14 we're only able to stick with a 5 percent
15 allocation --

16 You'd see opportunistic real estate,
17 you'd see more OFI, more international equity.

18 MS. MARCH: Does opportunistic real
19 estate give us the opportunity to be involved with
20 real estate managers who are going to be involved
21 with building housing that the average person can
22 live in?

23 MR. EVANS: As you know, Sandy, we're
24 very proud of our work force housing relationships
25 with Brian. We do a fair amount of lending in the

0034

1 affordable housing area. Brian Cook does, through
2 his ETI program.

3 We have funds like Avenant that you
4 recently contributed to that specialize in
5 rehabilitating affordable housing and managing it
6 long term for affordable housing residents; not as
7 an opportunistic play, throw people out of their
8 homes and turn over the units to the free markets.

9 So we will constantly be on the lookout
10 for managers like Avenant and others to continue to
11 build the portfolio when we can do so at
12 appropriate rates.

13 MS. MARCH: It's not only
14 rehabilitating. It's taking the managers and
15 having them understand that in the world there are
16 all different people who have different economic
17 abilities. And it's good that we have one manager
18 who does this.

19 Isn't there a way to call a summit with
20 all our real estate managers and just talk to them
21 about their being willing to go into the world and
22 make an 8 percent profit instead of a 30 per
23 profit?

24 MR. EVANS: We are actively working on
25 that. As you know, it's more than just Avenant.

0035

1 MS. MARCH: I'm actively working on it
2 for 30 years here. I'm a little above zero.

3 MR. EVANS: I hear you.

4 MR. KAZANSKY: Speaking of zero --
5 (Laughter.)

6 -- I'm looking at infrastructure. I can
7 say without a bit of hyperbole, we've been pushing
8 for more infrastructure investment across more -- I
9 don't see -- sometimes the work we do in investing
10 with managers that we invest with, conduct
11 infrastructure business as part of other asset
12 classes.

13 So I guess my question is, where is it
14 happening, and if infrastructure is just going to
15 be listed and have zeros across the board, then why
16 even have it listed at all? Unless we're going to
17 make a commitment to define it as something we
18 truly want to focus on investing?

19 MR. MURAD: One comment -- zero across
20 the board, actually goes back to a comment I made
21 earlier. If we can be as generic as we could and
22 spare a lot of the details, you'd probably have a
23 line item that said something like "private real
24 assets," that included opportunistic real estate as
25 well as infrastructure.

0036

1 We do think that, again, given the
2 commentary about the 8 percent opportunistic real
3 estate allocation, that's absolutely over time, and
4 even now can include infrastructure --

5 MR. KAZANSKY: I'd find it more
6 comforting if there was at least some other numeral
7 than zero.

8 MS. PELLISH: Put it another way. I
9 think what we don't have, it's very hard to develop
10 assumptions for infrastructure, because there have
11 been so few realizations from your investments.

12 MS. MARCH: It would make America great
13 again.

14 MS. PELLISH: We're supportive of
15 infrastructure investing; we just don't think we
16 can assign specific numbers.

17 I think what we should do is maybe say
18 "private opportunistic/infrastructure," because we
19 kept it in there to recognize that we know it's
20 important to the Board, we think it should continue
21 to be part of the opportunity set. But we find it
22 very difficult to assign a specific risk return
23 expectation, because there's virtually very little
24 history.

25 MR. EVANS: Nothing in this exercise has

0037

1 been more disappointing to me than the fact we
2 haven't been able to prove out the case for
3 infrastructure; which to me is analytically
4 obvious. But I trust these guys, and every
5 consultant has come back with the same answer. The
6 infrastructure asset class, there's not enough
7 history. That history that they have gets

8 dominated by real estate returns --

9 So what Robin suggested is in fact what
10 our plan will be, which is to come back with sort
11 of final recommendations on asset classes. We will
12 move up a level and have real estate and
13 infrastructure. I think we call it real assets,
14 what we currently call it.

15 That frustrated me, I wanted a specific
16 allocation for infrastructure. I'm now convinced,
17 not only by Roca-ton but by Callan and NEPC and
18 others, that we're better off, we'll reserve more
19 opportunities to make infrastructure investments if
20 we do as we're doing now, just call it real assets.

21 We have no intention of standing down on
22 our commitment to find infrastructure opportunities
23 that meet our risk and return objectives. We just
24 can't, there's not enough evidence to put it into a
25 high level allocation like this. Next time I hope

0038

1 there will be.

2 MR. KAZANSKY: The Teachers Retirement
3 System has been making history for a long, long
4 time. And so in this particular area of
5 infrastructure, I see no reason we can't be the
6 ones to make history on that particular --

7 MR. EVANS: Petya Nikolova and our team
8 will be out there looking for opportunities on an
9 ongoing basis. We will need to characterize it a
10 little bit differently.

11 MS. BEYER: Can I support what you are
12 saying by pointing to the problem with the numbers;
13 hedge funds, emerging markets, all of these asset
14 classes that we now call asset classes at times
15 didn't have enough data. So I want to support the
16 fact that not everything that we do can be proven
17 with numbers going backwards. In fact, we can be
18 fooled badly; which brings me to my basic question
19 on standard deviation. We can love it but can also
20 know we hate it, because it's so misleading. It
21 has tail pricing, selective reporting.

22 And how confident can we be using that,
23 to assess how much risk we at Teachers wish to
24 take? What are the bands of confidence looking
25 backwards and also looking forwards?

0039

1 MR. MURAD: We do not love standard
2 deviation as a measure of risk because of all of
3 things that not only data can miss, but the measure
4 itself doesn't capture.

5 So, on the following page we start
6 looking at a different measure of risk. So maybe
7 we can jump to it really quickly, which is twofold,
8 two different steps.

9 We're looking at what we expect to be,

10 call them fifth percentile, 1 and 20 downside
11 return outcomes over the next five years. We think
12 that's a better measure of addressing risk, because
13 A) it's a specific number and easier for us to
14 decide, can we tolerate that amount of risk?

