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Proceedings

NEW YORK CITY TEACHERS' RETIREMENT SYSTEM
INVESTMENT MEETING

Held on Thursday, October 3, 2019, at 55 Water Street, New York, New York

ATTENDEES:
DEBRA PENNY, Chairman, Trustee
THOMAS BROWN, Trustee
JOHN ADLER, Trustee, Mayor's Office
NATALIE GREEN-GILES, Trustee
SUSANNAH VICKERS, Trustee, Comptroller's Office
DAVID KAZANSKY, Trustee
RUSS BUCKLEY, Trustee
PATRICIA REILLY, Teachers' Retirement System

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ATTENDEES (Continued):
THAD McTIGUE, Teachers' Retirement System
JOHN DORSA, Comptroller's Office
SUSAN STANG, Teachers' Retirement System
RON SWINGLE, Teachers' Retirement System
KOMILJON ATAEV, Teachers' Retirement System
ROBIN PELLISH, Rocaton
JOSEPH NANKOF, Rocaton
MICHAEL FULVIO, Rocaton
VALERIE BUDZIK, Teachers' Retirement System
LIZ SANCHEZ, Teachers' Retirement System
DELORES CAPONE, Office of the Actuary
DAVID LEVINE, Groom Law Group
SUMANTE RAY, Mayor's Office
ALEX DONE, Comptroller's Office
MICHAEL HADDAD, Comptroller's Office
MILES DRAYCOTT, Comptroller's Office

MS. PENNY: Good morning and welcome to Teachers' Retirement System Investment Meeting. Today is October 3rd, one of my favorite days, 2019.
Mr. McTigue, would you like to call the roll?
MR. McTIGUE: Thank you, Madam Chair.
John Adler?
MR. ADLER: I am here.
MR. McTIGUE: Thomas Brown?
MR. BROWN: Here.
MR. McTIGUE: Natalie Green-Giles?
MS. GREEN-GILES: Here.
MR. McTIGUE: David Kazansky?
MR. KAZANSKY: Present.
MR. McTIGUE: Russ Buckley?
MR. BUCKLEY: Here.
MR. McTIGUE: Debra Penny?
MS. PENNY: Here.
MR. McTIGUE: And Susannah Vickers?
MS. VICKERS: Here.
MR. McTIGUE: We have a quorum.
MS. PENNY: Thank you.
We will start with the Passport Funds

performance review. Robin, will you start or Mike?
MS. PELLISH: Yes, Mike will.
MR. FULVIO: Good morning, everyone.
Okay, so you should have the September -- I'm sorry, the August flash report. And so we did already cover what the markets did back last month when we met for the month of August, but as you recall the U.S. was down 2 percent during August with a lot more volatility. We saw the same type of volatility abroad. Global developed equity markets all told were down about 2, 2.5 percent. And then emerging markets, there we saw the down markets about 2 percent. So markets sold off during August. We saw the U.S. 10-year treasuries fall about 50 basis points, which was a pretty big move. We will talk a little bit more about fixed income broadly, but that obviously drove the absolute returns for the fund, the Passport Funds, for the month of August. You can see the Diversified Equity Fund with assets of about $15 billion, that fund was down a little bit

more than the U.S. equity, market down about 2.4 percent which was also lagging the hybrid benchmark which was down about 3 percent.

One of the things worth highlighting is the Defensive Strategy Composite, which did provide some downside protection during the month. It captured about 50 percent of the down market in the U.S. and that was down about 1.1 percent. And then in -- back on the actively managed composite, you can see there is some relative underperformance by the active managers in the U.S. That composite was down 4.3 percent as a whole versus the broad U.S. is down 2. And then the International Equity composite lagged the -- its composite benchmark by about a quarter of a percent, down about 2.7 percent.

One of the things that Robin and I were talking about earlier jumps off the page is if you look at the calendar year returns through August, you can see the Diversified Equity Fund has a really strong absolute return of about positive 16 percent, 15.6 percent. And if you look at what -- you know, just to the

right what the numbers are for the trailing 12 months, that goes to show you just how poor the returns were in the markets for the second half of last year and, in particular, the fourth quarter. It really is stark to see essentially 0 percent return for the last 12 months, knowing that the last eight months you have gotten about 16 percent from the markets. That is really remarkable, speaks to the volatility we saw in the fourth quarter last year.

If there is no questions on Diversified Equity Fund which we are going to talk about later in the agenda, we can turn to the Balanced Fund. You can see their assets of about $400 million at the end of the month. The return for the month of August was essentially flat so again a down month for equities, but that was offset by a positive returns in fixed income markets in that fund and that fund year to date is up about 7 percent. The International Equity Fund with assets of about $161 million, I noted earlier the international composite down about 2-3/3

percent for the month. Year to date that fund is about up about 9.8 percent. The Inflation

Protection Fund, there it was a modest positive return of about just shy of a half of a percent. Year to date that fund is up 8 percent. And then the Socially Responsive Equity Fund with assets of about $233,000, that fund was down about 2-1/2 percent, lagged the S&P by about 1 percent for the month and year to date that fund returned about 13.5 percent versus the S&P about 18.

And there is previously discussed changes that, you know, occurred since these numbers were rounded out in August. So I will see if there is any questions there. Okay, great.

The next page you should have is a preliminary report through the end of September. There is a few highlights here. So what we saw was markets basically came back from the returns we saw in August. So in the U.S., the U.S. was up about just shy of 2 percent, roughly 1.8 percent large cap versus small cap. That brought the calendar year

return for the U.S. back over to just 20 percent. The benchmark for developed markets abroad is the MSCI EAFE Index. You can see that was up about 3 percent for the month and there broad developed markets were just behind the U.S., up about 13 percent. And then the emerging markets proxy was up about 2 percent for the month of September. The label there says "Custom MSCI Emerging Markets Index." That's actually the broad MSCI Emerging Markets Index beginning September 1st. So, again, a 2 percent return there. Calendar year to date, the experience of your custom benchmark which included changes beginning September 1st, the experience there is about 6.5 percent calendar year to date to bring for those returns. The underlying strategy for the Inflation Fund, that was up about 50 basis points for the month. Calendar year to date up about over 8.7 percent. And for the Socially Responsive Fund, the underlying strategy there up about 2.8 percent during September with a year-to-date return of about 17 percent.

One of the other things just to note, we have talked on and off about the dynamic between value and growth stocks in the U.S. and September was the first month in a while where we saw a very notable shift. You will recall growth that outperformed value quite significantly over recent years and in the month of the September alone, the Russell 1000 Growth Index was roughly flat for the month and the Value Index was up about 3.5 percent. So we saw the deviation, if you will, in the other direction. It's only one month, but we will see if that persists at all.

So if there is no questions there --

MS. PELLISH: Just to highlight what Mike was just referring to, if you look at the broad U.S. Equity Value Index, which is the Russell 3000 Value Index, for the past five years it has an average annual return of 6-1/2 percent. If you look at the broad U.S. Growth Index, the Russell 3000 Growth Index for the same period of time, five years ending August that's double that; up over 12-1/2 percent. So there has been this extraordinary spread

between growth and value that's persisted for a long time and we will be talking a little bit more about that in the executive session. So --

MR. FULVIO: If there is no other questions, we will go to the next item.

MS. PELLISH: So the next item is the discussion of the role of fixed income in the pension portfolio and that discussion is going to be led by our colleague Joe Nankof, who you have met in the past. But folks from BAM are certainly going to participate in this discussion because this is intended to provide some context and background for all of the asset allocation discussions that will be had over the coming months. As you know, we and the other consultants as well have been collaborating with BAM, the BAM team, to think about capital market assumptions, to think about asset classes, and to start the process of developing some recommendations for the board to consider.

And the last time around 2016 that we did this, fixed income and in particular the

duration of the fixed income composite was a very significant topic. There were significant changes made to the fixed income program as a result of that study. And we thought prior to considering detailed recommendations in the coming months, it might be useful to use this as a topic because it's not always intuitive and it's fairly complex and it's very important. So this is not a recommendation. This is really to provide some background and context for the coming discussions about asset allocation to the Teachers' pension.

So Joe is going to lead this, as I said, and we encourage the folks from BAM; Miles, Mike.

MR. NANKOF: We have had many, many discussions over the last three, four years on this topic and not only with Teachers' Retirement System and the Comptroller's Office investment team, but also all of our clients on fixed income portfolios and how to utilize fixed income in the diversified portfolio which for most of our clients does include a

significant allocation to equities which is true of your pension fund as well.

I think Robin covers most of what's on page 2. But I think the point I wanted to make was that that with the fixed income markets as they are and the variety of types of fixed income securities and sectors in the fixed income markets, our clients have recognized with our help and also with information and advice from others in the industry that it's not required to invest in the market as the indices are constituted. You can choose whatever duration you want in a portfolio, you can choose whatever amount of credit or mortgages or treasuries that suits the needs of the particular fund you are managing. More and more we have looked at customizing fixed income allocations in portfolios as we have for you in 2016 in particular, but even before then to best meet the needs of the pension fund. So I think that's an ongoing discussion and it's something that's worth examining each time that we would look at asset allocation. I

think for most of our clients the equity markets, the indices serve as a very good proxy for what you want to invest in. The markets are pretty efficient, the level of indices you do is a representation of that, but in fixed income we generally try to customize mandates to meet the needs of the fund.

If you turn to page 3 for a minute -- and again I will just reiterate what Robin said, please jump in with questions or comments along the way. You know, the way we think of again with a plan like yours, which is we would say about two-thirds invested in equity linked or equity like securities, it could be public equities or private investments but they are all tied to either corporations, profits, revenues, economic growth. They generally do well when the economy is doing well, whether it's in the U.S. or outside the U.S., and they tend to do less well when the economy is slow or we go into recession. 2008, 2009 is the most recent example of that; we have been through a

prolonged period of recovery. And what's interesting about fixed income markets and interest rates is they generally are -- and I am not reading from this page because you can do that yourself. They generally serve as a forecast for future economic growth and inflation and interest rates. So if you think about it that way, well, the higher the interest rates are, generally the more positive the markets are about future economic growth and activity. And the lower they are, that serves as a barometer for maybe future slower economic growth. And it may be driven by either our central bank or other central banks intervention and trying to prop up either the financial markets which is not a written stated objective of theirs, but it's certainly become one that's more of a focus of theirs or just continuing economic -- continuing to promote economic activity and growth as long as inflation is not a worry.

So we think of, you know, three risks systematically through time that the equity markets can be exposed to. It could be

economic -- I already talked about that -- it could be geopolitical, it could be technical. And any of those three risks as they have manifested over time, generally if -- as the risks present themselves, interest rates fall generally. We don't want to say it's 100 percent proof positive, but it is generally the case that if these risks -- it could be -- think about the events that we have lived through in the last 10, 20 years. We already talked about a few minutes ago the tech bubble bursting in early 2006, financial crisis '08/'09, certainly 9/11 was another one. All of these events corresponded with interest rates falling. And we have only seen in the last few days, interest rates have backed up about from below 100 basis points in the 10-year treasuries to about 180. They have come down in the last few days with the equity markets selling off. It's not an accident that equity numbers are coming in below expectations. Rates have fallen below expectations. The means that the Feds are going to ease a couple of times this year or

we are just going to see a slowdown in economic activity in the U.S. and abroad.

