NEW YORK CITY TEACHERS' RETIREMENT SYSTEM
INVESTMENT MEETING
Held on Thursday, December 3, 2015
at
55 Water Street
New York, New York

ATTENDEES:

JOHN ADLER, Chairperson, Trustee, Finance
PATRICIA REILLY, Executive Director, TRS
THADDEUS MCTIGUE, Deputy Executive Director, TRS
SANDRA MARCH, Trustee
THOMAS BROWN, Trustee
DAVID KAZANSKY, Trustee
SUSANNAH VICKERS, Trustee
RAYMOND ORLANDO, Trustee
CHARLOTTE BEYER, Trustee
SHERRY CHAN, Chief Actuary
SCOTT EVANS, Comptroller's Office
VALERIE BUDZIK, TRS
PAUL RAUCCI, TRS
SUSAN STANG, TRS
RONALD SWINGLE, TRS
MELVYN AARONSON
ROBIN PELLISH, Rocaton
CHRIS LYON, Rocaton
MICHAEL MCGOWAN, Rocaton
MICHAEL FULVIO, Rocaton
DAVID LEVINE, Groome Law Group
LIZ SANCHEZ, TRS
MILES DRACOTT, Comptroller's Office

P R O C E E D I N G S

(Time noted: 9:57 a.m.)

MR. ADLER: Good morning, everyone. Welcome to the December 3, 2015 investment meeting of the Teachers' Retirement System of the City of New York.

This is how I propose we do the agenda today. We have a discussion about our asset allocation review with Rocaton and the Comptroller's Office. And I would suggest that we start our public session with that, and then when we conclude that we move to the Passport Fund public agenda. And after that, we will switch to executive session so we can hear manager updates from Rocaton, as well as questions for the Comptroller's Office that any Board member may have. Okay?

If there are no objections to that, I will ask Patricia to do the roll call.

MS. REILLY: John Adler?

MR. ADLER: Present.

MS. REILLY: Charlotte Beyer?

MS. BEYER: Here.

MS. REILLY: Thomas Brown?

MR. BROWN: Here.

MS. REILLY: David Kazansky?
MR. KAZANSKY: Here.
MS. REILLY: Sandra March?
MS. MARCH: Present.
MS. REILLY: Raymond Orlando?
MR. ORLANDO: I'm here and present.
MS. REILLY: Susannah Vickers?
MS. VICKERS: Here.
MS. REILLY: I'll turn it over to you.
MR. ADLER: I'll turn it over to the Comptroller's Office to discuss the asset allocation review.
MS. MARCH: Also, on behalf of the Board, I'd like to thank our Actuary for participating in our asset allocation studying. It is the most important decision we make as a Board, and we thank you for participating.
MS. CHAN: Glad to be part of it.
MR. EVANS: Thank you. I'll briefly update you, then Robin and Chris have a presentation on some asset classes to continue the education part of this.
Sherry and the Actuary's Office have been working with me and the Bureau of Asset Management and Miles Dracott, who's here today, our chief risk

officer, working with me on asset allocation. We've been working very closely with Rocaton and the other four consultants on asset allocation.

We came to you last month with some theoretical portfolios; one that was a low cost portfolio, one that was a lower risk portfolio, and a higher cost portfolio. We talked through the pros and cons of private equity.

When we come back the next time, probably a February timetable, we'll have all things lined up. We're going to come back to you with three very thought-out paths for you to consider; and it will give you a chance to question us and to give your thoughts as we determine together which of these paths makes the most sense going down.

One path will be a more formalized version of the low cost asset allocation. There'll be a focus on efficient construction with as few asset classes as possible, with as low a management cost as possible.

The second portfolio will be unconstrained, except that it will not have any hedge funds, which you already excluded; and it won't have any private equities, which is an asset class that there's been a lot of discussion about.

Then the third portfolio will relax the

private equity assumptions so you can see what the impact of private equity is.

And with each of them, Robin and her team and I, and Sherry, will do our best job to give you something to start the discussion with. And then we will iterate work on one or some combination of those three options going forward.

It will be much less theoretical than last time, and really you will get the benefit of our best thoughts about the best way to combine the assets.

MS. MARCH: This is my concern. In my years as a Trustee, I do realize that I have learned that when one does take more risk one often gets more rewards. I think my concern as a Trustee, and I think other Trustees have same concern; going into some of those assets that may produce a higher return, and they have more risk, it has been very difficult determining what their true fee is.

And I think when you are presenting those assets, I am willing to take risk, but I don't want to take the risk of not knowing what the fee is; because they all too often hide some of the places that they are earning their fees.

So risk is wonderful, it gives me higher rewards. I need assurances. And I'm sure in saying that I speak for many of the Trustees, if not all of the Trustees.

MR. EVANS: Thanks very much. We hear you loud and clear. We'll make sure to be sensitive to that as we bring these various paths to you.