15 And then B), we can use that to get a
16 better sense of -- I made a comment earlier about
17 returns are a means to an end. There is a pension
18 plan to be supported with these assets, and on the
19 other side of that, of course, is going to be
20 contributions to support that to the extent that
21 returns don't deliver.

22 So what we have looked at here to, we
23 think, better address risk, though not perfectly,
24 is also this range of outcomes for contributions
25 against what you would anticipate you would

0040

1 contribute if you got a 7 percent return every
2 year.

3 So maybe to go back on that a little bit
4 and describe it. Essentially what we have done for
5 contributions, we said we can make assumptions
6 about returns, get a 7 percent return every year.
7 What does that mean for your contributions over a
8 ten year period, for the years in which those
9 returns still matter?

10 So a couple of years from today they are
11 already baked in with the way averaging and whatnot
12 works for the contributions. I won't get into
13 that, and I can't.

14 (Laughter.)

15 Sherry is here if you want to bug her.

16 MS. CHAN: My pleasure.

17 MR. MURAD: So what we've done is, we'll
18 start with something like an anchor to understand
19 where we set, where we think we might sit if we get
20 7 percent returns. You can see in the little
21 footnote, if we assume 7 percent returns that ten
22 year contribution is \$39 billion.

23 Then we compare our expectations and
24 downside expectations for each of those four
25 portfolios, including the policy target, which

0041

1 doesn't necessarily deliver 7 percent returns
2 either every year.

3 So these percentages that we're showing
4 are the percent differences from the \$39 billion
5 baseline. So the downside outcomes, the worse
6 cases are the ones where the numbers are very
7 positive, that's a significant increase in
8 contributions.

9 So, we can focus on this page more,
10 maybe we want to address alternative 3 before that.
11 But I also wanted to make sure we addressed that.

12 We are trying to look at risk in different ways
13 then just standard deviation, because it's not a
14 great measure. And so if you wanted to have an
15 idea of what the confidence number is, we're
16 essentially expressing that there's a 1 in 20
17 chance that these outcomes, the best case and worse
18 cases, for instance, are achieved for greater good
19 or bad magnitude of realized -- so the 95th
20 percentile worst case outcome, we're basically
21 saying there's a 1 in 20 chance under the policy
22 target the contributions are actually 36 percent
23 higher or more than that baseline of \$39 billion.

24 So I hopeful that's helpful, I know
25 that's a mouthful. But we are trying to understand
0042

1 not just the risk and returns, knowing that there's
2 a means to an end for returns, what the real risk
3 is at the end of the day.

4 MR. EVANS: We will come back to this
5 and let Sherry take us through more detail, but we
6 want to go back to the other alternatives. This is
7 a new thing designed to answer just the questions
8 you asked, Charlotte, so you can see what does that
9 mean? What's the standard deviation mean?

10 MR. MURAD: So alternative 3 real quick
11 is, what alternative 2 was in what was allowed,
12 just allowing for private equity. And you are
13 going to notice there's not a significant
14 difference in the risk-return profile we're showing
15 at the bottom of that table.

16 So I think it's worth commenting that we
17 are pretty conservative with our expectations for
18 private equity, and we did some analysis that I
19 don't think we'll spend time on, looking at what if
20 our expectation for private equity was higher?
21 What impact might that have on whether we would
22 allocate to private equity or how much?

23 You can obviously see that, even with
24 our current, what I'm calling conservative
25 expectations, we are adding a 4 percent slug to
0043

1 private equity. We do think it has a purpose, we
2 do think it serves a function.

3 The numbers aren't necessarily telling
4 that story, and I think the really important
5 comment, we already talked a little about different
6 modeling of things. Private equity is of course a
7 beast to model; in particular, because the
8 performance of any one manager versus any median
9 can be so wildly different.

10 And so that's why we're a little bit
11 conservative with what we bake into these numbers.
12 But it's worth mentioning. We do think it can
13 serve a purpose, to the extent fees are tolerable

14 and you believe that who you are funding with is
15 actually capable of delivering what they intend to
16 deliver.

17 MS. PELLISH: So before we go on, I
18 think the takeaway from this page, you can move
19 percentages around and get slightly different
20 results. David and his colleagues used a model
21 that goes to 10,000 in Monte Carlo simulations.
22 There's a lot of modelling that goes on to generate
23 these portfolios and outcomes. But we know we're
24 going to be wrong about the specific point
25 projections; right? To say that we have a high

0044

1 level of confidence that over the next ten years
2 we're exactly going to achieve 28 percent
3 compounded return is silly; right?

4 So here the question is, what is the
5 directional information you can get out of this
6 kind of modelling? And the directional information
7 is that it's very hard to achieve returns above 7
8 percent based on what we see as the outlook for
9 capital markets, based on where we are today.

10 So, we think the current portfolio could
11 probably achieve over the next ten years something
12 like 7 percent. We think we can improve the
13 volatility or expected risk characteristics of the
14 current portfolio by doing a few things, one of
15 which is extending the duration of the fixed income
16 component of the portfolio to just make it a more
17 powerful diversifier.

18 We have a page in here that talks about
19 separate funds -- to a question that was asked at
20 the last meeting, I think Mr. Adler asked this
21 question.

22 If you project rates are going to rise,
23 what impact does that have on the use of long bonds
24 in these portfolios? So we have a page in this
25 deck that directly addresses that point, because

0045

1 it's a very important question.

2 So directionally, we think spending the
3 duration of your current fixed income portfolio can
4 have a modest but important impact. We also think
5 that diversifying somewhat out of just straight
6 long equity can have a benefit on the volatility
7 and expected risk of this portfolio.

8 So that's the direction that these
9 portfolio mixes go into. That I think is the
10 takeaway.

11 CHAIRPERSON ADLER: I'd like to ask a
12 question. Can the reduction in the standard
13 deviation from the low cost alternative to the
14 other two, can you give us attribution? Where does
15 that come from?