So I think those are -- it's -- we think we are going to look at a bunch of statistics which we think bear out some of these fundamental linkages between interest rates, the bond market and equity markets, but it always comes back to what are those fundamental linkages between bond markets and equity markets which drive our belief about the role that fixed income might play or should play in a portfolio and let's see if the statistics actually bear out what we believe. So we think all of these objectives are potential objectives for clients to have for fixed income portfolios when they invest significantly in equities and your portfolio has done this for you over a long period of time. Certainly in the wake of falling interest rates for a long period of time, fixed income markets have benefited from that. Bond yields fall, prices rise, and your portfolio is an example of that.

So any questions on that before we go

into some of the numbers which back up some of the -- does that make sense? Okay. And bear in mind that when we had this discussion three years ago, more than three years ago -- I guess it seems like only a couple of weeks ago, but I don't think we were -- and Michael and Miles can attest to this, I don't think we were necessarily in the -- in the majority of the consultants advising the Comptroller's Office on asset allocation.

We were -- and, actually, page 5 is a good -- it's a good page to look at. We can come back to 4, if we want to. But at the time if we were looking only at the chart at the top of page 5 which we were actually back then, we didn't see '17 or '18 at the time. But we certainly saw the 2016 or something approximately 2016 yield curve and at the time I remember when we talked about long treasuries. So when you extend duration which you did, you are taking more interest rate risks. And we thought that was a good diversifier in a diversified portfolio with equity exposure. But what could happen is

when you invest when rates are very low and rates rise, you suffer price declines on the heels of that.

And everyone in the room was about equally certain that rates were definitely going to raise in 2016 forward; we were all very certain. It's not only equally, but very certain as well. And I think we -- we agreed with the majority in that room, which was -- so we agreed that it was -- the deck was stacked with it was more likely that rates were rising; it was more likely rates would rise from that point forward. There were artificially low levels, there were historically low levels. Anywhere you looked at it, it was low. But we also said at the same time, which I said a minute ago, what the environment does look like if rates fall and what would it look like for equity markets. And we said probably, not definitely, that if rates fell the economy would be slowing; the Fed would be easing and trying to intervene and promote economic activity, stabilize financial markets.

And at the end of 2018, last year, that's exactly what happened. There were concerns about a number of global issues; slowing in Europe and their inability to grow for many years, Japan not growing for close to three decades, U.S. China trade talks and, you know, no real deal on the horizon. And with all of these things overhanging economic growth and activity, the Fed pivoted and changed the position from tightening rates to easing, lowering rates. And they telegraphed they were going to ease and actually the market on a dime turned and expected them to ease three to four times this year. They have already eased twice and we think that there is a chance that they maybe cut one or two more times this year. And that's what the market is forecasting and that certainly helped -- it helped equity markets in the short term, but it corresponded with an environment where there were more concerns about economic growth and corporate profits and that can weigh on equity markets.

And at some point what the Fed can do to

prop up markets and promote economic growth, they will have a limit to what they could do. Certainly they can't go below -- we used to say they can't go below zero. What's interesting on this page, on the bottom half of page 5, is we have a sample of 10-year government bond yields outside of the U.S. So people say today with U.S. 10-year at 1.6 as of last night -- and again that's down from 180; it went below 150, went up to 180, now down to 160 again. People say it can't fall from here. Well, look at what's going on -- in take your market; Germany, Japan, UK, Italy. And, by the way, we don't have Switzerland on this chart, but the Swiss yield curve out to 50 years is negative. So you have the pleasure of lending the Swiss government money for 50 years and -- and paying them is essentially what it amounts to.

MR. ADLER: Joe, just slightly confused, the vertical axis.

MR. NANKOF: So, yes, because we are not showing enough significant digits, I will read up. It's from 0, it's 0.005, so .005, .015,

and then it's the left-hand axis.

MS. STANG: He is confused because you are reading the left-hand axis at the top.

MR. NANKOF: John, you are reading the bottom?

MR. ADLER: Yes.

MR. NANKOF: So it's half a percent; 1 percent 1-1/2 percent, 2 percent as the grid lines go up, if that makes sense. It's just rounding and we are not showing enough significant digits. Got it.

MS. PELLISH: But before we go there, I would like to look at the top half of that same page, because there was a lot of discussion about extending duration in the face of very low rates at -- in the 2016 study. Today we are lower.

MR. NANKOF: Between 1-1/4 and 1-1/2 percent at this point.

MS. PELLISH: So I know the same issue is on the table, which is does it make sense -- and it's a pretty straightforward question: Does it make sense to own relatively long-duration bonds in an environment where

rates are so low by historical standards, and does the benefit of diversification offset the risk of rising rates and the cost of rising rates. And I don't know if, Mike, and, Miles, you want to speak to that.

MR. DRAYCOTT: So, yes, I do have a question. So I think the principal argument for including long-duration treasuries is to limit drawdown risks if we do have a big selloff in the equity markets. My own view -- and I am not the student of the policymaking; Mike is. If you were to consider all the possible future past interest rates from here, they may be an asymmetry. In other words, no one voiced this as official policy, but if you thought the U.S. was less likely to ever see negative interest rates on U.S. government bonds, does that argue that the correlation assumption embedded in your analysis in 2016 should be adjusted; i.e. at this level of low interest rates if there was a thought that U.S. rates are less likely to go negative than the rest of the world, would that argue that that negative correlation which is really

behind the allocation to U.S. Treasuries is less likely to persist at today's level of rates than it was in 2016? It's unknowable, but I think that's a question.

MS. PELLISH: Right. And Joe is going to respond as well, but I will say from a perspective which isn't as deep into the mechanics of the markets, mechanics in the markets: I think we are in an anomalous position. We are in a very unusual state of the world where over -- I think the figure is over a third of investment grade bonds are trading at negative yields. It's -- you know, so what do you do in that situation? And I do think that we -- we make -- we make some correlation assumptions. We also allow for correlations to change and do a lot of Monte Carlo simulation, but we wouldn't invest in long bonds if we didn't think that they diversified the equity risk.

The problem, fundamentally the problem is: When you have 67 percent of a portfolio invested in equity-linked assets, whether they are public or private that is contributing

something like 90 percent of the risk of your portfolio, it's not equal to the capital allocation because stocks are so much more volatile than bonds. So what do you do; what do you do to protect yourself? And you are remembering that you are a long-term investor and you can withstand a lot of volatility, you can withstand illiquidity, you can withstand drawdowns, but nonetheless you are making ongoing contributions to the pension funds. There are a lot of constituencies that are watching the returns of the pension fund and so you don't just close the door on the fund and say, we will be back in 20 years and look at the numbers. We are looking at the numbers every month, every quarter, and contributions are being calculated using annual numbers. So we have to be somewhat mindful of the need to protect in extreme equity markets, because we are vulnerable to extreme equity markets.

The beauty of long bonds is they are very capital efficient. Unlike buying insurance, they will pay you -- as long as we don't go into negative territory, they will

pay you to own them. You get a positive carry; you are paid interest. They are capital efficient because you can allocate a relatively small percentage of your capital and buy a lot of duration. So they will -- they will diversify, they will diversify in a very powerful way, much more powerfully than the intermediate government bonds. That has to be weighed against the risk that we will fairly rapidly move to a more normal interest rate environment. And so you will suffer price declines in that portion of the portfolio and that -- that's why there is this debate, because there is logic on both sides. Where we come down on that judgment call, and it really is a judgment call, is that we are very mindful that historical statistics and financial market behavior may in fact be different this time because we are in uncharted territory. However -- and we think that you should continue to satisfy whatever diversifying asset classes you can; that includes infrastructure, that includes real estate which are less equity linked than all

of your other nonfixed income holdings. We still continue to believe that long bonds are sufficiently likely to play a diversifying role in the event of significant equity market downturns such that the potential benefit offsets the potential risk of price declines on that portion of your portfolio.

MR. NANKOF: Make no mistake about any of this: Regardless what investment grade fixed income you put in the portfolio, which call it 17 percent of the portfolio, that is not the part of the portfolio that's there to generate returns really over the long time. The equity portfolio, Robin mentioned real estate, infrastructure, private equity, those asset classes are intended -- they are allocated for long-term potential. Fixed income plays a different role. We listed the possible objectives of fixed income.

In fact, if you look at page 4 you can see that for any -- regardless of what investment grade fixed income you invest in, the yield is quite low. So it's not as if long treasuries are unique in this way today

versus the credit index, investment grade credit index which has a yield of 2.74, a whopping yield of 2.74 which is the biggest number on the page. The aggregate which is widely understood as the full bond market, all investment grade securities, mortgages, credit, treasuries. So you are not investing in it for total return for over the long term; you get some modest return.

And I think, Miles, while we agree that the base case over the next call it five or more years, five to ten years is that we end up with yields above where they are today and it's probably a skewed distribution on the upside. What we don't know is what does the path look like over the next five years to get there. Could we end up with rates falling a hundred basis points between now and then and what does that environment look like if we have a ten-year treasury that's at 50 basis points, not 160 basis points? It's more than 1 percent below. Where it is now? Plausible.

No one thought it was ten years ago, but --

MS. PELLISH: Or even three years ago.

MR. NANKOF: But clearly it is now. I am not sure exactly what the environment -- that environment looks like for equities, but it doesn't feel like it's one where equities are going to be generating great returns.

And in that environment, long treasuries offer one of the only safe havens in the portfolio. And not only these other investment-grade fixed income asset classes on this page will also do okay, but long treasuries would be the best counterbalance to what equity portfolio security -- or equity securities are likely to be doing in that environment. If the base case is realized over the next five years and it's realized in a very steady way over the next five years where rates just gradually increase, we reenter a more normal -- what people might call maybe the old normal, not the new normal economic environment where real economic growth is closer to 3 percent than 1-1/2 or 2, then that's probably a great environment for equity markets. Because, broadly speaking, people think economic growth will be slow for

a long time not only outside the U.S., but even in the U.S., lower than what we have seen for a long time. So that's an environment where bonds and long treasuries won't do well, but most everything else you own is probably doing okay. If not just okay, maybe even better than that.

So that's the hope; that's the message. That's what we have been -- and for the last ten years as we have been, you know, recommending clients consider long treasuries, not every client is invested, we have almost for that entire time thought that the best case is that rates would end up higher than where we started and people would look at us cross-eyed and say you think rates are going up and we say well, we just don't know where rates end up. We might have a base case, but this is not -- we are not allocating to this for a base case. We are allocating to this for an environment, which is very much below expectations in terms of our base case.

So I will just pause and see if there is any other questions, thoughts that people want us to take away from this discussion as we continue to work through the asset allocation with BAM.

MS. PELLISH: There are many more discussions that focus on fixed income, other than duration. There is also what should the allocation to mortgage, to credit, but by far the most important decision is what duration should this portfolio be targeted towards and how you move towards that. So there will be more to come.

MR. NANKOF: John has a question.

MS. PELLISH: Did you have a question?

MR. ADLER: Yes.

So when we had this discussion two years ago I remember Scott Evans, the former CIO, saying that comparing this to insurance, which you just too, Robin, you said this is much more capital efficient than insurance. And my understanding of -- really basic understanding, and I would like to know if I am correct and probably not, is that one of the reasons we didn't get to the target duration -- which is 18 and I believe now we

are like 12?

MS. PELLISH: Mike would know.

MR. HADDAD: We measure it as all sleeves of it; treasuries, mortgages, investment grade. Teachers is something like 75 percent of what the target was set in '16. So the exact numbers I don't quite know, but it's less than 12 to 18. It's more like 10 to 12 core bond portfolio.