MS. MARCH: I don't know if sensitivity is what I'm worried about. I know you are always sensitive. I want to know you have been assured that the office of the Comptroller, BAM, to whom we give our funds to manage, that I want to know that you feel assured that the managers that we will eventually hire to run our assets are not going to attempt, as we have read in many, many articles recently, that they have pulled the wool over everyone's eyes; even people who are more expert than I am.

MR. EVANS: I can assure you that we share your concern and focus on fee transparency. It's an item that is extremely high priority for the Comptroller. It's an item that is an extremely high priority for me. And we're spending a good bit of time on it.

MS. VICKERS: Do you want to remind everybody of the new template?

MR. EVANS: Sure; I'd be happy to. As you all know, we've been concerned about fee transparency for some time. When the Comptroller came in and when I came in and saw that we were not disclosing fees in public asset classes to you and the performance reports that we were being given, we immediately set out to make sure that we were showing returns after fees.

And although fees were already taken out of the private asset classes, it was tough to figure out exactly how much the fees were that were taken out, as Sandy suggested.

So the second part of our analysis has been to dissect that. Our first effort involved way too much detective work, working with our consultants. And the current CAFR shows the best estimates of our consultants of those incentive fees that are embedded. It's one of the reasons that the fees jumped so much; it was the fact that the incentive fees weren't in the fiscal 2014 numbers, and they are in 2015.

But we have to go beyond that. We have to insist that the managers are being completely transparent with us when they report on all kinds of fees; incentive fees, other charges, et cetera. And that's why we notified all of our managers, all 300 of our managers, that we will not do business with managers, we will not give any additional allocation to managers that don't disclose the full aspects of their fees; and we use the ILPA standard template, whatever the latest ILPA standard template is for fee disclosure.

We talked with other large pension systems about this. We stand united. The Comptroller on your behalf and with many other state treasurers, and the comptrollers wrote to the SEC chair to ask that this become a matter of regulation.

And so, we are very aligned on this issue, very concerned, and very focused on being proactive.

MS. MARCH: I want to thank the Comptroller's Office for all of their efforts. But what I'd like us to insure, the New York City retirement systems have always been in the forefront of many issues. And sometimes waiting for others to pass regulation can take a very long time.

We have contracts that are very different than the rest of the world. And I think maybe what I'm asking -- I'm not an attorney -- but I am sure that somehow the attorneys in this City, both from the retirement systems, from the Corporation Counsel, from our other attorneys who we use as experts, can come up with some kind of language that we're not dealing with these managers verbally. Because verbal contracts do not always stand up.

So I would ask that, should we decide that we wish to go to a portfolio because we are shown that that portfolio will produce us a better return, but it involves investing in assets that in the past have been a problem in understanding their fee structure; maybe what we have to do is hold these firms, hold their feet to the fire and develop some kind of language in our contract and be the people in the industry who are leading the way.

We lead the way in so many ways in our contracts, let's do it this way also.

MR. EVANS: Sandy, I completely agree with you, the Comptroller completely agrees with you; in fact, we've already taken this action. To remind you, I wrote a letter to every one of our private private markets managers; private equity, real estate, hedge funds -- you don't do hedge funds -- infrastructure, et cetera.

And I said by the end of the year we wanted all the history since we started doing business with them, we wanted the fee detail. And going forward we would only accept the ILPA template for the capital call and distribution notice.

And then any contract that we sign with

any private manager would have to have a clause in it requiring that disclosure.

From that moment on, every contract that we've signed, and Warburg Pincus we signed, we just signed another one -- in our side letter, our special language, there is a clause that requires them to disclose this information. And so this is already being enacted.

The SEC move is something that we believe as a matter of public policy ought to be endorsed by everyone. But as you suggest, we're not waiting for that to happen, we've already taken action. So we're well on the way to delivering this.

We will not present any manager to you or the other four systems that refuses to agree to the ILPA standard. They fail the BAM test and they will not be proposed to you going forward.

We're still on asset allocation. If there are no other questions we'll turn to Robin and her team to give us the educational --

MS. MARCH: Before we go to that, I would make a suggestion that why don't we put that exact language in the IPSs of the Teachers' Retirement System and all asset classes? We should put that language in our IPS.

MR. EVANS: We're happy to work with you on that.

MS. BUDZIK: It's a Board requirement.

MS. MARCH: Then it would also involve, should our variable funds for our 403B ever go into any of those asset classes, they will also have that same protection.

MR. EVANS: We're happy to work with the Law Department to get language that would be suitable for all asset classes; be happy to.

First of all, do Sherry or Robin have comments on the game plan to come back in February --

MS. CHAN: I have an update about the template we're working on. I sat down with Robin and Scott. We initially had looked for presenting the difference in the contributions after five years. But after further review -- I think the assets proving method and how that, it was over six years currently. We really don't see the full impact until maybe down the road. And so we decided to expand that analysis to ten years.

What we'll be doing is bearing the return for the first five years and then thereafter in years 6 through 10, just our current 7 percent assumption. So the delta will reflect further down the road, to really see the full effect of it being phased in.