16 MR. MURAD: A lot of it is coming from
17 new sources of risk. So, it's coming from new
18 exposures to different kinds of market factors.
19 But we can certainly create a pie chart that shows
20 where risk reduction is coming from.

21 CHAIRPERSON ADLER: That would be
22 helpful.

23 MR. EVANS: You've got five asset
24 classes, private equity -- in portfolio 2 you're
25 adding real estate, opportunistic and Core, you're
0046

1 adding OFI, and that's it.

2 MS. BEYER: But you're taking down the
3 equity?

4 MS. PELLISH: Yes.

5 (Talking over each other.)

6 MS. PELLISH: We talked a little about,
7 I think at a prior investment meeting, the fact
8 that even though the current policy target is
9 diversified, you only have 63 percent in
10 equity-like asset classes. The fact is that 90
11 percent of your expected volatility comes from that
12 63 percent allocation.

13 So if we can create a portfolio that has
14 an expected return similar to the current policy
15 mix, but take down U.S. Equity, for example; we
16 showed here from 31 percent to 19 percent. That's
17 a very powerful reallocation of assets in terms of
18 lowering expected risk.

19 MS. BEYER: And my question on risk is,
20 taking that risk and betting against equities from
21 63 to 46, where does that get factored in? Because
22 it certainly doesn't come out in standard
23 deviation, other than the historical way of equity
24 contributing to a lot of volatility.

25 What if you are wrong? Are you really
0047

1 protected sufficiently by the increase in the fixed
2 income? Is what I'm saying.

3 MR. MURAD: So what we're basically
4 doing here, the risk really that the standard
5 deviation is expressing is the magnitude of
6 surprises; right? And so, by reducing the risk
7 we're also taking down our opportunity on the
8 upside.

9 So, absolutely something that's
10 happening. And the tradeoff that has to be made if
11 you want to reduce downside, typically.

12 MS. BEYER: That's what my question
13 really was; how much of the risk is that?

14 MR. EVANS: You can see it on the next
15 page.

16 MR. MURAD: We show the upside and
17 downside return outcomes.

18 MS. BEYER: It didn't look all that
19 different to me.

20 MR. MURAD: So, on page 4, why don't we
21 look at the bottom table? Alternative 1, the best
22 case outcome, because it is basically propped up by
23 fantastic equity returns, is that you grow
24 principal by almost 77 percent.

25 If you reduce your downside risk to
0048

1 alternative 2, you're also reducing your upside
2 risk from 77 percent to only 64 percent increase,
3 which is a lot of money. That's absolutely a
4 tradeoff that, if you want to reduce downside risk,
5 I don't think you come up with any fantastic silver
6 bullets to also not pay some of the upside.

7 MS. PELLISH: When we refer to risk
8 tolerance, that's exactly the question, and it's a
9 very difficult question to answer, which is: How
10 do you weigh the opportunity cost of maybe missing
11 a portion of a fantastic run on equities? How do
12 you value that, versus if you look at the fifth
13 percentile, worst case outcome and the current
14 policy target, we're basically saying over ten
15 years you could make no money, cumulative return.
16 Negative 1.1 percent; versus alternative 2,
17 cumulatively gain 10 percent.

18 That's a very disappointing outcome, but
19 in terms of, it has an impact on contributions and
20 it has a significant impact on market value for the
21 pension fund.

22 MR. EVANS: This is the one part of the
23 exercise that Rocaton and BAM can't answer for you.
24 The risk appetite is a trustee decision. These
25 three alternatives are roughly the same in terms of
0049

1 what we would expect to return over time. They're
2 different in terms of how much risk is being taken,
3 and you know what the upside and downside case are.

4 So this we need, and this is one of the
5 primary things we're hoping to get today some
6 feedback from you.

7 MS. MARCH: My biggest risk is not
8 making a decision on your recommendation. The
9 biggest risk that we have is a repeat of '07, '08,
10 2001, 2002, '87, that's the biggest risk we have.

11 I respect the work you are doing. How
12 do we fit into our risk factor the biggest risk
13 that we have? And then when it's all over, we
14 become the people who made the bad decision, but we
15 made no bad decision, we're just victims of
16 circumstance.

17 MR. EVANS: I think Rocaton can clarify
18 for me, but the downside scenarios that they have
19 here -- the 5th percentile worst case outcome, I

20 believe -- tell me if I'm wrong, David -- these are
21 all worse than any of those periods that you
22 mentioned in terms of the full five year outcomes,
23 bad as the 2008 break was. These are really bad
24 scenarios.

25 And the reason for running so many

0050

1 scenarios is to give you a sense of this is how bad
2 we think it could get under these asset
3 allocations.

4 MS. MARCH: So, in simple language, if
5 we actually looked at all the market turns, all the
6 market drops that were caused by deviant actions,
7 what you are saying to me is: What you are
8 producing innocently is more of a risk than what
9 they did.

10 I'd like to better our portfolio for the
11 three biggest drops that we're not involved with
12 market cycles. But we're involved with market
13 shenanigans; and see what would have been happened
14 if our portfolio was worse X amount of dollars, if
15 in the year that the downfall happened, even if we
16 took 1 percent or 2 percent off our portfolio or we
17 left the value of our portfolio the way it was.
18 And to that year, instead of losing what we lost we
19 just skipped that, we removed that out of our life.
20 And then we went to the other years that the
21 portfolio earned whatever it earned. That's an
22 exercise that's probably very easy to do.

23 MS. PELLISH: Let me restate what I
24 think you want.

25 (Laughter.)

0051

1 You see the experience of these
2 portfolios historically by calendar year
3 highlighting the period of those --

4 MS. MARCH: I want to actually see the
5 experience of our portfolio, having nothing to do
6 with what you're recommending in asset allocation.
7 What happened, we had made a decision in asset
8 allocation. We were at a certain point in time
9 prior to the market decline.

10 If the market decline did not happen and
11 if for the next twelve months we earned nothing,
12 but we stayed at that rate, and then went back into
13 whatever our earnings was for the following years,
14 what would be the value of the portfolio today?