MR. ADLER: My understanding was that one of the reasons was that the price of getting to that target duration became too expensive. In other words, when you are buying insurance you have to decide whether the insurance is worth the cost of the premiums essentially. And I feel like given what the interest rate -- the actual behavior was as opposed to the expected behavior, it became -- we decided that it was too expensive to go all the way to the target duration.

So, first of all, is that an accurate understanding? And I am not sure to which side of the table I am directing the question.

MR. HADDAD: I will take it because that

was a tactical tilt that BAM did on behalf of all five systems. So we methodically put out a plan to get this done over a two-year time period. About a year into it, we achieved 50 percent of it and then we had the election and the fiscal stimulus and what became a -- call it a neutral yield environment quickly shifted to a rising yield environment.

So what this on the top of page 5 shows is a point in time at four different times, all consistent times. I am not accusing them of doing anything with the chart, but there was a lot of volatility in between there. So from late '16 all the way probably to November of '18, we are in a rising yield environment maybe with an expectation of the 30 year. So because of that, we paused. And then in early '19 recognizing the changes that Joe had enunciated, we did a pretty meaningful duration extension at that time on behalf of all five systems and we extended from 2s to 10s. So the duration target on the treasury portfolio of TRS is 30. So we changed our tilt from being short duration to I am going

to call it more neutral-ish, but with a view that 10s, 30s, that yield curve itself is going to exceed at a greater pace than 30-year yields are going to drop. There is a whole bunch of nuance behind that view. I am happy to go into it if people want to hear it. But I think we saved hundreds of basis points by delaying that duration extension and doing it later than doing it if we had methodically followed our plan, if that makes sense.

MR. ADLER: I don't want to speak to anybody else. It makes some sense, but I am not totally there. But I don't think this is the right forum for you to get me totally there.

MS. PELLISH: But I think the answer is yes. I think they felt the risk cost in terms of price risk was too great.

MR. HADDAD: Yes.

MR. NANKOF: And the corollary to that is paying too high a price is the same thing as saying you are investing in too low a yield. They are identical -- they mean the same thing, but they are --

MR. ADLER: But part of the issue you are saying is the yield is secondary here, that the primary objective is to create the diversification in order to create -- to insulate the portfolio from a drop in equity markets?

MS. PELLISH: To some extent, yes.

MR. NANKOF: It is -- it is strategy again. I think our discussion with BAM, I think we all agreed on this. It's strategy first so is this the right strategy, meaning something you want to generally hold for the next ten years. You know, but then -- but then importantly, and we have some words in here which refer to this, being aware of the market environment as you move -- as you move from one position to another; meaning as you move from let's say intermediate bonds to long bonds, it's -- you are buying and selling securities so it's important to understand what the market environment is like as you are doing that and executing. And BAM was trying to do exactly that, so it's prudent to do that. Just to say, we don't want to be

sitting here in ten years and not having executed on the strategy we want to own in ten years.

MR. ADLER: So one more question about that.

We are talking about sort of filling in the portfolio with durations, but as I recall some part of the rationale is in 2008 when all correlations went to one, the exception to that was long duration treasuries, right? But it -- also then once the market bottomed out and started to rise again, then treasuries, long duration treasuries then again diversified, but you actually -- you didn't want to hold them at that point. And of course now we know when the market bottomed out, but at the time we didn't know when the market bottomed out.

And so how do you -- in other words, you create this -- this risk diversifier, but then the risk diversifier quickly becomes a sort of -- I don't know what the right term is -- a weight weighing the portfolio down?

MS. PELLISH: Yes, that's the price of

diversion. So if you knew in advance which price class was going to outperform, you would only hold that; you would never diversify. I would -- I am not being flippant. I think that's exactly right.

And that's why it's important if we continue the strategy that we agreed on in 2016 which is to hold some portion of the fixed income program in long duration, it would not have been a mistake to do that if equity markets continue to do well and fixed income rates rally. If we lose money on the long-bond portfolio, that doesn't mean that decision was a mistake because we are making a decision about a huge portfolio in the face of huge levels of uncertainty, particularly -- I think particularly today because of the existence of these -- of the fact that we have been in the longest bull market ever where we are seeing negative interest rates. There is a lot of geopolitical stuff going on, so it's a very difficult set of decisions to make.

And the -- the argument for diversification can be made in a very complex

way, but at its simplest, at its heart is we don't know what's going to happen. We think over a long periods of time over the planning horizon, equities will continue to provide the kinds of returns that we want to see in the portfolio and the fixed income won't, which is why most of our money is in equity-linked securities. But we understand there is a real risk that over the planning horizon, equities will have a very bad experience. And the best diversifier that we know of against that risk is long-government cash.

MR. NANKOF: And there are always cash needs for a pension fund. I think we can always list off what they are; it can be funding commitments to private investments, it can be paying benefits to your participants, all the things you need cash for. It's always nice to have something that's done really well that you can sell in a liquid market, like a long treasury in a market, like the operating needs of the fund don't stop in 2008 just because the markets are doing badly. You can't ask your participants if they can hold

off on the checks that they are counting on. So it's great we can actually go to the treasury market and sell the things that have been up 15, 20, 30, whatever it is, in that kind of environment. It's wonderful to have assets, so there is this operational benefit to having assets that perform.

And then, okay, there is a recovery in the equity market after the market bottomed out in the financial crisis and, yes, treasuries are no longer what you would go to to source liquidity. Now you have equity markets that are doing well and you can use those assets for a source of liquidity for whatever needs you have in the pension fund, so these daily, monthly, weekly needs that you have which are critical to the running of this system. And we think long treasuries over the long term can help with that a great deal and we have seen it with other clients where we are -- we have long treasuries in the portfolio. We have been rebalancing, helping clients rebalance their portfolios the last couple of years even longer than that. And I

see as rebalancing activity is happening, just to stay near your target what we are selling one month we are buying the next and, vice versa. So it's working -- the markets are working the way you would generally think they would work, which is not everything is doing well at once and particularly long bonds and equities, you know, have inverse correlation. Not always.

MS. PELLISH: Often.

MR. HADDAD: But let me just address the correlation because that's the crux of what we are depending upon, what we depended upon before.

Correlation ended up being positive, so we -- it worked out well for us for the wrong -- wrong reasons. But during those periods when equities had bad days, weeks, months, quarters, sometimes it worked, sometimes it didn't. By the end of the reporting period, it has. So it begs the question: What do we think going forward? And I think Robin laid it out well. We don't know. It begs the question: Why did it work over the past three

years, why over the past ten years? David can answer my question for me. By 12 trillion, some are going to change the price. So, to my mind, I showed you at the CIM a chart of long yields going back to the history of the founding of this country. We have never been this low. Our country has been through a lot of stuff, so why now? Is it that bad? It might be. The level of debt in the country is so high that the future might be that bleak, but that begs the question: Is the negative correlation going to hold?

And I am going to offer the other side of the argument. Not necessarily I believe that, but just so you hear two sides. Why are long rates so low? I would argue what's going on in global bond markets. So of the 17 trillion in negative yielding bonds, 40 percent is in Japan, 60 percent is in Europe. In Japan -- our funds rate here, what is it? 1.875, the midpoint, 1.875. In Japan it's minus 10. Our QE program was something like, correct me if I get these wrong, 17 percent of GDP. And Japan's is 45 percent of GDP, so

Japan bought all the bonds. The government bought all their bonds their ten-year yields minus 20 I think, so that adds to that. In Europe, the funds rate is minus 50. They announced a new QE program a month ago. They don't have enough bonds to buy.

MS. PELLISH: Just to make clear, basis points.

MR. HADDAD: Yes, minus .5. But it's crazy, as Joe laid out, that if you are going to lend the Swiss government money and you are going to get ninety cents on the dollar, why would you do that; why not stick it in the mattress and get a hundred? So what's driven rates low is foreign bond markets by foreign economies. Is that going to continue? Don't know. Can they buy 12 trillion of debt over the next ten years? They can't; there is not that much debt to buy. So if monetary policy is not going to work, what's next? Fiscal policy. So there is a likely outcome that the next wave of stimulus is fiscal policy and that's pro growth. That's more borrowing, so it works against fixed income in both

directions and that concerns me.

So I think that's the other side of it, and I think what's really important is that we don't know what that negative correlation is going to be. So I looked at -- I think you guys are minus .04 on a big picture scale, but they have also been very clear it's not that long one; it's what we call the left tail in an adverse environment. That's when it's really going to help you. It has. Will it continue? You know, if you look at our yields relative to the globe we still have room to come down, but I will argue we are already down because of that. The policymakers have been pretty clear they don't intend to go to negative rates but, you know, best intentions are what they are. But they will do more QE if they can and that would drive more long rates lower than would be helpful, so that's kind of the other side of the environment. We are depending on that to work in a negative -- in a bad situation and we don't know.

MS. PELLISH: So there you are, is that helpful?

MR. ADLER: A thorough presentation that ends, we don't know.

MS. PELLISH: And when do you buy insurance? When you don't know. So just to end on --

MR. NANKOF: Gives Robin less work.

MS. PELLISH: So really more to come. Right now your target allocation doesn't include this long-bond exposure and we will be looking at scenarios in which that is maintained and which that isn't maintained. So we will be back with other decisions that will need to be made, including how to allocate across global equity markets, how to allocate to mortgages and credit bonds which you will continue to own at sort of more duration, and how to allocate to private market strategies.

MR. HADDAD: I will add on that: Not to get into some of the things in particular, but where we have been very closely aligned with Rocaton is to derisk your portfolio and to reduce the equity beta in your portfolio. So we are looking to get more diversification and

less exposure to the U.S. equity market.

MS. PELLISH: Any more questions?

MS. PENNY: Thank you, Robin. Thank you, Joe, for that presentation.

Is there anything else before we go into -- okay, do I have a motion to go move into executive session?

MR. BROWN: I move pursuant to Public Officers Law Section 105 to go into executive session for a discussion on specific investment matters.

MS. PENNY: Thank you, Mr. Brown.

Is there a second?
MR. KAZANSKY: Second.
MS. PENNY: Thank you, Mr. Kazansky.
Any discussion? All in favor?
Aye.
MS. VICKERS: Aye.
MR. KAZANSKY: Aye.
MR. BROWN: Aye.
MR. ADLER: Aye.
MR. BUCKLEY: Aye.
MS. GREEN-GILES: Aye.
MS. PENNY: Any opposed? All right, we

are in executive session.
MS. PELLISH: Susan, I don't think there are any manager updates.
MR. FULVIO: This will be a brief update.
Following up on the conversations at the last investment meeting, we provided MSCI and Sustainalytics with a scope of services that the board was interested in for providing data as part of this process to review emerging market companies. We received back proposals, we just got these back earlier this week. And included in the proposals is their understanding of the scope, but also among that the pricing for the services.
So the MSCI pricing is on Slide 7. And in our -- in our early conversations with BAM, page 7, this would be a cost -- and actually a conversation with MSCI that costs would be to BAM subscription, works the way your current subscription with MSCI data works. This would be an extension of that relationship that you already have with MSCI and this could be, you know, easily implemented if you will. So we

just wanted to circle back. There was some previously unknowns about the price with MSCI. This is pretty clear and we don't foresee any issues with being able to contract on this, given our earlier conversations with David and --
MS. PENNY: So this is the cost for Teachers?
MR. FULVIO: This is the cost for all systems.
MS. VICKERS: So the idea from BAM's perspective kind of early on was that this might be an enhancement to our current operations that BAM would just want. And if

it was easier from a procurement standpoint, David thought there was the possibility that BAM could just pay for it.