Also, I think the initial thought was to use a uniform rate for the first five years, and we're just trying to get at the cumulative rate at the end of five years, try to get to that end point; and in between solving for one flat rate.

But looking at it closer, and if you ended up at the same point in five years but taking a different path, rather than taking a set return for five years, if you vary it and said you take a big hit in the beginning and in the last four years you make up for it such that you arrive at the same end point, versus if you flipped it around and we took the big hit in the fifth year and the first four years were a uniform path. Then we've got a range of answers.

And so, we thought instead of using the same five year return, we would more go back to Robin and see what kind of path and average rate there would be for those five years so they are different. And so we're really modelling a portfolio that's representative of a true path that we can think returns would yield.

So we tweaked the analysis a little bit. I'm having my staff right now work on it. And we're looking at different scenarios, and we should be in good shape for February.

MR. EVANS: At the end of this -- right now Sherry's describing a fairly technical process that Robin and Miles and I are engaged in. But the end is, it's a risk measure that you can really get your arms around. How much will bad outcomes, projected bad outcomes with a given asset allocation, affect the contribution relative to the path that it's on?

It translates all this volatility into something real that I think you all will have an idea about how much sensitivity you're willing to take; and it gives you the ability, and only you can judge, the risk appetite that the boards have. That's not something we as the advisor, or Robin the consultant, or even the Actuary can determine.

That is the province of the Board, and one of the most important, as Sandy said at the outset, one of the most important decisions. And once we have an instruction from you on the amount of risk that you're comfortable with, then we can begin to tailor.

MS. PELLISH: Thanks. So, what we'd like to spend the next fifteen to thirty minutes on, depending on the level of questions, level of interest, is an educational session that is focused on a set of asset classes that are currently included in your target allocation policy, and that may be included going forward. So scenarios we will be discussing with you in February, including some or all of the asset classes.

If you recall, we had a session on private equity, we had a session on investment grade bonds, long duration versus Core+5. And now what we'd like to talk about are the hybrid fixed income asset classes, which are asset classes like emerging market debt and high yield; which are bonds, but also have a significant linkage to the equity markets.

And so, to present the set of slides -- I apologize that we didn't get them to you in advance, we like to do that, it didn't work out this time -- but to present these, I have one of my colleagues, Mike McGowan, who is part of our fixed income research team at Rocaton, and he was instrumental in putting this together.

Please interrupt us with questions if we're not being clear or if we're going too quickly or too slowly.

MR. MCGOWAN: Thanks for having me. So, as Robin alluded to, the objective is to delineate the role of hybrids in investment portfolios and the unique characteristics of each of those asset classes.

So, while hybrids all have unique factors, risk factors, we would submit that, generally speaking, hybrids have a risk return profile that's in between core fixed income and the equity markets. Put a little differently, we would expect over a full market cycle hybrid fixed income asset classes to slightly underperform equity markets with much less risk.

Relative to your Core+5 program, we think that hybrids can be a return enhancer and a modest diversifier.

Importantly, these asset classes are challenging to implement passively in them for a couple of reasons. And because they are a bit inefficient, in our view it's most prudent to invest actively.

So, I will turn your attention to slide 3.

(Indicating.)

This is just for context. Currently the pension plan has a 15 percent allocation to hybrid fixed income. I will note the 3 percent allocated to EMD has not been funded yet, but is part of the target allocations.

If we move to slide 4. We thought it

would be useful to juxtapose hybrid fixed income to core fixed income and public equity markets across a suite of high level portfolio characteristics. So the check marks indicate that that specific asset class shares that characteristic. So I will start from left to right.

Low institutional use. You will see that only REITs, convertibles and opportunistic fixed income has been checked off. Now, candidly, this is a little bit more art than science; but we would submit that, like your pension plan, many institutional investors have embraced hybrid asset classes.

We move to equity risk diversifiers. You will see that Core fixed income and TIPS are the only two asset classes that we checked off. Why is that? Well, we would submit that while hybrid fixed income would provide modest diversification relative to equities in a risk off environment, e.g., 2008, we would expect hybrid fixed income performance to be extremely challenged.

For example, in 2008, convertibles, corporate high yields and bank loans were all down more than 50 percent. Public market equity was down 50 percent, but we would submit on an absolute basis hybrid fixed income performance would still be challenged.

What you'll see here is that many of the hybrid fixed income asset classes share common characteristics. So as I alluded to earlier, we believe hybrid fixed income offers superior returns to Core fixed income over bull market cycles with greater volatility. In addition, we believe those asset classes are less efficient.

Moving on to liquidity and costs. We don't view hybrid fixed income as a source of liquidity. I will give you an example. Corporate high yield. Many bonds in the corporate high yield index don't trade for weeks or months at a time. They're tucked away in an investment portfolio and they stay there.

In addition, if you look at bid/ask spreads, what it costs to trade the bonds, it can be very significant, especially in times of volatility. Relative to a Treasury bond or public market equity, those markets are quite liquid.