15 Maybe the numbers are going to show that
16 we would be in the same situation; but I can't
17 believe that.

18 MS. BEYER: What do you mean?

19 MS. MARCH: In 2008, I don't remember
20 the percentage that the market went down at that
21 point in time.

22 MS. PELLISH: Close to 40 percent.
23 MS. MARCH: Therefore, don't give us the
24 40 percent drop, leave us at no earnings whatsoever
25 for that particular year. Then go to the next year

0052

1 and whatever the earnings were for the following
2 year, apply it to the portfolio. If it was minus
3 10 you apply minus 10; if it was zero, you leave it
4 at zero; but if it was plus 1, you do the plus 1.

5 I'm saying, I don't want to lose the 40
6 percent. Because I didn't lose the 40 percent in
7 the value of the portfolio at the Teachers
8 Retirement Systems because of the asset allocation
9 that we chose as an institution; I lost it because
10 of whatever I lost it. I don't want to use the
11 word "manipulation," but I just did.

12 CHAIRPERSON ADLER: That's 20/20
13 hindsight.

14 MS. MARCH: That's not 20/20 hindsight,
15 John. It may be a waste of time, and if it's too
16 difficult to do we don't do, and it doesn't really
17 prove anything. But the problem is, what comes out
18 in the world is that all the pension funds in this
19 country are incompetent. Because after the time
20 passes for what occurs, the world forgets that.

21 And it's the five pension systems in the
22 City of New York who didn't earn the correct amount
23 of money because we weren't smart enough. But they
24 forget that we lost 40 percent, having nothing to
25 do with our actions, and having nothing to do with

0053

1 what our allocations was.

2 CHAIRPERSON ADLER: That's not true; you
3 didn't actually lose 40 percent, because you
4 weren't completely invested in equities.

5 MS. MARCH: It wasn't only equities, it
6 was whatever the market earned in each of the asset
7 classes.

8 CHAIRPERSON ADLER: I don't know how
9 much the retirement system lost, but I'm pretty
10 sure it wasn't 40 percent. Most pension plans lost
11 between 25 and 30 percent.

12 MS. MARCH: I'll take 25 or 30 percent.
13 If the following year to make up the 20 percent I
14 have to earn 20 percent, and whatever I should have
15 earned that year, that's a lot of money. I'm
16 saying I want to work from the number I would have
17 earned and never lost the 20 percent.

18 I understand it's an exercise that leads
19 nowhere.

20 MS. BEYER: Except PR.

21 MS. MARCH: It's not even PR. It's that
22 we are victims of whatever the market does to us,
23 even if we make the most intelligent decisions.

24 And I'm a victim of --

25 MS. BEYER: So this is the call to

0054

1 action, then, if you're right, we're just victims,
2 we still have to act.

3 MS. MARCH: I'm not saying we shouldn't
4 act. But what I'm saying is, when the next episode
5 happens, it would be nice for the Comptroller's
6 Office to have that information. So even if they
7 produced a press release that the press chose not
8 to publish because it's the facts, we should have
9 that information. Let's go on to the decision that
10 we have to make, because we are victims of world.

11 MS. BEYER: I have one more question on
12 2 and 3. And that is, is it assuming that the
13 equity is the same allocation of active and
14 passive, or is it --

15 MS. PELLISH: It's all passive. It's
16 essentially all beta, passive.

17 MS. BEYER: Which is not the case today.

18 MS. PELLISH: Yes.

19 MS. BEYER: So that would be an
20 additional change that we would have to do. But I
21 think it's an important assumption.

22 MS. PELLISH: Can I interrupt you to
23 clarify? When we do these exercises, sometimes we
24 assume active management in certain asset classes;
25 and we say, let's assume active managers can add 50

0055

1 basis points. Personally, I think that adds a lot
2 of noise. This is hard enough to get your arms
3 around without then deciding how much you think
4 active managers are going to help or hurt you.

5 All we're saying is, the most important
6 decision that this Board will make and has made is,
7 what kind of capital market exposures do you want?
8 Once you decide the capital market exposure, that's
9 really going to drive your results.

10 Over and above that, the implementation
11 plan will include pacing, will include active
12 versus passive.

13 MR. EVANS: Any active performance
14 excess return would be an addition; or a
15 subtraction.

16 MS. BEYER: We don't have an added value
17 from active.

18 MS. PELLISH: Right. It's not included
19 in this number. Frankly, it wouldn't make much of
20 a difference.

21 MR. EVANS: For instance, Charlotte, in
22 private equity, which is a tough asset class to
23 model, there is an assumption of Hamilton Lane that
24 provided the other alternatives, the median
25 returns. And we all know for private equity you

0056

1 have to do better than median returns to have
2 private equity pay for itself.

3 But in terms of modelling we just assume
4 median returns.

5 CHAIRPERSON ADLER: Question. All of
6 the three alternatives, as does our current policy,
7 have a very high percentage of non U.S. allocated
8 to emerging markets. Two questions on this.

9 The first is, we avoid a significant
10 percentage of emerging markets through our country
11 screening policy. And so, did your modelling take
12 that into account?

13 MS. PELLISH: You raised this question I
14 think at the last meeting. So Mike is handing out
15 -- it's a great question -- we avoid China and
16 Russia, particularly China, there's obviously a
17 very significant emerging market.

18 So I think it's a great question, and
19 the question for everyone else's benefit is: Is
20 the way in which we model emerging markets valid
21 for this Board, given that you exclude such a
22 significant component of the emerging markets?

23 And I will talk to this for a minute.
24 What we've done here on the this side of the page
25 is to look at the price earnings, trailing 12 month

0057

1 price to earnings ratio for the emerging markets
2 index. So that's the blue line. Then we look at
3 the emerging markets index just for China, which is
4 the red line. Then we look at Russia, and Russia
5 is a small component, so it really doesn't matter.

6 What we're trying to see is, does the
7 evaluation of China differ significantly from the
8 broad index, such that we might expect that those
9 two indexes would behave differently?