MR. ADLER: You mean not even corporate?

MS. VICKERS: Charge-back. And that's when the cost was in this $20,000 range. As we will see in a second with Sustainalytics, there are additional possible costs levels that probably wouldn't make sense for BAM.

MR. ADLER: So in other words because we

already pay whatever it is to MSCI, this would be just an addition to that and I think we -- don't we pay like a million dollars a year to MSCI today?

MR. DRAYCOTT: Yes.

MR. ADLER: So this is kind of a rounding error on that. Got it. And that MSCI -- just curious, the MSCI fee that we pay now, that's not part of corpus?

MS. VICKERS: No, that is. We pay all the funds. So BERS, Teachers, everybody is currently paying for the MSCI for -- on a pro rata basis.

MS. PENNY: But we pay it anyway.

MR. FULVIO: Should we switch gears to pull up the Sustainalytics version of this.

So with Sustainalytics, you will recall they did come to us with an early proposal. The scope there was a little bit different. That can be found on page 5 and you will recall we talked about there about $18,000 a year. When we discussed the potential scope at the last meeting it became obvious rather than just an annual report on companies that

flagged for certain issues, there was a greater desire and a need for an ongoing subscription potentially to the research that Sustainalytics would provide. So having that realtime subscription, having ready access to all of that information obviously there is an increased cost associated with that.

And pages 6 and 7 provide two versions of the pricing related to that expanded scope. Slide 6, this would be the cost for one system. Whereas slide 7 is the cost if BAM was to contract and, you know, there would be for all -- all the systems would benefit from the data. So there is an incremental cost associated with that, but the bundled pricing there would be at a discount rather than doing each system a la carte. One of the things that did get called out, you can see on both 6 and 7, is this idea of a product involvement service. So this is -- think about what you -- how you leverage some of MSCI's information today to identify companies that have a product that maybe, you know, results in 50 percent of their revenue coming from selling

that product. And you have chosen to use that data to do other divestment initiatives. If you wanted to use Sustainalytics for that type of data, that's the a la carte price that gives you that information.

So what we want to discuss a little bit offline is whether you need that from both providers. And the initial thought was you already have that with MSCI and that may not be an issue and there the data is more factual, less their opinion as to whether something is good or bad. So that was point one.

Point two: The ESG risk rating, what we had previously discussed with respect to how we look at companies, wasn't necessarily utilizing Sustainalytics ESG ratings. It was more focused on controversies and global standards, which ends up being one of the bigger costs subscription to these ESG ratings. So if we could carve out of the pricing, then the pricing is back in line with some of the incremental costs we talked about with MSCI. So we need to do a little bit more

digging on that, but we wanted to share what we have thus far.

MS. VICKERS: I will just say: In participating in some of these offline discussions, there is kind of a chicken and egg scenario going on. It's hard for our people to give us a clear answer about what things will cost and what procurement method we will be forced to use, unless there is clear direction from the board of exactly what we are going to do. And I think in order for the board to have clear direction we need to make some decisions, which include who is going to be responsible for doing what in terms of that. If we had ongoing access to all of these data fees, is that something that a new responsibility that BAM would do alongside MSCI? I don't know. So it would be helpful. I don't know if we can do it right now, but to make some decisions about what the board is hoping to get out of this process.

MR. FULVIO: And then the last item which was just a quick update at the last meeting, we also talked with Sustainalytics,

about their engagement services. We had a few follow-up conversations with them about what they offer in the space and how they define engagement. It seems like a very interesting range of services that they provide in that space. So the thought was if, you know, the board was to step up their engagement efforts -- which you already have very deep large engagement efforts. But if this emerging markets process requires that you increase the scale at which you are engaging, maybe you can work with someone like Sustainalytics as an extension of staff for that. So we thought it might be interesting to bring Sustainalytics back in, bring in the person who is based in Denmark who leads this effort to present to the board in December and to talk a little bit about what they do, how they approach it, and invite Mike Garland to also come. And I think we can also do a little bit of conversation around how they might be similar or different, but also could be an interesting conversation which we think is all related to this discussion.

MR. KAZANSKY: Any idea of a range of what something like that might cost?

MR. FULVIO: Yes. It depends on -- they have a -- they have a variety of services or ways in which they work with asset owners, so depends on how you come at it.

MS. PELLISH: If they cover just standards compliance.

MR. FULVIO: Standards compliance, I don't remember the specific pricing. But you could partner with them to focus on certain ESG-related themes, and so you partner with them on individual priorities that the board had and they would help you create an action plan and then they would go out to companies and engage on those -- on those action items. So that would be -- they would call that more of a thematic engagement or you could have -- you know, they have their own thematic engagements that they do, which the board could then just contract with them to be broadly a part of and then you would -- they would just represent you for all of those types of engagements; it wouldn't just be a

standalone thematic approach. So there is different ways of approaching it.

MR. KAZANSKY: But the expectation will be that the cost of that will require an RFP?

MR. FULVIO: It depends. It always does.

MS. PELLISH: Well, it would be more than the $20,000 threshold that we just talked about before and it's just there is a little lot of different ways you can approach it, but it would be more than $20,000.

MR. ADLER: Isn't there a $100,000 for negotiated attributions? I am asking BAM, not Rocaton, or maybe Rocaton knows.

MS. VICKERS: I don't know. Valerie.

MS. BUDZIK: 100 was a small purchase. I would call it abbreviated RFP, but there was still some.

MS. VICKERS: But they still take a while. There is always a process.

MS. PELLISH: So we asked them for fees and if you were just asking them to do engagement activities with companies that failed to meet standards, they gave us a very

wide range of something like forty to a hundred thousand. So it's not hundreds of thousands, but it's more than twenty.

MS. GREEN-GILES: When you contract for that and if there are no incidents and you are not asking them to engage, are you still paying?

MS. PELLISH: Yes, they are engaging. They are -- apparently there are always incidents and they are always in a process of engagements with a variety of companies.

MS. GREEN-GILES: But it's a flat fee, regardless?

MS. PELLISH: It's not per company or per incident.

MR. FULVIO: The more thematic engagement that came up, the example they cited last year was for asset owners that wanted to engage on child labor in the cocoa industry. If you wanted to, you know, work with them on an individual or thematic engagement project, then they said the cost would be about 20K.

MS. PELLISH: So there is a lot of ways

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to slice and dice this.

MR. ADLER: Do they kind of give you a menu? Okay, there is child labor in the cocoa industry or palm oil industry or deforestation?

MS. PELLISH: Yes, it's not an infinite. What the service is, it's the results of Sustainalytics making an acquisition fairly recently of this company based in Denmark, but with global offices and today they have 25 people involved in their engagement team. They are supported by a broader team that does research and gathers data.

MS. VICKERS: I am not sure if the thematic engagement -- we started talking about engagement because of the divestment policy requirement to engage with respect with companies before we decide to sell them. And if there was a controversy that was flagged that made us think that we might want to divest from a certain company or industry and the policy tells us that we have to engage with them before we do that, that's not what we are talking about here. It's not all

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companies, you know, having some exposure to children in the cocoa industry. It's Company A that violates a standard.

MS. PELLISH: It's interesting and they talked a lot about it. I don't think it's relevant for actually what you want to do. It's sort of just interesting.

MS. VICKERS: Or maybe it is, but not to that. It could be something else that if we say that we want to be that kind of investment fund that we, you know, dig in on these issues, that would be very cool. But that's not what --

MS. PELLISH: That's not part of this policy.

MR. FULVIO: The reason we focused on those in discussions is because previous divestments had been more thematic, so firearms manufacturing.

MR. DRAYCOTT: So Robin and Michael, but there is a process issue here. At the moment when we look at the ESG data we kind of -- reports past the resolution, we go and look, do these people derive more than X percent of revenues from these bad activities and then it's binary; they are in or out. What you are suggesting here is we have a kind of middle ground, we have someone that we are looking at and should engage before excluding them?

MS. PELLISH: Well, actually not really. It sounds like that. So because I don't think you have been part of the previous conversations, I see where you can draw that conclusion. But that's -- I don't think that's what we are preparing.

What's been discussed and what -- I think what the consensus of the board is is that there is a desire to screen the portfolio holdings relative to a set of standards which are the UN standards and that's what these services provided by MSCI and Sustainalytics are targeted towards. The engagement part of the discussion came out of the last month's investment meeting where, just as Susannah said, there is this need per the divestment policy if we identify a company that is flagged as not compliant with a given standard, the initial step has to be

engagement. So the question is: How would you engage? And so the board requested that we look into the engagement capabilities of Sustainalytics and that's what we are reporting on. So I absolutely don't think we want to do what you might have thought we were suggesting.

So here is the question to the board: They do have this engagement capability. They are focused on much broader engagement than we might want to use them for, at least initially. Is there an interest in having the head of that business who is going to be in the States in the first week of December come in and present?

MS. PENNY: Yes, sure.

MR. KAZANSKY: Couldn't hurt.

MS. PENNY: Are all five systems interested in this and, if they are, do they engage or do they give a report independent of one another? So if one system is interested in something, does the other one have to; do they work for each system independently?

MS. VICKERS: So we have been having

these conversations at each of the five boards and I can tell you just sort of big picture, there are three boards that are interested in this type of stuff and there are two boards that aren't. Sometimes BAM might want the ability to do the analysis across the portfolio. So just without making any decisions, thought about a five-system price, why it costs more for five systems than one system. Mike and I talked a little bit about and I am not sure that totally makes sense because it's just data. I don't know if it's licenses or, you know, users and what costs more. It's the same.

MS. PENNY: If there is one company to say we want information on one thing like?

MS. PELLISH: One board you mean?

MS. PENNY: Yes.

MS. VICKERS: I think each board will be using it in a different way. If the TRS emerging markets policy calls for an annual screen of controversies being done in a certain manner and a NYCERS policy calls for something else, it could result in NYCERS or

Teachers using this system with different or -- you know, different frequency for example. And then I think we also need to factor in the TRS investment staff I think wants access to this stuff too or might need access for the variable fund, so maybe we go back to a TRS-only model. I don't know.

MS. GREEN-GILES: And BERS has already contracted with their own Clarity A, I which is a similar service customizable software tool.

MS. VICKERS: Can you remind us what BERS is going to be doing with that?

MS. GREEN-GILES: Clarity AI, it's -- I believe it's around $18,000 also, if I remember, so price-wise it's similar. And the idea is that BERS's investment team will be using them and I don't know much more than that. I saw a demo of the product. It's this -- you know, it's similar to what we saw except it's much more customizable. So you put in your own factors that you are looking at and I guess that was the appeal to the investment staff. How that trickles to BAM, I

don't know.

MS. VICKERS: Are there particular

standards or guidelines that the BERS board has instructed the investment team to use?

MS. GREEN-GILES: I think we are supposed to be doing that. We haven't done it yet. The contract -- we just approved the contract at the last two meetings.

MR. BUCKLEY: It's supposed to incorporate the Sustainalytics as well as the MSCI data?

MS. GREEN-GILES: It's more like an aggregator, so they are taking that plus whatever is publicly available and mixing it up into some algorithm.

MS. VICKERS: I think from sitting on this board, you have seen that Teachers and the same happening at NYCERS, we are having this long thoughtful conversation about what to do with this data. So I would just throw it out to BERS board and BERS staff that including BAM in what you guys are doing would be helpful for all of us.