And the last column I will touch on, the significant number of index vehicles. This is important in terms of implementation. We would submit that public market equity, Core fixed income and TIPS all have a plethora of index vehicles available to them. And more importantly, those vehicles are very large in size.

Corporate high yield, EMD, bank loans, they all have a limited number of passive investment options.

I thought we could do a deeper dive on page 5 into each asset class. So, what exactly these asset classes are. So please interject questions.

I'll start with corporate high yield. Corporate high yield, below investment grade companies issuing bonds. Generally these companies have weaker balance sheets and weaker cash flow metrics relative to their investment grade counterparts.

So, what does that mean? They have to pay a higher interest rate than their investment grade counterparts.

So I will turn your attention to yields to worse, as of September 30. So as of September 30, the high yield index was offering 8 percent. If you look at the corporate investment grade index at this time period, it was offering between 4 and 5 percent. So it's about a 300 basis points pick-up in yield.

MS. BEYER: Can you define yield to worse?

MR. MCGOWAN: Yield to worse is the discount rate that will make the present value of future cash flows equal to the price. Or, more simplistically, it's the return you would expect to get if there were no defaults.

MS. BEYER: And the pure yield today on the high yield? The one everybody reads about?

MR. MCGOWAN: Seven and a 1/2 percent. It's come down a bit, October was a strong month for high yield.

MS. BEYER: Thanks.

MR. MCGOWAN: No problem.

So 8 percent yield, and then I will turn your attention to the 660, 2 basis points of spread. That represents the yield over the Treasury rate. So you're getting 660 basis points over the Treasury rate to compensate you for that default risk and liquidity risk.

MS. PELLISH: That's pretty close to the historical average; right?

MR. MCGOWAN: The historical median is 550. Importantly, if you look at historical yields, it's been about 9 and 10 percent. So what I'd say is, there are two components to yield; rates and spread. Because rates are so low right now, the absolute yield is lower than the spend historically, even though the spread is slightly wider.

So, what can affect high yield bonds? We would say that company specific or idiosyncratic risk could cause issues in the high yield bond market. But maybe more importantly, as Robin alluded to earlier, it has equity-like exposure. So during a recession, high yield companies are going to be more challenged because they have weaker balance sheets, because they have weaker cash flows; so we would expect an uptick in defaults.

MS. BEYER: I don't want to take us off track; but can you relate it to the real world in the case of -- I read today that the banks that did the debt for the Dell takeover of EMC are now allowed to get rid of the junk bonds that they issued and they did, and they're very excited about it because it's a high yield and everybody they think will grab it.

Why would they -- can you explain that in relation to what you are talking about here?

MR. MCGOWAN: Sure. When a bank underwrites a high yield deal they typically don't keep the bonds on the balance sheets. Institutional investors buy that bond. So they would underwrite the deal and then they would go to a Shenkman or Stone Harbor, both of which are in your portfolio; and Shenkman and Stone Harbor would buy that high yield deal.

MS. BEYER: But why was it a big story in the Journal this morning that they were allowed to get rid of them? That's what I didn't understand.

MR. MCGOWAN: I didn't read it.

MS. BEYER: It's on the cover of the Money and Investing section. It surprised me. Isn't what that they do anyway?

MR. MCGOWAN: That is what they do.

MS. MARCH: They needed to fill a space.

MS. BEYER: It just sounded like somehow they were being asked to hold on to it because, who knows? Sorry.

MR. MCGOWAN: No worries.

So, let's move to bank loans. Similar to high yield, so you're taking below investment grade corporate credit risk. I will juxtapose the two by highlighting their differences. So the remaining differences between bank loans and high yield.

Bank loans are senior in the capital structure relative to high yield. So if a company defaults, the company will have to pay bank holders before high yield bond holders.

In addition, bank holders are typically secured by a company's assets. So again, if a company defaults, the bank lenders can take the assets, liquidate those assets and receive the proceeds.

In addition, bank loans are floating rate relative to high yield bonds which are fixed rate. So bank loans pay Libor plus a spread. So when interest rates go up bank loan investors benefit from an increased coupon.

I'll turn your attention to convertibles. So, convertibles are a much smaller market than either high yield or bank loans. High yield is greater than a trillion dollars, and high yield outstanding, bank loans just under a trillion dollars. Convertibles is just under $200 billion. So convertibles are bonds that gives the investor the option to take that bond into equity when he or she feels like it makes sense to do so.

So intuitively, convertibles are attractive because they provide coupon every six months, and bond downside protection. In addition there is an equity sweetener. So if the underlying stock does well, the security holder benefits by converting the bond into equity.

Tech companies and financial companies are the big issuers in this market.

MS. PELLISH: What is the typical rating?

MR. MCGOWAN: Double B, triple B, the typical credit quality.

So, EMD hard currency. You don't have this in your portfolio currently, but it's part of the target asset allocation policy. It's a bit different than high yield bank loans and convertibles because you're not taking corporate credit risk with EMD; you're taking political, economic and sovereign credit risk.