10 And what you can see from this chart is
11 that at times they do. If you look back into the
12 2006 to 2007, 2008 time frame, the red line peaks,
13 the Chinese PE ratio peaks significantly relative
14 to the broad emerging markets valuation.

15 But over most periods of time they're
16 reasonably close. So what that says -- we think
17 because China is such a large component of the
18 emerging markets and has such a significant impact
19 on the valuation of most emerging markets, that in
20 fact modelling emerging markets without China would
21 not look significantly different than the modelling
22 we do for the emerging markets benchmark, including
23 China.

24 And that's counterintuitive, given
25 China, and you see below the percentage of the

0058

1 emerging markets capitalization, that China

2 represents below, you see China is the red part of
3 the area chart.

4 So China is certainly a big part of the
5 emerging markets, but because its impact is so
6 significant we felt throughout the emerging
7 markets, we don't think that we can or in fact
8 should develop different projections for your
9 emerging markets component.

10 CHAIRPERSON ADLER: A related question
11 is: It really is making a bet on emerging markets,
12 because it's probably about, roughly 40 percent of
13 our international that we're putting into emerging.
14 I don't think that emerging markets make up 40
15 percent of the global capital markets.

16 MS. PELLISH: No.

17 CHAIRPERSON ADLER: So, I think that's a
18 discussion we should have is, do we want to make a
19 bet on emerging markets outperforming the rest of
20 the really developed markets?

21 MS. PELLISH: Yes.

22 MR. MURAD: Comparing what we're doing
23 here to market cap is going to vary of course,
24 depending how we slice it. In other words, if we
25 look at it as a percentage of our total equity

0059

1 allocation, it's 12 out of 60 or whatever the case
2 may be. That's more representative, but still
3 overweight, but more representative of what the
4 global markets look like.

5 I made the comment before, part of that
6 bet, just to explain it, does come from what's
7 going on in the basket clause. Generally, we don't
8 have allocations that have an emerging market
9 exposure that's close to non U.S. developed. You
10 would tend to veer more towards a global market
11 weighted -- which is about 15-sh percent EM on
12 average, over time.

13 So, it is kind of a bet -- it is a bet,
14 and it's again, we're trying, in making this
15 allocation we're squeezing the air from one side of
16 a balloon, we have a basket constraining what we
17 can do.

18 Because the basket limits where you can
19 make bets on risky assets and how, to give you
20 further information, that's kind of what's
21 happening, you end up saying, well, if I only have
22 so much room to take risk, here's one of the
23 places it might be most interesting to take it.

24 I know that doesn't answer your
25 question, but it's worth kind of giving an

0060

1 explanation of what's going on.

2 MR. EVANS: That phenomenon, if you're
3 limited in the risky assets by statute, you use

4 that limitation as efficiently as possible, where
5 you have assets that you believe will be able to
6 outperform others. And you see that most
7 pronounced in opportunistic real estate, expected
8 return 8 1/2 percent; emerging markets, expected
9 return double digits.

10 And so, Roca-ton has a very conservative
11 expectation for U.S. Equities, 4.7 percent. And
12 so, if we're trying to solve for 7, that's our
13 mandate, you've got to take risk in the basket
14 clause, forces us to take risk in very concentrated
15 ways.

16 So you'll end up with portfolios that
17 look like you're taking a big bet; and some of the
18 bets we were forced into by the state of the
19 markets, some of the bets we're forced into because
20 of the statute.

21 MS. PELLISH: So, all that aside, that's
22 the rationale why we see this overweight to markets
23 relative to global market capitalization. But
24 people do challenge us. I think it's a very
25 logical argument to challenge our view of emerging
0061

1 markets. And so we would be happy, and I think we
2 should come back to you for discussion of the
3 emerging markets assumptions.

4 Essentially what we're saying is, given
5 the basket clause and given our low return
6 expectation for U.S. and developed, much lower for
7 U.S., low expectations for U.S. equity returns.
8 We're trying to get back to 7 percent, and part of
9 the way we get back there is through emerging
10 markets. But your challenge is, is that
11 justifiable? Is our return expectation for
12 emerging markets justifiable?

13 And so, I would suggest we come back
14 next meeting to discuss that in more detail.

15 MR. MURAD: And I would add on to that.
16 As part of the asset allocation exercise, we're
17 obviously not making one-off decisions, we're
18 making a whole group of decisions. And so, one of
19 the things again that lends us comfort, you can
20 almost think of us, to simplify it a little bit,
21 when we're adding emerging equity, we're also
22 saying, let's add some long duration Treasuries or
23 something to mitigate that bet that we're making,
24 to temper expectations a little bit.

25 And so, at the end of the day, the whole
0062

1 thing is obviously a big exercise in trade-offs.

2 MR. EVANS: Another option you have, I
3 believe, is an option they're taking in North
4 Carolina today; which is to say, you know what?
5 The markets are in a condition that we're not going

6 to reach for the expected return that we usually
7 reach for, and we'll focus on keeping the riskiness
8 of the portfolio down at levels we're comfortable
9 with.

10 And when the markets allow for us to get
11 back to the long term expected returns, we'll dial
12 up the risk again. We assume the 7 percent
13 ambition is a given. Again, that's your choice.

14 CHAIRPERSON ADLER: I'm not convinced
15 yet about the long duration Treasuries, especially
16 in the rise of interest rates. And I don't know if
17 today is the right moment, but if you can make the
18 case in a rising interest rate environment where
19 you would expect long term durations to be quite
20 risky.

21 MR. MURAD: Let's jump to page 6, I
22 think. We share your concern. And in fact, if you
23 were to look under the hood in our model for some
24 insight into what's going on there. What we're
25 showing here is our forecast for 10 and 30 year

0063

1 rates, and importantly, there's a range of
2 forecasts, not just one line. We don't know what's
3 going to happen.

4 If you look at the middle of the road
5 expectations for what we're pricing and for
6 interest rates, that's the blue line to the right
7 of each of the charts. And I guess that tan line
8 is the market price forward curve for what's going
9 to happen.