MS. GREEN-GILES: Yes.

MS. PELLISH: So you had asked a -- you posed a question?

MS. VICKERS: So I think can we have a discussion today about how the board might want to utilize or decide -- pick an option from the information that we have today, what seems to be the most relevant due to the discussions we have had. And then, you know, BAM and Rocaton can go back and try to come up with a final action plan.

MR. ADLER: What I heard Robin say a few minutes ago is that looking at page 7 is that will really -- we have been mostly talking about from this list the controversies and global standards screening and not the ESG risk rating and not the product involvement, because that I think is more duplicative of what we already get from MSCI. Is that an accurate statement, Miles? We certainly get the product involvement thing and don't we get the ESG risk ratings from MSCI, too?

MR. DRAYCOTT: They have a version of it.

MR. ADLER: And we are not really

looking for more in this context?

MR. KAZANSKY: I think having duplicative services made sense. We thought one was going to have no charge and the other

was just 18,000.
MS. VICKERS: Can I throw something out: And this isn't a BAM-approved idea --
MR. KAZANSKY: You are a trustee. You are speaking as a trustee.
MS. VICKERS: -- if we go back to the original proposal on page 5. So I don't know if we -- so what I am suggesting is that we do the added MSCI capability, because that just will be seamless with what we are already doing. See how -- you know, how much work it is for us to figure out how to use that and come up with some kind of reporting based on that. And then almost as a check, if that's the right word, we just ask Sustainalytics for now to -- just every year to give us a fixed report on the portfolio.
MR. ADLER: Which product?
MR. KAZANSKY: Page 5, just the original page 5.

MS. VICKERS: And so -- and then once we see what this looks like, we prepare the Sustainalytics annual report to the MSCI work that we are able to do and we can always change. But, Miles, I don't know if you have a thought. Having a whole new complicated database from Sustainalytics even if it's just controversies and global screening, I am not sure how quickly we are going to be able to get integrated and have it be meaningful.
MR. ADLER: Well, let me just throw out something: See, if we can get -- here is the thing. If that same thing is going to be used by NYCERS for whatever it -- wherever it lands and presumably they will charge 18,000 for NYCERS as well, but that's something I think you guys are going to investigate. You guys, maybe Rocaton -- I don't know if it's BAM or Rocaton.
MS. VICKERS: Investigate what?
MR. ADLER: The pricing if we just do -- so if we -- on page --
MS. VICKERS: Can I interrupt?
MR. ADLER: No, I would like to finish

my thought. Let me finish my thought and then you can respond. Thank you.
If we could pay 40,000 for both NYCERS and Teachers to get the access portal and as part of that we are going to do the report anyway, so basically paying per system an

extra $20,000 a year they will still do the report. So for $2,000 a year we are getting broader access, what's wrong with that?

MS. VICKERS: So my response is: I don't see that they are doing the report in the 6 to 7 proposal. And, again, maybe we should ask Alex and Miles. I think that there is a staffing capacity usage question that you are ignoring when you say just for $2,000 more, we can have this whole cool database. I am not sure we need the cool database. No one has convinced me of that, A.

And, B I don't know if our -- BAM staff has the capacity and bandwidth to use it effectively, when for $18,000 we can go to Sustainalytics and have them just do it for us.

MR. FULVIO: I think they are going to

do it for you anyway. I think you will just have the ability to access their research. I think we were pretty clear that the aspect they would be still reporting to the board on an annual basis, I think was part of it. It was just this subscription factor that's adding the additional cost.

MR. DRAYCOTT: If all we are doing in running some analysis in Sustainalytics is coming up with a list of companies in order to understand the impact of potentially excluding that we dump that into MSCI system, that's not a terrible drain on our resources. What would be really problematic is if we need to send all our holdings over to Sustainalytics in order to analyze something.

MR. DONE: I think right now the consideration is that we do have resource constraints at BAM and in the risk group in particular. So adding incremental, you know, responsibilities, they may not be able to fulfill in a timely manner.

MR. DRAYCOTT: Sorry, just the other thing is we can -- it's unclear to me that

MSCI needs to charge us anything, because we were quite careful when we negotiated the original contract. So, anyway, I don't really know what extra services we are getting for the 24 range, but -- sorry, I am getting off topic.

MS. VICKERS: If you think that you can get rid of that cost, that would be great.

MR. DRAYCOTT: We would just like to have that conversation.

MS. PENNY: So if we do the $18,000 with Sustainalytics and with MSCI, do you think that we have everything we need?

MR. DRAYCOTT: With MSCI we already get their data. It's already integrated on the risk platform, so I am not even sure we should have to pay anything extra.

MS. VICKERS: Just so we totally understand, do we currently get the MSCI ESG Controversies?

MR. DRAYCOTT: That's --

MS. VICKERS: That's what the additional cost would be for on page 6, so I think that's what we don't have now. We did elect when we

bought MSCI to do their ESG ratings, but this is --

MR. DRAYCOTT: You are right, Susannah, but we built into the contract the right -- just bears looking at.

MS. PELLISH: So if you know as part of the glide path -- because we are not sure whether having two vendors will actually be additive or not, it might make sense to start out with just the annual service. And if it's compelling on an annual basis, it might be even more compelling to have an ongoing portal and more frequent access and we still would be taking a big step forward having information from both MSCI and Sustainalytics. So maybe given resource constraints, maybe it makes sense to start with the annual service at Sustainalytics and that also might mean you don't wait for every other board to make up their mind.

MS. PENNY: So if it turns out you need more people somewhere down the line, that's another conversation. But at least we started -- I think we really wanted to get going with

this.

MS. GREEN-GILES: So just to be clear, don't buy the add-on service with MSCI; we take what we have?

MR. KAZANSKY: No, we would get whatever is in the MSCI.

MS. GREEN-GILES: But we are currently paying for it?

MR. KAZANSKY: Whether or not we are paying for it or not is the question, but we are definitely going to get the service.

MS. GREEN-GILES: So what is on the table now, the Sustainalytics 18,000 and then the not paying the additional 24,000?

MS. VICKERS: No, Natalie, I think what's on the table right now is we are agreeing we want the additional enhancement with MSCI. Right now we are told it costs $24,000. Miles thinks he might be able to reduce or eliminate that cost, but I think the board should make a decision on whether or not we want it, price to be determined. While at the same time, we are saying that we also want to engage Sustainalytics as a vendor to do an

annual report that could be compared to the work that MSCI's database can perform for us.

MS. GREEN-GILES: Isn't that where we started this whole conversation months ago, is whether it made sense to have two services?

MR. KAZANSKY: Yes.

MS. GREEN-GILES: So we are back at that decision?

MR. ADLER: Well, and the question is whether we just choose the $18,000 service annual thing, which it does say in reading the bullet here that they would be available throughout the year to assist with ad hoc requests as well or try to do the broader thing. And I am willing to go along with the group here and let's say let's start with the 18,000. And if we are not getting what we need, we can consider going beyond.

MR. KAZANSKY: That makes sense.

MS. PELLISH: Great.

MR. McTIGUE: Off the record.

MS. VICKERS: So should BAM go ahead and begin the contracting process for Sustainalytics with the 18,000 and then have

an additional discussion with MSCI on the cost of that enhanced product?

MS. PENNY: Yes. Do we need consensus or we are good?

MS. BUDZIK: If there is consensus?

MR. KAZANSKY: Yes.

MS. PENNY: Okay, yes, there is consensus.

MR. KAZANSKY: We have consensus.

MS. VICKERS: Great.

MR. ADLER: Can I ask one more question: So besides the Sustainalytics contract, what's the next steps in terms of, you know, moving from our interim to our more conclusive policy on emerging markets?

MS. PELLISH: I would -- one thought, it seems to me we have taken the initial step of lifting the country restrictions. So you are now fully invested in the emerging markets. The next step -- actually, that was the important step and you accomplished that. The next step was to figure out how to implement a process that focused on controversies and compliance with certain standards and I think

we have gotten very close to a decision on that. And we have selected vendors, we have selected services, and now we are just talking about price. And I think the third step is to codify the process. Because although we have agreed on the -- the board has reached a consensus on the broad strokes of that policy, there are details about exactly what are the standards which I think there is agreement on, but we just need to codify and what are the steps for that process and how do we make that consistent with the previously approved investment policy.

MS. VICKERS: Then we can codify the policy to the IPS?

MS. PELLISH: To the completed and finalized IPS.

MR. KAZANSKY: Would that be something that would be doable for us, let's say, in the November investment meeting?

MS. PELLISH: Would it be, Mike? Yes. Yes.

MS. PENNY: Great.

So then we are going to go out of order

a little bit, go to Item Number 4 and have Alex talk to us about the proposed pension allocation increases. Alex.

MR. DONE: Well, thank you.

I guess the first thing I see on the list here is an increased allocation to PGIM pre-cap real estate investment fund where Teachers approved at the last CIM a commitment of $74 million pounds, $93,000. There was one system that chose not to come into the investment and importantly we are trying to preserve the fee break for on this investment, which is predicated on a minimum allocation of 200 million pounds. So what we have done is reallocated on a pro rata basis the allocation that was originally, you know, allocated to the system that chose not to participate and the pro rata increase that we will be asking for Teachers would be 3 million pounds to 77 million pounds, which is a roughly $4 million increase to $96 million.

MS. PENNY: $3 million increase?

MR. DONE: 3 million pounds. $4 million. That was a spot rate as of the date

of the memo, because it does change every day. So that is the request and proposal that we ask now.

MS. VICKERS: Does that sound okay to you guys? John?

MR. ADLER: Yes, I am fine.

MS. PENNY: Yes.

MR. DONE: The next item on the agenda is also a proposed increased allocation to the first-time fund early stage manager programs, particularly across PE, real estate, infrastructure, and OFI. So let me just step back as a reminder that at the July CIM, there was a proposal to commit to these programs, to invest in first-time funds early stage managers which Teachers approved.

And if you look at the first page of the presentation that BAM prepared, you will see at the bottom what the original allocations were to those respective programs. So 158 million to PE, 233 million to real estate program, 123 million to the OFI alternative credit program, and $65 million to the infrastructure program. We came back to the

boards in September, in the recent September, CIM asking Teachers to potentially -- to actually increase their allocation to each of these programs and it's primarily driven by two things. Once again, BAM wants to preserve the very favorable fees that we negotiated on your behalf for these programs. And I have some details that I had the teams put together quantifying the extent of those fee savings that were derived based on original commitment amount, aggregate commitment amounts.

And the second reason is that we have actually several systems, as I have outlined on the second bullet point of page 2, that may not be allocating to the programs. So the shortfalls from those systems have been reallocated to Teachers and NYCERS. NYCERS and Teachers were the ones who originally approved the original commitments that were proposed back in July. And I would note that we also went to NYCERS board in September with a proposed increase allocation, which they have subsequently approved.

So on page 3, just wanted to provide you

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a couple of the highlights. And again, as I mentioned, the fee breaks and carry discount breaks and favorable terms that were negotiated were predicated on fixed aggregate amounts. So I just want to share with you what they were. For PE it's a $500 million investment across multiple years, four years. So allocated over a four-year period, but a $500 million commitment. For real estate, it's simply $500 million for real estate. And for, you know -- I think this is a typo here -- infrastructure is 200 million. I think it's OFI is 300 million. Alternative credit in the aggregate is 300 million and infrastructure is the one that's 200 million.

MR. BROWN: So change the 300 to 200?