So we used EMD hard currency as a proxy for the EMD market. In fact, the emerging market debt market is much larger than just the EMD hard benchmark. If you look at EMD local, which is denominated in home country currency, it's two and a half times the size of the hard currency market.

In addition, EMD corporates are a one trillion dollar market. So oftentimes managers will be benchmarked to the EMD hard index, but they have the opportunity to invest across the spectrum.

So, what is the EMD hard? It's U.S. dollars denominated either below investment grade or investment grade. Interestingly, it's not a homogenous asset class. So you'll have the Philippines, really great credit, in the index, along with Venezuela, currently in the index.

So, two very different stories, all in the same index. It's quite a bifurcated market.

MR. ADLER: Are we allocated to both parts of that market?

MS. PELLISH: I believe that the target allocation is focused on hard currency. But I think the discussion of the array of instruments in that market is useful, because we would not index this market. And any active manager that you hired would want some authority to go into the local currency, and maybe even corporate.

MR. MCGOWAN: If there are no other questions we'll turn to pages 6 and 7. We thought it would be useful to show how the asset classes have done over certain trailing periods. We looked at long term 10 and 20 year trailing periods through September 30. Currently it's backward looking, but we thought it would be helpful to highlight how the asset classes have performed.

So it's quite interesting, page 6. You will see that the equity markets proxied by the MSCI -- have returned just about the same as the Core+5 index, with four times the volatility. Now, what I would say is that we've been in a secular declining interest rate environment. So it's highly unlikely that the Core+5 portfolio will be able to produce those type of returns over the next ten years.

MS. PELLISH: Just to say that, in order to do that you have to go down to negative interest rates.

MR. EVANS: Just to point out, in the MSCI equity, international equity, you have mostly dollar denominated asset classes here. If you brought those out and looked at just U.S. equities and international equities, I think it would look quite different.

MS. PELLISH: Good point.

MR. MCGOWAN: So the S&P over that time period returned 7 percent. To your point, it's hurt by the EM exposure and developed market exposure.

MR. EVANS: If you want to compare the two asset classes, comparing dollar based asset classes, you would see the U.S. up, as you expect, because you're taking more risk.

MR. MCGOWAN: So I think the risk-return charts do a pretty good job of highlighting why we tend to introduce these asset classes to our clients. It provides somewhat similar returns; in this case, better returns in the equity market with less volatility. So a much better Sharpe ratio. And it's the same story for the 20 year period.

MS. PELLISH: So the Sharpe ratio, to remind everyone what that means. The Sharpe ratio is a fraction that says the return over the risk rate, over T bills, essentially, per unit of volatility. So how much money did you make over the risk free rate for every unit of volatility you experienced over that time period?

And fixed income always has the highest Sharpe ratio because it always has the lowest risk. And I think the important point here is that the Core+5 has played, and will continue to be -- the investment grade fixed income composite has and will continue to play an important role in the portfolio.

But there are ways to get equity-like returns without taking full volatility risk, equity markets. The problem is that, as Mike pointed out, the hybrid fixed income asset classes are much smaller than the equity or investment grade fixed income markets. So it's just not viable to take very large allocations of your portfolio.

So the tension here is not whether these are worth investing in, but are they worth investing in at the relatively modest allocations you are forced to make? That's really the judgment call.

MR. MCGOWAN: I would turn your attention to page 11, if I could. It makes a similar point to risk-return. It's more cogent. So, what we did here was, we looked at a draw-down analysis. The best way to think about that is, if you invest $1 at the peak of the market, how much money would you have lost when it hit its trough? So to hammer that point home. If you invested $1 in June of 2007, how much money would you have lost in February of 2009?

And in the case of the equity markets, you would have lost 55 percent. What you'll see here is that the draw-down isn't as dramatic for the hybrid asset classes. So I'll point you to high yield, 33 percent; bank loans around 30 percent. So meaningfully less dramatic draw-down.

And the period of time. So, it would have taken 26 months in the case of high yield to get back to the highs of the market; whereas in the global equities, it would have taken over five years to get back to your highs.

MR. EVANS: There's one fixed income asset class that's notably missing here, which is long Treasuries, which we talked about a lot at the last meeting. Can you go through what the chart on long Treasury looks like over the time period?

MR. MCGOWAN: Sure. The drawdown for long

Treasuries, it will have a larger draw-down than, say, Core fixed income, because it has a great deal of duration risk, interest rate exposure. But importantly, when equities fell off, long Treasuries do quite well. So the diversification benefits that long Treasuries offer is quite attractive.

MR. EVANS: You have here in all the assets you're looking at equity-like fixed income, where the two factors of risk; one is the fixed income factor which is pulling things up, the equity factor is pulling it down.

As you pointed out at the last meeting, if you just look at Treasuries you would have actually made money during this period of time.

MR. MCGOWAN: Exactly.

MR. EVANS: We can look at that as an option, you parse out the different aspects.

MR. MCGOWAN: Yes.

I will go back to page 9, if you don't mind.

MS. MARCH: How do you figure out the science of Wall Street? How do you take a look at our investment returns from 2000 to today, if you take out what happened on the Street and what was done to us?