10 So the markets are already pricing in an
11 expectation, a break-even expectation that rates
12 are going to rise over time. We're pricing in an
13 expectation that they will rise even more than
14 that.

15 So a couple of important comments there.
16 One is that rates rising isn't necessarily going to
17 cause you regret against investing in a shorter
18 duration type of fixed income instrument; it's
19 really that if rates rise more than the forward
20 curve as already priced in, that's when you might
21 start to experience a negative spread for long
22 bonds versus market duration bonds.

23 So that's one.

24 Two, given that we in fact are in our
25 model, assuming rates rise faster than the market

0064

1 is pricing it, that means that on a standalone
2 basis we're essentially penalizing longer duration
3 on its own.

4 So, in other words, if you were to look
5 at long duration Treasuries return, we're
6 penalizing them quite a bit more than we're
7 penalizing market duration fixed income, because

8 that risk is built into the model.

9 So, despite all of that, you are seeing
10 that long bonds are still finding a dwelling within
11 the portfolios. And that's really because -- and
12 of course we could still be wrong, it's always
13 possible to be wrong -- that's because the
14 diversification value that they tend to have,
15 especially in safety environments, '08, '02, it's
16 really, really powerful.

17 And so, they are there absolutely as a
18 risk reducer. They are there to save you to the
19 extent possible in the environments where
20 everything else is just tanking.

21 Even after diversifying, in a flight to
22 safety environment, there's only one diversifying
23 asset, could be wrong, but Treasury bonds.

24 And so we totally, we recognize that
25 factor on an expected basis. We think long bonds

0065

1 are not going to do as well; but, as well as market
2 duration bonds, if rates rise.

3 But as part of the asset allocation
4 exercise, when you add everything together we're
5 able to keep the risk lower while maintaining the
6 compound return. And the reason compound return
7 can be maintained is because what reduces your
8 return expectations is often your expectations as
9 to volatility.

10 MS. PELLISH: By avoiding the valleys in
11 the annual returns, the compound return over ten
12 years improved. It's in essence an insurance
13 policy that provides some current yield.

14 MR. MURAD: And you can look at page 7,
15 our assumptions, our Core+5 expected return is 3.6,
16 and our long duration Treasuries is 2.6. So that's
17 all we agree we're worried about rates rising; but
18 other things can happen, either too long Treasuries
19 or other assets in the portfolio. So they
20 complement pretty much every other risk asset class
21 quite well.

22 MS. PELLISH: The other point to know is
23 that this is not -- even if you pick one of these
24 portfolios today, no one at BAM or at Rocaton would
25 recommend that we implement this change in duration

0066

1 overnight. So there would be, as with every other
2 asset class, an implementation plan for longer
3 duration as rates rise.

4 MR. MURAD: And this is based off of our
5 assumptions as of December 31. A lot's happened
6 since then. In fact, not to say I predicted it --
7 but exactly what we're talking about has played
8 out. In the month of January everything tanked.
9 Long Treasuries returned plus 6 percent roughly,

10 whatever it is, when everything else returned minus
11 5 or minus 6 percent.

12 I can't guarantee that's going to happen
13 like that every time markets are down, but that's
14 really the generic philosophy behind why they're
15 there.

16 MR. EVANS: You identify the three big
17 calls that are embedded in here, the long duration
18 calls, the emerging markets call, and also the
19 opportunistic fixed income call. And those three
20 are seen in other consulting exercises that we're
21 doing, but not in this strength.

22 And so, they help to make up for a very
23 low expected public equity.

24 We will continue, after we go past this
25 discussion, continue to kick around, do we really
0067

1 go to long duration? How quickly do we go to long
2 duration? How much should it be focused on
3 Treasuries versus corporates? Can we take 8
4 percent and put it in opportunistic fixed income?
5 Emerging markets, do more studies, India dropped
6 out, which has been an issue in other funds, the
7 case for emerging markets --

8 This is what we'll do in the remaining
9 part of the session. The part that would be really
10 helpful to us right now is the overall risk
11 preference. And there, you have a choice between a
12 fairly traditional long-only portfolio that doesn't
13 have a lot of carry based assets, going to give you
14 11 percent risk. I think the charts that Sherry
15 has -- page 4, is probably the place to look at it.

16 And you can see it both in terms of
17 cumulative returns, upside and downside; and what
18 that means in your annual contribution to the
19 Teachers portfolio from the City.

20 In the low cost case, we're expecting in
21 Rocaton's market expectations, that over the next
22 ten years we'll have to kick in 4 percent more than
23 the \$39 billion. It could be 4 percent less if
24 things go well, and we have a 1 in 20 upside case.
25 It could be 32 percent less.

0068

1 The expected returns are pretty much the
2 same across all three scenarios. When you add the
3 alternative asset classes with and without private
4 equity, the band gets tighter and your extreme
5 returns get less. And that's what you get for that
6 extra \$150 million worth of fees, is that that
7 tighter band.

8 And so there's baggage that comes with
9 those fees, and we talk about that baggage a lot.
10 But it does pay off, and pays off by having less
11 extreme results when you run into some of the

12 patches in the road Sandy referred to earlier, and
13 the markets lose their --

14 And so, your willingness to take that
15 volatility risk is paramount here in whether we
16 pony up for these expensive asset classes or not.
17 That's the value they provide.

18 And after you all make that call we will
19 then go and debate these other things and come back
20 with a much more fulsome discussion about
21 alternatives. We can have fixed income and real
22 estate and in the non-U.S. equity portfolio. We'll
23 give you a couple of ways we could do that.

24 So we wanted to show you our best shot
25 in three different paths today.

0069

1 MR. KAZANSKY: One thing I'd like to get
2 more clarity on, not necessarily today, but in
3 future discussions is: When you're talking about
4 pacing an implementation, and in some cases it may
5 take many, many years for that. How would that
6 conflict in 18 to 24 months? When we want to
7 review our asset allocation, how locked in do we
8 get, and what restrictions do we have at that
9 point? When we're in the middle of implementing
10 and we see that's not happening the way we thought
11 it should, what do we do at that point, what are
12 our choices?