MR. DONE: Yes. I apologize for that. OFI aggregate, 300 million. And infra in the aggregate is 200 million. Those were just transposed. And again there is meaningful carry -- fee and carry discounts, which we will discuss in a second by asset class.

The other important rationale which certainly made me personally comfortable when

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I was discussing this with the teams and with each of your specialty consultants, which did provide recommendation memos that you saw for the September CIM in making this increased allocation, is that we were very thoughtful about what is the potential exposure increase that Teachers would have by increasing their allocation to this program. And there is some guidelines that we have been following; some formal, some informal across their asset classes. What do I mean by that? Very specifically, you know, in PE you have approved over the years, certainly since I have been around, sub-asset allocations and target. What do I mean by that? There is a target to what percentage of the PE portfolio should you buy out, growth equity, special situations, and you will recall there is a bucket that we included that we addressed in the annual plans three or four years ago about emerging managers. Particularly as we were developing the internal emerging manager program, the one you have committed to now three times and was reupped at the beginning

of the year and what we said was the long-term target to emerging managers, what your exposure should be over time is 10 percent.

So let me just flip you through PE, so go to page 4 there. You will see the details. Look at the bottom of page 4. What I tried to do there for each of the asset classes is show you where you are today with regards to your exposure to emerging managers. And then as you see, seen us do with your annual plans, is then project that forward. Looking at what the annual plan is not only for your direct program because you are obviously allocating on your direct emerging manager program, but also adding this potential new program. We know there is a horizon-model pacing plan that we put together, together with your consultants, to project what is the exposure that you would have to emerging managers given a certain set of assumptions with regard to the growth of your private equity portfolios, contributions, distributions, and the growth of the overall plan. So as of today and today is calculated as of the end of the year, you

have a 5.6 percent. So that's the yellow bar at the left-hand side of page 4 for PE. A 5.6 percent exposure to emerging managers and that is versus your 10 percent long-term target that has been approved as of the 2019 annual plan which we are executing for you today.

Then what we do is then later into that, this new early stage emerging manager program and we have two scenarios. The first scenario would be as contemplated and approved as of July, meaning that the Teachers would commit $158 million to this program allocated over four years. Given the growth in overall PE plan, the way you would pace and continue to pace your existing direct emerging manager program so that's in here as well, that would suggest at the end of four years in 2023 your allocation to emerging managers is 7.3 percent. Now, if you were to increase as we are proposing your allocation to this program, Early Stage Manager Program from 158 million to 238 million, your total exposure would grow from 7.3 percent at the end of the four years to 8.2 percent.

So you would do two things. First of all you would pace faster into your 10 percent target, which I would argue is a good thing. But also more importantly, you would not exceed the guidelines that we have been following together with the recommendations from your specialty consultants of targeting 10 percent to emerging managers in the portfolio. So that certainly made us feel comfortable in having, you know, Teachers and the other board pick up some of the allocation that may be coming off some of the plan, funds that may not be allocated to this program.

MR. BROWN: Alex, why do you think the faster we get to the 10 percent goal would be better for us?

MR. DONE: Because you have a target. You want to be at your target asset allocation. So right now if you look at all of PE, you have 6 percent allocation to PE. You are slightly under that today and obviously your goal is to have you fully allocated into PE. Particularly if we believe which we do in the underlying returns

expectations for this asset class, you want to be fully allocated versus hanging out or being in placeholders which is the equity markets. So you do want to be at the target allocation.

Now, if you take that further look at your sub-allocation emerging managers program, which since I have been here has been a program, and strategic initiative to increase the allocation to emerging managers, and we thought it was always prudent over a four or five-year period to get there and we have been deliberate and prudent about it. So I would argue over the long term, certainly you want to get to your 10 percent sub-allocation to get there.

MR. BROWN: What's the calendar to get to 10 percent?

MR. DONE: Based on these metrics if I were to extend this two to three years, it would probably two or three years longer. These are conservative numbers. We have been conservative in allocating PE. As you recall, we have provided historical scenarios in terms of how we have been proposing the phasing of

PE. One of the assumptions that we made is, A, you know, conservative views with regards to the growth of the plan. The -- and I think also given where we are in terms of cycle, valuations, you know, we have paced more prudently than if you were to make more aggressive assumptions in your pacing plan. So we have deliberately been a bit more conservative in allocating. So that's a part of that.

But if you look at the top of page 4 and this is just for PE, you can see the fee savings that we have -- that you would achieve by increasing the allocation and maintaining the aggregate commitment amount of 500 million across the two systems that potentially would participate. So you see the management fee savings is 11 percent. The PE program is being -- the fees are NAV, so there is 11 percent savings. I think the more meaningful one is certainly carry, which we were able to negotiate for the primary portion of the portfolio. By that I mean, there is a portion of the allocation that goes to funds. It's a

primary fund; the other is co-investments. Originally the Neuberger team proposed a 5 percent carry on that and we got them down to 0, so on primary funds they are not charging any carry. And then on co-investments they were originally charging a 10 percent carry above an 8 percent hurdle or pref and we got them that down to 9 percent. So primary is say full 100 percent on fee savings on carry and that's going to be the lion's share of this portfolio. I think it was targeted about 60 percent, you know, primary funds. That's a meaningful savings.

So just stepping you through a couple of others, you see the real estate we just conducted the same analysis. Real estate you have a smaller allocation. See at the bottom as with PE to emerging managers and in emerging real estate than PE, so you are starting 2.6 and between that layer in both direct investments that were part of your annual plan of this program. And, again, you are -- at the end of this investment period for this new program you are still under 5 percent exposure to emerging managers, but importantly look at the fee savings at the top. We were able to negotiate a 30 percent decrease in carry. That is meaningful. And your catchup, the catchup was originally 100 percent catchup to the GP and we negotiated 60/40.

The next one is alternative credit, OFI. Same story on the exposure to emerging managers is very low right now. All you have is -- Brightwood is the only MWBE manager or emerging manager. It's an emerging manager program. The only small manager in the OFI program is Brightwood. That accounts about 1.1 of the Teachers' OFI portfolio. That would grow to under 4, 3.9 percent. But again you see the meaningful savings, 25 basis points or 25 percent I should say. Management fee, savings 5 percent. Carry goes from 7-1/2 percent to 10. Plus 25 percent and the GP catchup goes from 50/50 to 100, so you see the difference there.

And, lastly, we have infrastructure. You will recall infrastructure you have no

exposure today to emerging managers, very concentrated portfolio of primarily large global infrastructure managers generally. So this was -- the idea with the infrastructure program is, as you will recall from the memo that was provided in July, this would establish any emerging manager program. So you are starting from 0 to grow to 5 percent of the program over three years. This has a three-year investment period so a different term than the others, but it would grow to approximately 5 percent, 4.8 to be exact, from 0 today. And again at the top, you will see the fee savings that were -- that you would get from maintaining the total size. So again on management fees, it's primarily on co-investments. The BlackRock which is the proposed partner here would be charging 80 basis points on co-investments versus 87-1/2 basis points. And carry -- there was no fee savings on carry, but the pref was increased in your favor. So the pref because raised from 7 to 8 and the catchup was negotiated from 100 percent catchup to 50/50.

So again just to wrap up, we strongly believe that this emerging manager program and this focus on early stage managers where Teachers has a white space, we have, you know, very -- well, little, actually no allocation to truly first-time funds. We do believe will be additive to the portfolio and it's important for us that we preserve some of the fee breaks that we have been able to negotiate. So for those reasons, we are proposing that you consider increasing your allocations in each of those four programs as proposed.

MR. BROWN: Is there a deadline for this?

MR. DONE: There is because we are in the midst of negotiations, meaning we are in the legal stage. Because once you gave us the original approval back in July for you to commit to these programs, legal began. We are looking to finalize legal in the month of October. And then we would have to, frankly, go back to the drawing board with regards to fees, if you will, not approve it because we

would have -- it would reopen a discussion on fees. And I think, frankly, I would have to come back to you and discuss whether it makes sense and it's prudent to do this. If you remember, one of the number one considerations that we had in every memo on this proposed investment was the fact that it is essentially a fund of funds structure. So there are two layers of fees, so I was primarily very focused on taking those down as much as we can and we were successful in doing that. But at these aggregate commitment amounts, that would really change the calculus if we weren't -- if we weren't able to preserve that.

MR. BROWN: Do you have any idea if the other two funds are going to go with this?

MR. DONE: No. I mean, I am always cautious.

MR. ADLER: The other three.

MS. VICKERS: It's a surprise that BERS didn't want to go, because --

MR. DONE: That's a very good point. BERS surprised me the most. I always knew police and fire were a bit of a wild card.

But to be fair to police and fire, they haven't turned it down. They have tabled police and fire. And, again, I always appeal to my better angels I think to be more of an optimistic person, but I don't know. I don't know the answer to that.

MS. VICKERS: What we are requesting is an up to.

MR. DONE: Yes. Yes, that's a very good point. Because let's say one of those three systems or all of them decide to come in, we would very revert to your average original allocation.

MR. BROWN: The key is up to.

MS. PENNY: We stand behind the original commitment. But to be honest for 181 million more, I don't know. We will certainly talk about it. But you seem to explain it there is a pacing calendar and it all made sense and now we want to hurry up and get there and it's $181 million, so...

MR. DONE: I would say, Debbie, a couple of things. The way we think about it is this gets deployed over four years, which is what

we showed. And, importantly, it remains within your guidelines that certainly BAM recommends, but your U.S. amounts have recommended as to what should your target allocation to emerging managers be. So we are not violating that so, we think it's a prudent increase. It's not an egregious increase that we are asking for. I think it stays within the guidelines that we have set up for the program and what we think it's prudent for you to have exposure to the emerging manager. But I can't underestimate or really say the primary reason is the fees. If at the lower amount you are potentially going to pay much higher fees, then I think it opens up a broader conversation about the program and stepping back, putting fees aside which is always an important consideration. I do think there is a place for early stage managers in your portfolio in the private markets. They become a feeder into your direct investor program, which has been very successful to date. And to source these managers with the help of these outside partners is critical, so

I think it is important. I would argue the increment think about over a four-year period and the fee savings far outweigh the concerns that you may have, in my opinion, of the added increment.

MR. KAZANSKY: So first of all --

MR. DONE: One thing I will say: PE -- let me interrupt, David.

So the difference annually for PE which is where you see one of the biggest increases going from 158 to 238, your annual increase would go from 40 million I think the -- sorry, you would go 20 million up. So you go from 100,000 million a year to 120 million. So another 20 million annually, which is why I say look at it over a four-year investment period.

MR. KAZANSKY: So collectively this is a $760 million commitment?

MR. ADLER: Collectively for Teachers?

MR. DONE: Across the four asset classes.

MR. KAZANSKY: So that's a decent amount of money. And congratulations on all the

emerging manager programs that have existed to this point and I am sure we will be lauding them in a week.

But so my question is that: Are we confident that giving this larger amount of money from our fund, if -- is the IRR going to be worth it; are we going to make the money? Yes, I understand the fee break is important, but more important than fees are returns and we are putting money where, you know, we have no track record. We debated for quite some time on giving KKR a billion and change and this isn't too far from it but, you know, to first timers so I am a little wary with that.

And the other thing is -- which can negate everything I just said, is if we are comfortable and we agree -- and the only reason we would agree is that we believe it's better for the fund to give this amount of money to these managers. If we agree that 760 is a number that we are comfortable with, if police and fire decides that they do want in or BERS decides they do want in, would there be any reason to keep us at that higher level

since we are comfortable with it, if we ultimately are, and would that give any additional fee breaks to you guys if we enlarged our commitment and police and fire jumped in as well?