We have all this science here, and

although it's not an exact science, it is absolutely a science that we should look at, understand and make decisions based on it.

But after we make our decisions, if you just look at our portfolio from 2000 until today, we are victims of circumstances that had nothing to do with the decisions we made in asset allocation. Our returns were affected by what happened on the Street, for those people who are looking at me, to say it more clearly.

We can get all of this education, we can make very intelligent decisions based on the information that our experts are giving us; but can we run results for the next fifteen years on two sets of figures? What our results are as a result of our decisions versus should anything happen again on the Street just as a means of having those figures there? I don't know that I'm making sense, but I'm making sense from my perspective.

MS. PELLISH: I think what this draw-down analysis is trying to say, that if you get a big shock to the system like we had in 2008, whether it's occurring organically or imposed by the actions of a few people, it's a big shock. And the cause matters, but as you're living through it you're losing money no matter what.

And so the question is, how do you best live through that experience? And what we're saying is, we think over the long term hybrid asset classes make a lot of sense. But in the short term when you're living through a shock it feels a little better than equities, but you're still losing 30 percent of your money from peak to trough. And the only way to avoid that entirely is to hold Treasury bonds.

MS. MARCH: Or have the money in my mattress.

MS. PELLISH: That too.

MS. MARCH: I think if we looked at what would have happened if we divided the money up in our mattresses, we probably would come up with better results. You understand the point?

MS. PELLISH: I understand.

MS. MARCH: And as an institution it is our results that the world judges us on. But somehow the world has to take into account what the rest of the world is doing to us; and there's no way that we can overcome that.

MS. PELLISH: One of the other issues with these hybrid asset classes is that you really have to invest in them actively, as Mike pointed out. This relates to your point. There are no large index funds that are cost effective to invest in these asset classes. The benchmarks aren't very good, the loss of concentration, and we can talk about the benchmark problems, there's a lot of problems with the benchmark. You really don't want to invest in these benchmarks.

So you have to hire active managers. You hire active managers in high yield and bank loans and converts, and we have the results of that.

But that is a significant factor when we think about making allocations to these asset classes. We have to hire managers and we'll have to continue to retain active managers if we want to hold these kinds of securities. Maybe we should look at what the results look like.

MR. MCGOWAN: Sure.

MS. PELLISH: Let's look at both.

MR. MCGOWAN: If you look at page 8, we want to highlight to the group how the asset class composite performance has done relative to the public equity markets. And what you will see is, over the seven and ten year period, high yield has outperformed the public equity markets over both periods. And convertibles and opportunistic fixed income, while they don't have a ten year number, they have a seven year number, and both have outperformed the public equity markets, I'd say pretty significantly.

MS. PELLISH: Gross of fees, because we don't have net of fees by composite. But the fees are less than 100 basis points in each case. So even after you significantly outperform.

MR. EVANS: Outperform the MSCI.

MS. PELLISH: Yes.

MR. EVANS: Fifty percent international.

MS. PELLISH: Yes.

MR. EVANS: So the U.S. markets here they would have not outperformed.

MR. MCGOWAN: That's totally correct.

MS. BEYER: And that's important.

MR. EVANS: To get a balance of comparing apples to apples, if comparing U.S. fixed income you have to understand U.S. equity. Part of this shows emerging markets, but you don't have emerging here. There you would want to be looking at international equity, like emerging markets equities.

MS. PELLISH: That's a very good point. We should have put U.S. equity here. But for five years the U.S. equity market, the Russell 2000 is up about 14 percent.

MR. MCGOWAN: For the ten year up about 8 percent.

MR. EVANS: The other important point you mentioned, and I want to punch is, the lion's share of the returns in fixed income markets, all of these fixed income markets, there was interest rate decline. There's some spread effect, sure, but if you don't have further interest rate declines you can't get those same returns out of fixed income. So you are from a long way period, we're looking at a period of time quite different from the period of time in the rear view mirror.

So while it's correct historical information, when we go to do asset allocation going forward, looking from an environment where there's negative interest rates in Europe today, there's almost certainly a different relationship in the returns between equity asset classes and these types of asset classes -- the relationship among them might be --

MS. PELLISH: Let's talk about that a little more. That is the danger in looking at historical numbers that we lived through, this secular interest rate decline that by arithmetic can't continue. It doesn't necessarily mean that rates are going to rise any time soon, but they can't continue this steady decline in perpetuity.

MR. MCGOWAN: Why don't we go to page 19.

What we did here was, we highlighted our equilibrium return assumptions along with our next ten year return assumptions for a host of asset classes.

What I would say is that if you look at bank loans, 5.5, high yield, 6.3, EMD around 6; about 100 BIPS lower than public equity markets. That's our expectation for these asset classes. So again, with the theme slightly lower returns, much less volatility.

MS. PELLISH: If you look at over the next ten years, the spread is greater.

MR. MCGOWAN: Yes.