13 I don't necessarily know if we want to
14 get into that today; but just something I'd like to
15 --

16 MR. EVANS: Very good question.

17 MS. PELLISH: Okay.

18 MR. MURAD: That covers everything I
19 absolutely wanted to cover. There's other material
20 in the deck -- illustrative -- I'll send it back to
21 these guys.

22 MS. MARCH: I'd like to say, I think we
23 have to have an executive session discussion;
24 because I think it involves, we never talk about
25 managers or what we do with managers in the public

0070

1 eye. And I think we have to have a discussion.
2 Because if I as a trustee am going to vote for an
3 asset allocation that has an asset class I have
4 concerns about because of the management fees, then
5 I would like to have a discussion what we might do
6 as a Board if we're going to go to that asset
7 class, what we're going to require as a Board
8 before we even hire a manager.

9 CHAIRPERSON ADLER: I would ask, are
10 there any other comments that folks want to make in
11 public session? If not, I think we can exit public
12 session and go to executive session.

13 Any other comments or questions that

14 folks want to ask?

15 MR. KAZANSKY: I wanted to ask the
16 Actuary, I know we hinted at some comments that you
17 might want to possibly make.

18 MS. CHAN: I can provide background
19 information on slide 4. Maybe a little on how to
20 read this chart, because there are a lot of numbers
21 on here, but the percentages actually represent
22 different items.

23 On slide 4, this mirrors and builds on
24 previous slides. You have the policy target and
25 the three alternative baskets here, so to speak,

0071

1 that builds off the previous slide.

2 If you look at the five year cumulative
3 returns, being in the 95th percentile, the 50th
4 percentile or 5th percentile, those are the
5 cumulative breaks for the five years.

6 So what my office did is, rates were
7 provided by Rocaton, and what my office did was, we
8 took these rates and we modelled what effect it
9 would have over a ten year horizon on the
10 contributions.

11 So, if we assumed a 7 percent return for
12 ten years, it generates about a cumulative amount
13 of \$39 billion in contributions. So, for example,
14 if we looked at the 95th percentile, take that for
15 a policy target; over five years it should generate
16 77.6 percent return.

17 And you can take different paths to get
18 there, took uniform paths, same rate for each year,
19 that means 12.2 percent return on an annual basis.
20 If you took 12.2 percent return and earned that
21 over five years, it will get you up to 77.6
22 percent.

23 If we were to actually get to a rate of
24 12.2 percent return over five years, and then
25 looked at the ten year period, that would cause the

0072

1 contributions to decrease by 24.4 percent. So the
2 12.2 was assumed for the first five years, and then
3 a regular 7 percent, our current rate, was assumed
4 for years 6 through 10.

5 We did the analysis over ten years
6 because the actual asset evaluation method -- gain
7 loss over a six year period, to really reflect the
8 returns, really get them incorporated, why we
9 looked at the ten year return.

10 And it was mentioned earlier that these
11 rates start at a time frame where it could be baked
12 in. That alluded to our one year lag methodology
13 and evaluation. We have, for example, the
14 valuation done as of June 30, 2014, that is an
15 evaluation that we used to determine the fiscal

16 year 2016 contribution.

17 Because in reality, January 2016,
18 returns for June 30, 2015 have already been
19 realized. So the next year of return that still
20 has to be realized is 6/30/2016, which affects the
21 fiscal year contribution for 2018. So that's why
22 there is -- a lag.

23 So, the percentages in parentheses next
24 to the negative 24.4 percent, namely the negative
25 32 percent to roughly negative 15 or negative 16

0073

1 percent, what that represents is, if we didn't take
2 a uniform path of 12.2 percent each year, if we
3 played a little bit around with the returns,
4 perhaps realizing a big gain in the beginning years
5 and then making up for it in the last few years to
6 get to the same 77.6 percent, or vice versa, we had
7 the big gain toward the end of the five years, and
8 then made up for it in the beginning years. That
9 kind of shows you the variability of return.

10 So depending on which path you take, we
11 can actually see a decrease in the contributions up
12 to 32 percent, or we could just see a decrease of
13 negative 15.5 percent or a decrease of 25 percent
14 rather than a 24.4 percent.

15 The others are similar. If you look at,
16 for example, the fifth percentile cumulative return
17 of negative 1.1 percent policy target over a five
18 year period, then you are not earning the assumed 7
19 percent, so your contributions are actually going
20 to increase by 36 percent after ten years.

21 MR. KAZANSKY: So we should try to avoid
22 that.

23 (Laughter.)

24 MR. MURAD: We were asked about risk a
25 couple of times. That adds yet another layer of us

0074

1 trying to address risk. It's very easy for us to
2 say the standard deviation is this. It's a little
3 more difficult for us to say the 1 and 20 return
4 over the next five or ten years is this. And then
5 the next layer on that is to say, well, if returns
6 are a means to an end, how does this affect the
7 end, if not all 5 percent returns over the next ten
8 years are created equal?

9 So we worked with Sherry to get a sense
10 of what does this really mean for one of the things
11 we ultimately care about, which is contributions in
12 the next ten years.

13 CHAIRPERSON ADLER: Just to translate to
14 dollars, or to English --

15 MS. CHAN: I can do it in Chinese.

16 (Laughter.)

17 CHAIRPERSON ADLER: It might be more

18 understandable. The 7 percent assumes cumulative
19 contributions of \$39 billion. If we were going to
20 get worse outcome of 36 percent, the cumulative
21 contributions would be roughly \$53 billion,
22 something like that.

23 MS. CHAN: It would be 1.36 times the --
24 cumulative over ten years, spread over ten years.

25 CHAIRPERSON ADLER: Over ten years?

0075

1 MS. CHAN: Yes. We did the analysis
2 over ten years, even though the returns are
3 realized over five years, because our actual
4 evaluation methodology -- gain losses over six
5 years. For really the full effect of the returns,
6 we looked at a ten year period. For the first five
7 years that 36 percent increase you are talking
8 about is a negative .2 percent return for five
9 years. And then for years 6 through 10 we assume
10 the regular current assumptions of 7 percent.