MR. DONE: Let me take that in two

parts.

The first part and most important part, particularly for real estate and PE I would say where we actually have empirical evidence and we put that into the memo, we clearly believe that there is the ability for smaller managers to outperform other sized managers in those assets. So what's critical is manager selection, right? Because just like they have the ability to outperform at the top end, so they have higher, you know, first-quartile returns, historically they also have lower fourth-quartile returns historically than larger managers. Manager selection is key, which is what we discussed with the Teachers board about the direct program. And the reasons why we wanted to do it, but what I would say is that what we think helps work

here in your favor, is how we structure the investment. By that I mean your partner. Whether it's Grosvenor for real estate and OFI or BlackRock in infra or Neuberger, they only make money if they deliver the returns. So they are an investment partner, not a service provider. They are putting money alongside of you. They only can earn a carry, which is the larger share of fee if it's above the preferred return. And, again, more importantly the empirical evidence suggests to us that there is alpha; there is upside potential to adding these managers. So I would say fundamentally the reasons we are supporting this, bar none is because we think it's adequate to your portfolio from a return perspective over time. All the other things are secondary. Important, but secondary. It's about returns. It's the reason to do it and diversifying your portfolio, which tends to be certainly more exposed certainly because of size to the larger managers.

Also remember that this in the aggregate you say it's similar to KKR, you are correct.

But KKR is one manager. This will go to a diversified number of managers, so there is also further diversification. Neuberger is going to create a diversified portfolio of primary fund managers and direct co-investments as well, that's important. And you remember, real estate is very interesting that the way Grosvenor has designed that one to give you differentiated exposure to funds, to have interest in joint ventures, co-investments, et cetera. It would be very differently differentiated for your portfolio and could help us source direct managers with I think differentiating capabilities than what we have today. So that's the first part. And very important, we are doing this because we think it will be accretive to your current portfolio.

I think the second part is a little tougher. It's a judgment call. It's even though we are very favorable on emerging markets, we want to be thoughtful with regards to how much exposure you have. Because as I said: While there is potential for

outperformance, there is also an investment. There is potential that it doesn't work, so we want to be prudent. So it was originally sized to be prudent as we thought about not only in the context of your emerging manager portfolio, but also in the components of your emerging manager portfolio. I would say these are still early stage managers. So I would also not recommend that the largest portion of your overall emerging manager portfolio is to the early stages of managers. There is still a benefit of having, I would argue, of the largest part of the overall exposure to more seasoned managers which is what you do on a direct basis where you are making bigger checks.

So I could go either way frankly, but I still stand by the original recommendation which is -- I thought which was prudent overall. I think its upside still fits within that and still recommend that feels like the right and appropriate allocation. Above that, I am not 10 percent smart to say that one way or the other whether that will have an impact.

Probably not, but probably not much more than what we are recommending now. I would -- I would not.

MR. KAZANSKY: I am not suggesting that we put in more than --

MR. DONE: But you are saying if other boards come in?

MR. KAZANSKY: You are looking at the bigger picture, which is how this affects all five boards. That is a luxury I don't have.

My concern is, I am concerned about this board and this board only. So if it's right for us to increase our commitment by 181, I would want to believe that is correct regardless of what any other system chooses to do. Whether they all get in or they all get out, I don't care. It's either a good decision for the board to have one set of numbers or another or it's not.

MR. DONE: I think it's right. I would agree with that. And the answer is: At this increased level, irrespective of what other three would do I would be comfortable with that amount. But to answer your question: I

don't think it will get us an incremental fee savings, because to get from where we were to this fee saving was a jump. I think the next jump is almost double for overall in aggregate.

MR. ADLER: To play on Dave's point: So let's just say we approve these amounts and let's say one of the other three systems does come in, could we then forgetting there is no -- understanding there is no additional fee savings, let's just say on PE where it's 500 million and the result is that the total amount goes to 600 million, we could do it with Neuberger Berman?

MR. DONE: First of all, they would absolutely take it. But more importantly hearing the question, you know, BAM would agree with that. BAM would agree it's prudent. But what we are also recommending: Are we comfortable with the higher amounts period for Teachers, the answer is yes.

MS. PENNY: But you recommended them first. That's why I am having a little problem with this, this is 181 million, and it

makes sense. I understand with the fee savings and I certainly understand with the pacing calendar, but yet that wasn't the first number that you came --

MR. DONE: But I think that has more to do, Debbie, with our process how we do allocations. If you were to ask me what is the prudent -- what is my -- what I think is prudent for Teachers, the answer is what we originally recommended.

MS. PENNY: I always feel like now this isn't prudent.

MR. DONE: But I am saying it's not absolute. It could be slightly higher. Sometimes we don't have the allocation to give or the GP doesn't give us the increased allocation. We are trying to do pro rata across all systems. $500 million in aggregate allocated pro rata felt like the right number, it just did. That being said: When we analyzed -- because we did the analysis, what's here -- the increment, we can get comfortable with that increase. So both can actually be true in this case.

MS. VICKERS: Does that make sense? Because the reason we first allocated the smaller amount is because we are starting with 500 million split five ways and that's the starting point. Just because of our process and having five funds, that's where we have to start with and then we do the tweaks afterwards.

MR. ADLER: So I have one question about the infrastructure, which is: So presumably there is no target for exposure to emerging managers in the infrastructure because it probably got put in the slide, correct?

MR. DONE: Correct.

MR. ADLER: That's one question.

The second question is: You just made the point for private equity and I think real estate about not limiting our early stage -- our emerging manager exposure to just early stage, that you want diversification within the emerging managers to early stage and more, you know, later stage emerging managers. But this program for infrastructure is only early stage, right, so doesn't that fly in the face

of that statement that you made to the other asset classes?

MR. DONE: First of all, with regards to infra the reason there has not been a target is because that's not been explicitly discussed with the board either by your consultant StepStone or BAM through Petya. That being said, I personally get comfortable given the size of the asset class that under 5 percent on a relatively basis could be a good guideline. This came at 4.8, so I think I get comfortable in a portfolio that you have today. That's 2 percent of your portfolio having to be up to 5 percent over a four-year period to me is reasonable and I think it's adequate.

But this is the other point I wanted to make, John, to your second point: With PE, and real estate in particular, we have very defined and historic emerging manager programs. We have defined the size of emerging managers, what's a direct manager, we can find what's an early stage manager. If you remember from the memos that was sent to

all the boards and obviously including Teachers, this was not called an early stage first-time fund program.

MR. ADLER: For infrastructure.

MR. DONE: It was actually an emerging manager program. So if you looked at the -- what the criteria was, it's going to be funds up to a billion and a half because Petya is looking at funds a billion and a half or greater. So these are not tiny funds the way in PE we are looking at 2 or $3 million funds and that may not be first-time funds. So this is a different program or the criteria is a little different, given the asset class.

MR. ADLER: So the plan is 200 million with the BlackRock platform and it's over three years and how many investments do we anticipate that being in, like what's the size of the commitment per fund?

MR. DONE: I don't recall the specifics, but I remember it was in the neighborhood of probably two to four investments a year.

MR. ADLER: Very tiny slices.

MR. DONE: I think the dollars would be

about 15 to $20 million, kind of bite sizes in infra.

MR. ADLER: Okay, very small.

Okay. I would just say, I am comfortable with this recommendation. And you said we did get -- let me just ask a question, sorry. Did we get memos from each of the consultants recommending these increased allocations?

MR. DONE: Yes.

MR. ADLER: Is that true on OFI from Rocaton?

MR. DONE: What I understand from Wesley, he spoke to Rocaton and you were going to verbally discuss it with the board.

MR. FULVIO: That's right.

MR. ADLER: So is that --
MR. DONE: But the specialty consultants did provide --
MR. FULVIO: We shared in July, we are comfortable with the recommendation for Grosvenor. And I think the as to the allocation, we deferred to the board. It was a notable increase, but again we are

comfortable with the manager itself so...
MR. KAZANSKY: So if you have to get your legal ducks in a row by end of the month --
MR. DONE: That's the target.
MR. KAZANSKY: -- I would like to request more time to let this marinate. And we would have an answer for the CIM cause the CIM is what, the 17th?
MS. VICKERS: The 25th.
MR. KAZANSKY: Does that fit into your time frame?
MR. DONE: We can make that work.
MR. ADLER: Can I ask Michael a follow-up question. I understand you are comfortable with Grosvenor for the OFI. Are you comfortable with the increased allocation to Grosvenor that's being recommended here for Teachers?
MR. FULVIO: Yes, we are comfortable with it.
MR. ADLER: Okay, fine. I just didn't hear you say it.
MS. PENNY: By the CIM, will you know if

the other systems have agreed; you are still waiting?
MS. VICKERS: Hopefully.
MR. DORSA: That's the plan, we should know by the CIM.
MR. ADLER: But NYCERS has approved it so basically in some ways if we are saying or potentially saying that the recommended amounts are good with us and BAM is saying we can go above those amounts, then what the other systems do is not really relevant to our decision.
MS. VICKERS: Correct, but I think they would like to know if all of a sudden one board comes in. We will let you know because even if you approve the up to, it might mean that we are just utilizing a smaller amount.
MR. KAZANSKY: Okay.

MS. PENNY: Good, okay.

MS. STANG: Can I ask one question: So it's a yes on PGIM, that was yes and consensus?

MS. VICKERS: We will let you know at the appropriate time.

MS. PELLISH: So we are going to go back to the Passport Funds manager, ClearBridge.

MR. FULVIO: We handed this out. This was distributed last week and then we handed it out earlier this week. ClearBridge is a manager in the active Composite U.S. Equity within the Diversified Equity Fund. It's been a topic of discussion on and off over the last few years. You will recall, they manage all cap-growth mandate, currently of about $266 million or just shy of 2 percent of the Diversified Equity Fund. It's a strategy that was hired back in October, 2013.

And, you know, what I highlight is out of the gate the strategy performed quite well for TRS. And then since the beginning of 2015, the strategy has really lagged the benchmark. Because at this time it is a very active strategy, and I am defining active as the amount of tracking error they take relative to their benchmark, you know, it's not -- we didn't think going into it, it would be unlikely that their returns would deviate significantly from the benchmark over any

given time period. So we will look at a couple of slides that show their historical relative track record and you will see that, but what has kind of irked us a little bit is how long the underperformance has persisted.

I think the big takeaway is there hasn't been anything particularly that's changed about the strategy, the approach, the team. And I think as a board and staff at Rocaton, we have been very patient in trying to hope -- we hoped that the market would begin rewarding a process that historically had, you know, bore really good relative results, but in the past few years has really struggled. But we are at a point where, you know, we think with the passage of time things just have not turned around for quite some time. And all else equal, we recommend moving forward without ClearBridge in the portfolio. So Slide 2 just provides a quick intro on that.

We have had a lot of conversations with them over the last few years about what's driven the results we have seen. And, as I said earlier, nothing really changed with

respect to the people or process. In fact, the person who -- Richie Freeman, who is one of the PMs, has been managing the strategy going back to the late '80s and then Evan Bauman joined the team about 20 years ago. There has been no other change to how they work, what they are trying to accomplish. Their focus is trying to find undervalued growth companies that they think over the long term are going to create competitive positions for themselves in the market and they are going to have healthy free cash flow generation and that the market will reward them for, so they end up holding some of their names for a very long time. Some of the companies in the portfolio have been there for 20-plus years. The firm itself has been pretty stable over the last few years. The strategy assets have come down. Even though we have seen stability in the strategy's separate account book of business which you are part of, there is a retail mutual fund and institutional mutual fund and there we have seen asset outflows have increased and the

decrease has been from 18 to 10 billion in what's been a strongly returning market. So you would have expected to see that go up, all else equal.