MS. PELLISH: Again, reflecting where we're starting with yields. Relative to global -- if you look at expectations for U.S. equities, you'll see this, when in February we present the results of the initial asset allocation analysis, our expectations for U.S. equity over the next ten years.

We don't have a crystal ball, but I'd say the seeds are reflective of many observers of the markets. So we're looking at a compound return expectation of under 5 percent over the next ten years

for U.S. Equities; and converts are 4 percent.

High yield in this, in our projections is actually equivalent to U.S. equity.

So we have no crystal ball, but what we're trying to say, given where we are today in PE ratios, given where we are in expectations of GDP growth, what do we think is a reasonable range of expectations for these asset classes? And we just noted that over the past five years the U.S. equity market has generated an average annual return of 14 percent.

Again, just like interest rates can't continue going down forever, you can't continue having these kinds of returns in the U.S. equity market. And so we think we're going to compensate for that over the next ten years.

MR. EVANS: Robin, it's fees and expected returns on page 19 that we're constructing the asset allocation scenarios.

MS. PELLISH: Absolutely.

So now that we've stressed everyone.

MS. MARCH: Infrastructure looks good.

MS. BEYER: Mr. Chairman, I just want to correct my earlier piece about the Journal's article. It was saying that the 12 percent of the portion of the Dell debt that JPMorgan and others are underwriting is crisis-like. The cap rate of 12 percent is much higher than it had been historically, and that this might sort of be signalling something to the market, the M&A and the high yield markets would soften people -- the junk bonds.

So my question really was to your point that you just made; which is, historical numbers can be very misleading. We could be at the beginning of something that this article is a little tiny weak signal on the horizon.

MR. MCGOWAN: To your point, we've seen seven consecutive years of sub 2 percent default rates in the high yield market.

MS. PELLISH: What is average?

MR. MCGOWAN: Four and a half. So the credit cycle is long, to be totally candid.

MS. BEYER: Who would have told you five years ago, six years ago, that rates would stay low as long as they have? Nobody. And nobody would have said the longest bull market --

MS. PELLISH: The last thing we want to do, we included in the appendix a slide on each of the asset classes providing additional detail on them.

I think the last thing we want to touch on is how our active managers have done in these asset classes. Again, a point covered a few times, which is that you can't passively invest in these asset classes in a reasonable way.

So we want to talk about how your active managers have done and how the median active managers have done in the universe of managers.

MR. MCGOWAN: As Robin alluded to, we looked at --

MS. PELLISH: Page 10.

MR. MCGOWAN: -- four hybrid asset classes. So starting at the top left, the EMD hard currency. We don't have an allocation, but we thought it would be useful to provide active management performance of the universe. And it's been quite poor over recent trailing periods. The reason for that is, EMD hard managers tend to use local and corporate EMD, so 10 to 20 percent of their portfolio in those sub asset classes. And those have really underperformed EMD hard.

So any allocation to local or corporates to some extent have hurt active management performance.

If you look over to high yield --

MS. BEYER: This is all gross of fees?

MR. MCGOWAN: Yes, this is all gross of

fees.

So the high yield investment universe is really challenged. So it has a lot of strategies that are short duration high yields. Your exposure in broad market, it has credit quality extremes, so strategies that only invest in double Bs. So it's really not an apples to apples comparison to your program. But I would say is, over the one, three and five year period, again gross of fees, your managers at a composite level have added value.

If we turn to bank loans. Bank loans have only been in the program since 2013; but active management has performed incredibly well. Two or three of your managers are top decile in the universe, so we're quite happy with the management performance, although it's a fairly truncated time period, they have done well.

Lastly, convertibles; again, really happy. Your composite's excess returns have been quite strong. The E investment median performance has been quite weak.

So, all in all, we think that the managers are doing quite well for your program.

MS. PELLISH: With that, that concludes our comments, with time remaining for questions.

MR. ADLER: Further questions for Rocaton?

MR. ORLANDO: Does it help to have a point of view about the future? Philosophically, existentially speaking?

MS. PELLISH: We try to add an existential component.

(Laughter.)

MR. ADLER: Thank you.

There's more on asset allocation?

MR. EVANS: That's it.

MR. ADLER: Very good. The next item on the agenda is, we're switching to the Passport funds, and Rocaton will take us through the third quarter report.

MR. FULVIO: Good morning. We circulated this quarterly report that you should have a copy of in advance. We did review this performance at the last investment meeting, and we weren't planning to go through it with much detail. If there are any questions I'd be happy to address them, otherwise we can go forward and speak about October.

MR. ADLER: Any more questions?

Okay.

MR. FULVIO: It's not quite as ancient as the third quarter, but the performance for October should be the other handout you have there.

(Indicating.)

We spoke a little about this at last month's meeting. As you will recall, October was a strong month in terms of absolute returns in a variety of markets. The U.S. equity market as measured by the Russell 3000 was up about 7.9 percent. Developed equity markets, measured by the EAFE index, was up 7.8 percent. So some notably strong returns for the month of October.