11 MS. BEYER: The parentheses was if it's
12 not an even 12.2 percent or 6.3. But you didn't do
13 it on the other three alternatives?

14 MS. CHAN: We didn't do it because -- it
15 shows the variability. First of all, the returns
16 are pretty similar. You can kind of transpose
17 those ranges based on that. It was only done for
18 the target policy, just to prove the point that if
19 you didn't take the uniform path, there is
20 variability of return.

21 But subsequent to today's discussion, as
22 we make some decisions, we can provide those ranges
23 in the portfolio.

24 MR. EVANS: We can assume a similar
25 confidence for the other alternatives.

0076

1 MS. CHAN: Right.

2 MR. MURAD: I think maybe a key point
3 from that is that there is a cost to volatility in
4 contributions. If we were just investing some
5 principal and looking at it five or ten years
6 later, the cost is only whatever you ended up with.

7 But this, we have a path, and that
8 matters. And so actually I think that's another
9 reason to come back to a one point discussion for
10 long duration Treasury bonds. Anything that can
11 help you smooth out your ride reduces that cost.

12 MS. BEYER: But it's not quite as
13 compelling here.

14 MS. PELLISH: What's not compelling?

15 MS. BEYER: When you said "smooths out
16 the ride," when I look across, first of all, it's
17 percentages, not dollars. It doesn't appear to me
18 to be a table banger that we should go with
19 alternative 2, when in fact the upside and downside

20 are --

21 Does anyone else read it the way I'm
22 reading it?

23 CHAIRPERSON ADLER: The differences
24 aren't that extreme.

25 MS. BEYER: Yes. Just looking at

0077

1 returns and risk, it's going from 11 1/2 percent
2 standard deviation to 8, it's pretty dramatic. But
3 when you look at it in terms of this risk, which is
4 contributions, it didn't appear to be quite as
5 dramatic.

6 MS. PELLISH: So, that's deliberate,
7 because of the use of very expensive smoothing
8 mechanisms for contributions; right? So the whole
9 point of that smoothing mechanism is to avoid
10 dramatic changes.

11 MS. BEYER: Right.

12 MR. EVANS: This is how standard
13 deviation plays out in contributions; in the real
14 world.

15 MR. MURAD: As much as we tried to keep
16 one-upping the way we're looking at risk, there
17 still is something left over potentially after all
18 these contributions are made. And some that we're
19 not necessarily capturing here, but I think you
20 have a good sense in the cases where you
21 contributed more, it's also unfortunately quite
22 likely that there are still more left, contributed
23 -- it's not that you make 32 percent more in
24 contributions and you're 100 percent funded and you
25 are done. There's still a story to tell. So this

0078

1 is book one.

2 MR. EVANS: But the portfolio that we
3 brought last time, which is just the five index
4 assets, was even more volatile in the standard
5 deviation point. It translates into a similar
6 thing, that low 80s upside. And it had a downside
7 that was a little more, so there was a little more
8 risk. Still, same 7 percent expected return, wider
9 band.

10 This kind of translated into the real
11 world in a way that's useful. We thought it was
12 useful, I hope you think it's useful.

13 MS. BEYER: Yes.

14 CHAIRPERSON ADLER: Any other comments
15 or questions?

16 (No response.)

17 So a motion would be in order to go into
18 executive session.

19 MS. MARCH: I move that we go into
20 executive session for the purpose of discussing
21 sales and securities.

22 MS. VICKERS: Second.
23 CHAIRPERSON ADLER: Discussion?
24 (No response.)
25 All in favor of the resolution say
0079
1 "Aye."
2 (A chorus of "Ayes.")
3 Any opposed?
4 Abstentions?
5 (No response.)
6 Motion carries. That ends public
7 session.
8 (Whereupon, the Board entered executive session.)
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

24
25
0080
1 CHAIRPERSON ADLER: Is there a motion to
2 exit executive session and go back to public
3 session?
4 MS. MARCH: So moved.
5 MS. VICKERS: Second.
6 CHAIRPERSON ADLER: All in favor of the
7 resolution say "Aye."
8 (A chorus of "Ayes.")
9 Any opposed?
10 Abstentions?
11 (No response.)
12 Motion carries.
13 (Discussion off the record.)
14
15
16
17
18
19
20
21
22
23

24

25

0081

1 (Whereupon, the Board returned to public
2 session.)

3 CHAIRPERSON ADLER: Susan, do you want
4 to report out?

5 MS. STANG: In executive session on the
6 Passport funds there was further discussion about
7 the asset allocation study that was presented in
8 the public session.

9 There was discussion about fees and
10 disclosure of fees in the private equity asset
11 class within the pension fund.

12 There was a discussion about the
13 investment strategy for Variable B.

14 And there was a discussion about
15 performance based fees.

16 Agreement was reached on the direction
17 that TRS staff will take.

18 CHAIRPERSON ADLER: Thank you very much.
19 Now, can we have a motion to adjourn the
20 meeting?

21 MS. VICKERS: Motion to adjourn the
22 meeting.

23 MS. MARCH: Second.

24 CHAIRPERSON ADLER: Any discussion?
25 All in favor of the resolution say

0082

1 "Aye."

2 (A chorus of "Ayes.")

3 Any opposed?

4 Abstentions?

5 (No response.)

6 We're adjourned.

7 (Time noted: 1:23 p.m.)

8 (Matter concluded.)

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

0083

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

C E R T I F I C A T I O N

I, Jeffrey Shapiro, a Shorthand Reporter and Notary Public, within and for the State of New York, do hereby certify that I reported the proceedings in the within-entitled matter, on Thursday, February 4, 2016, at the offices of the NEW YORK CITY TEACHERS RETIREMENT SYSTEM, 55 Water Street, New York, New York, and that this is an accurate transcription of these proceedings.

IN WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, 2016.

JEFFREY SHAPIRO