We have had a number of conversations with them over the years trying to make sure we understand what's going on in the portfolio. And because of their process and what they are looking for in the market, they are underweight blue chip technology companies. Everybody has been talking about these stocks in the last couple of years and those names have become a very significant portion of the benchmark. And so when you don't hold those names -- they have grown so much they present 25 percent; those six companies with Microsoft, 25 percent of the Russell 3000 Growth Index -- it's not surprising that this company has lagged while those five or six companies have really driven benchmark returns. So stock selection within IT healthcare, media, and energy has really hurt the strategy. It hasn't helped over the recent time period that they are overweight to

healthcare and energies. So it's not been a favorable market for the strategy and the types of companies they invest in and that's persisted for quite some time.

You know, we will give them credit for sticking to their knitting, but at some point we don't want to wait forever I guess is where I am going. We talked about the cyclicality of active managers, so we haven't -- I think we have been very patient. We haven't reacted to the cycle and you can see that illustrated on Slide 4. So maybe we were buying them early in the cycle at a high, if you will. If you look at some of the shaded area, Teachers holding period, so you can see coming out of 2013 the strategy had done quite well and then since 2015 it's trailed off. And, you know, in most of these time periods over the long term, the line is above zero. But you can see over the last few years regardless of whether you are looking at rolling 5 or 10-year time period, the performance has really trailed off. So the length of this cycle has been really disappointing for the strategy.

So one thing that we wanted to point out is from a consistency standpoint, the strategy really is quite consistent. It's quite a consistent outperformer over the time periods leading up to 2013 and unfortunately since then it's been an consistent underperformer. But if you look at these charts, what we are showing here on the X axis is the return of the market or their benchmark and on the Y axis, the return of the strategy. And what we have highlighted is the strategy has done really, really well in periods where the market has had notable negative returns in virtually all those time periods, the strategy has outperformed quite significantly. All told, on average the strategy outperforms in about 70 percent of rolling three-year, five-year, and actually 80 percent rolling ten-year time period. So the strategy in these time periods has done really well. Unfortunately, what we have seen in the market obviously is this go-go growth market where those high-fliers have driven the performance of the market and they have not kept up.

So --

MS. PELLISH: So I think what you are hearing from Mike is a little bit of ambivalence, because there is a logic to why we have held onto this strategy despite its consistent underperformance of its benchmark. And it's been not only consistent, but large.

MR. BROWN: What is that?

MR. FULVIO: Since inception, the strategy has returned about 9 percent and the benchmark returned 13-1/2 percent.

MS. PELLISH: On an average annual basis, so each year on average you have lost more than 4 percent in opportunity cost relative to the benchmark.

MR. BROWN: And you are comfortable in getting rid of this? Perhaps it just might be a low point.

MS. PELLISH: It might be. And we are trying to show you both sides of the argument, which we have held on believing that this is a manager with very significant tracking error; they have a value bias within the growth market so they haven't held these FANG stocks

that everybody is holding at or about market or benchmark weight. And so we can understand much of the source of their underperformance, but at some point we say maybe there is just something we don't understand. At some point we say, we don't understand, we may be missing something. We can't see a significant change in the process or people or firm, the environment has been there; is something there. It may just be the market environment is not favorable for their strategy, but at some point we have to acknowledge, as with everything, there is a lot of uncertainty around evaluating managers. And at some point, we may just -- we have said okay, there is something going on here and we can't consistently just blame the fact that their style is out of favor. They are a growth manager.

MS. STANG: Just add two quick things. We have tried everything. First, we reduced their fees from like 33 or 35 BPS to 20. We wanted to go to 15 and they had the nerve to renegotiate it up to 20, but anyway so we reduced their fees. And because of the way our rebalancing program started out with a certain amount of money, but it kept going because they kept underperforming. So they kept getting more increase, so they had an increasing allocation. But we recently reduced it to, so we have halved their money by 40 or 45 percent recently in a recent thing. So we have tried the -- you know, step one is cut the fees, step two is cut the amount of money they have. You know, so the question is: Do we go to step three? That's what I would say.

MR. KAZANSKY: So my question is: If the projection is that U.S. equities let's say are going to do single digits, is that the environment where we expect this active manager to shine or do we believe that let's just let go of the reins on this strategy and we can't possibly know whether or not they are going to repeat what they have done when the market hasn't been great?

MS. PELLISH: So if the high-growth companies -- doesn't have to be the broad

market, but if the high-growth, high-valuation tech companies underperform significantly, they should do better than their peers and better than the benchmark because they don't own them and they haven't owned them. They trade -- they turn over like 5 percent of their portfolio, 5 to 10 percent of their portfolio per year. So what they own today is what they are going to own tomorrow largely and so there are environments.

And that's why Mike highlighted these graphs on page 5, because what they demonstrate in general when the market is in negative territory, when they are benchmarked, their part of the market is in negative territory, they tend to outperform the benchmark.

MR. KAZANSKY: So when President Warren breaks up Facebook --

MS. PELLISH: Potentially.

MR. KAZANSKY: -- they will do better.

MS. STANG: Another way of saying exactly what Robin said on page 4, if the last time they really hit the ball out of the park

was in the tech bubble, '99 -- I mean 2000, that's when they really showed their stripes.

So now right now what do they own? They own United Health Care. They have big positions in companies that haven't done terribly well and because they are an all-cap portfolio they have, you know, bigger positions in some and then they have tons of small positions. So it's -- you can tell where I come out on this one but, you know, it's a judgment call. It could be exactly the wrong time, but how much patience does a person have.

MS. PELLISH: So we are not coming to you saying it's a mistake to hold on. There was a clear logic to both their retention and holding them over this prolonged period of time. But at some point, we say there may be something going on that we don't -- simply isn't visible to us.

MR. FULVIO: Just again for the record, the recommendation would be to move the company money to the index.

MS. STANG: Until we come back with a better idea.

MS. PENNY: Do we need consensus; do we have consensus?

MR. ADLER: Yes.

MR. KAZANSKY: Yes.

MR. BROWN: Yes.

MS. GREEN-GILES: If I had a crystal ball it would be nice, but sure.

MR. ADLER: Can I just ask a question about another active underperforming active manager, which I would just -- you don't need to address it today, but when I look at our active manager roster it's not quite as underperforming as ClearBridge. But Sound Shore, which is one of the two large value active managers, also has very persistent underperformance. And so I would just like Rocaton to -- not necessarily today. I would like to, you know, report to us your assessment of that manager.

MS. PELLISH: Sure.

MR. ADLER: Again, it's not just a quarter a year. It's like three, five years of consistently underperformed.

MR. FULVIO: It's driven a lot by the

last few years, the trailing time period. Well, you can see it's end-point specific, but we will come back.

MR. ADLER: Just give us an assessment

of then, because that's our largest active manager. They have the most assets in that active portfolio.

Let me just ask one other question: At some point you guys said that you were going to come to us with a recommendation for a standalone equity index fund I thought.

MS. STANG: It's coming as -- it's happening. As of 1/1, there will be a domestic. We have already approved it, a domestic index fund and an international index fund.

MR. KAZANSKY: The literature is up on TRS' website. Members have been notified.

MS. PELLISH: We will give you a progress report at the next investment meeting, does that make sense?

MS. STANG: Everything has been done. It's all been done.

MR. ADLER: Did we pick a manager for

it?

MS. STANG: Yes, you did already. Basically, two Fidelity mutual funds. I can't remember the exact name. The domestic one costs 2 basis points, the international one cost 5. It's happening, yes.

MR. BUCKLEY: I feel like I am looking at the ClearBridge and I just want to sort of think about this a little more. And we talked earlier about insurance, talking about the fixed income stuff and how this strategy is not exactly the FANG stocks. But I am looking at the three-month performance, 5.8 exceeds everybody else's three-month performance. Their negative 2.63 is not necessarily out of line with everybody's. I don't want to look too short term, but -- I don't know -- is there a value in having someone in the portfolio that for their strategy isn't to hold onto these FANG stocks? We are talking about strategies that are diverging from whatever everyone else is doing, if we feel like there is uncertainty.

MS. PELLISH: So -- well, so the

response I think we make to that is: Yes, absolutely there is value to having a manager doing something differently. We do have value managers, so what they are doing is they are marrying growth and value to some extent and that accounts for the -- that is a primary source of the underperformance. But I would say we have a lot of exposure within this particular composite to value managers, so I am not so concerned about having a portfolio that doesn't have that exposure to FANG stocks because we already have that within the value portfolios.

MR. BUCKLEY: Okay.

MS. STANG: If you are worried about defensive, there is that whole defensive composite within Variable A. It's not like somebody is investing in ClearBridge directly.

MR. BUCKLEY: Yes, right. Right.

MS. PELLISH: If we only had very aggressive growth managers elsewhere in this composite, I would be more concerned. But given the presence of the other style managers, I think that ClearBridge's absence

would make it -- would change the diversification characteristics significantly.

MR. BUCKLEY: All right.

MS. PENNY: Do I hear a motion to move out of executive session?

MR. BROWN: So moved.

MS. PENNY: Thank you, Mr. Brown.

Do I hear a second?

MS. VICKERS: Second.

MS. PENNY: Thank you very much.

All in favor?

Aye.

MS. VICKERS: Aye.

MR. KAZANSKY: Aye.

MR. BROWN: Aye.

MR. ADLER: Aye.

MR. BUCKLEY: Aye.

MS. GREEN-GILES: Aye.

MS. PENNY: Any opposed? We are in public session.

Okay, welcome back to public session. Susan, will you report to us.

MS. STANG: Is the camera on?

Okay, in executive session we received

proposals from two vendors. Consensus was reached as to the next steps. We discussed a specific manager within the Variable A program. Consensus was reached which will be announced at the appropriate time. There was a presentation on two previously approved investments within the pension fund. Consensus was reached on one of the two.

MS. PENNY: Thank you.
Is there anything else anyone would like to add? Okay.
MR. BROWN: Before we adjourn, I would like to invite all of you to join David and me in wishing our Madam Chair a very happy birthday today.
MS. PENNY: I am not a year older.
Now, do I have a motion to adjourn?
MS. VICKERS: So moved.
MS. PENNY: Thank you, Susannah.
Do I have a second?
MS. GREEN-GILES: Second.
MS. PENNY: Thank you, Natalie.
All in favor?
Aye.

MS. VICKERS: Aye.
MR. KAZANSKY: Aye.
MR. BROWN: Aye.
MR. ADLER: Aye.
MR. BUCKLEY: Aye.
MS. GREEN-GILES: Aye.
MS. PENNY: Any opposed? Okay, we are adjourned.
[Time noted: 12:48 p.m.]

C E R T I F I C A T E

STATE OF NEW YORK)
: ss.
COUNTY OF QUEENS)

I, YAFFA KAPLAN, a Notary Public within and for the State of New York, do hereby certify that the foregoing record of proceedings is a full and correct transcript of the stenographic notes taken by me therein.

IN WITNESS WHEREOF, I have hereunto set my hand this 10th day of October, 2019.

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YAFFA KAPLAN