The diversified equity fund, the month of October's return was 7 percent, so it lagged that of the Russell 3000 index. The hybrid benchmark had a return of 7.6 percent, so a good month from an absolute perspective, some lagging on a relative basis.

That brought the year to date return for the diversified equity fund to about 1.1 percent, trailing the Russell 3000 index by about 2 percent.

You can see below the line items for the total fund the various components. The defensive strategy composite did not quite keep pace with the Russell 3000, as we would expect that it not. The return for the month was about 3.8 percent. Year to date that composite is up about 60 basis points relative to the Russell 3, again about 2 percent.

The actively managed equity composite for the U.S. was up about 6.6 percent. Again, it was a challenged month from a relative performance perspective for that composite as a whole, the market was up about 7.9. Year to date that composite has a modest negative return of negative .2 percent.

And the international equity composite was up about 7.7 percent, just modestly trailing the broad EAFE market at 7.8 percent. Year to date the EP program was up about 2.6 percent versus the EP benchmark of about 2.5. These returns were all net of fees.

Below that you can see the bond fund, which at the end of the month was about $330 million. The fund as a whole was down about 10 basis points for the month, roughly in line for the benchmark. The year to date return for that fund was positive 1.3 percent, which is also consistent for the longer term. You can see the one and three year periods in the 1.3 and 1 percent ranges.

The international equity fund, about $100 million in assets, was up about 7.6 percent, modestly trailing the EP index of 7.8 percent. The year to date return for that fund was about 2.16 percent versus the EAFE of 2.5. The inflation protection fund, about $42 million in assets, had a return for the month of positive 60 basis points, ahead of the return for the custom benchmark and below that of CPI.

Over the year to date time period that fund was down about 3.9 percent, more closely tracking its custom benchmark, which is down about 3 percent, and the CPI index, which was through the year to date period up about 80 basis points.

The socially responsive equity fund has about $115 million in assets, was up about 7 percent for the month of October, versus the S&P 500 up about 8.4 percent. Year to date that fund is up about 1.3 percent versus the S&P's return of 2.7.

Any questions on the Passport funds?

If there's no questions we can flip ahead to the preliminary benchmark report for the month of November. Unfortunately, the returns weren't quite as strong as they were in absolute terms during November as they were for October. The U.S. was up about 50 basis points, or half a percent. The EAFE index was down 1.5 percent.

And you can see below that the defensive strategy composite, modestly negative, which those three benchmarks roll up into the hybrid benchmark, which generally tracks the broader diversified equity fund, and that benchmark had a return of about positive .1 percent.

You can see below that the inflation protection fund's underlying strategy for the month was down about 2.2 percent. And just below that the underlying strategy for the socially responsive equity fund had a positive return of .2 percent, modestly trailing the S&P's .3 percent.

So, year to date through November, the U.S. equity markets are up about 2 1/2 to 3 percent. The developed non-U.S. markets are up 1 percent. And you can see below that those other proxies we spoke of thorough that time period, general mixed returns. But we'll see how the year comes to a close --

MR. ADLER: Thank you.

Any further questions for Rocaton about the Passport funds for public session?

(No response.)

I think that concludes our public session business for now. I would accept a motion to move into executive session.

MS. MARCH: I move, pursuant to public officer law Section 105, to go into executive session for discussions regarding specific investment matters.

MR. ADLER: Is there a second?
MS. BEYER: Second.
MR. ADLER: Any discussion?
All in favor say "Aye."
(A chorus of "Ayes.")
Absentions?
That concludes our public session. And I would propose that we just move right into executive session, as soon as the cameras are off; unless people feel a break is necessary.
(Whereupon, the Board entered executive session.)

MR. ADLER: We now need a motion to exit the executive agenda and go back into public session to report out.

MS. MARCH: So moved.

MS. VICKERS: Second.

MR. ADLER: Any discussion?

All in favor?

(A chorus of "Ayes.")

Any opposed? Abstentions?

(No response.)

(Whereupon, the Board returned to public session.)

MR. ADLER: We're back in public session.

Susan, do you want to report out of executive session?

MS. STANG: Certainly.

In the executive session of the Passport funds, one manager update, a housekeeping item and an update on the international composite was presented and discussed. There was also discussion about developing a diversity policy.

MR. ADLER: Anything else for public session?

(No response.)

I think a motion to adjourn the meeting

would be in order.

MS. MARCH: So moved.

MS. VICKERS: Second.

MR. ADLER: All in favor of adjourning the meeting say "Aye."

(A chorus of "Ayes.")

Any opposed?

(No response.)

The meeting is adjourned.

(Time noted: 11:31 a.m.)

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

I, Jeffrey Shapiro, a Shorthand Reporter and Notary Public, within and for the State of New York, do hereby certify that I reported the proceedings in the within-entitled matter, on Thursday, December 3, 2015, at the offices of the NEW YORK CITY TEACHERS RETIREMENT SYSTEM, 55 Water Street, New York, New York, and that this is an accurate transcription of these proceedings.

IN WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____________, 2015.

JEFFREY SHAPIRO