NEW YORK CITY TEACHERS' RETIREMENT SYSTEM

INVESTMENT MEETING

Held on Thursday, March 9, 2023
Via Videoconference
10:10 a.m.

ATTENDEES:

THOMAS BROWN, Chairman, Trustee

DAVID KAZANSKY, Trustee

VICTORIA LEE, Trustee

BRYAN BERGE, Trustee, Mayor's Office

ALISON HIRSH, Trustee, Comptroller's Office

ANGELA GREEN, Trustee

PATRICIA REILLY, Teachers' Retirement System

SUSAN STANG, Teachers' Retirement System

DEVON ALEXANDER, Rocaton

MICHAEL FULVIO, Rocaton

VALERIE BUDZIK, Teachers' Retirement System

REPORTED BY:
YAFFA KAPLAN
JOB NO. 9179892

ATTENDEES (Continued):

LIZ SANCHEZ, Teachers' Retirement System

THAD McTIGUE, Teachers' Retirement System

DAVID LEVINE, Groom Law Group

JOHN DORSA, Comptroller's Office

KOMIL ATAEV, Teachers' Retirement System

RON SWINGLE, Teachers' Retirement System

KATE VISCONTI, Bureau of Asset Management

KIM BOSTON, Bureau of Asset Management

NEHAN NAIM, Bureau of Asset Management

STEVEN MEIER, CIO, Bureau of Asset Management

DAN HAAS, Bureau of Asset Management

MARTIN Z. BRAUN, Bureau of Asset Management

ED BERMAN, Bureau of Asset Management

JOHN GLUSZAK, Bureau of Asset Management

WILFREDO SUAREZ, Bureau of Asset Management

SANDY XU, Bureau of Asset Management

JANET LONDONO-VALLE, Bureau of Asset Management

TOM CARROLL, Bureau of Asset Management

JOHN ADLER, Mayor's Office

ATTENDEES:

MARC RIVITZ, StepStone

JUSTIN THIBAULT, StepStone

ARISTA AFTOOMIS, TRS

ISAAC GLOVINSKY, TRS

LOREN PERRY, TRS

ED HUE, Office of the Actuary

ANTHONY GIORDANO, Trustee

SANYA COWAN, Bureau of Asset Management

JACKIE NORTON, Bureau of Asset Management

GREGORY FAULKNER, Trustee

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MS. REILLY: Good morning. Welcome to the Investment Meeting of the Teachers' Retirement Board for March 9, 2022 -- it's 2023.

Bryan Berge?

MR. BERGE: Bryan Berge representing Mayor Adams. Present.

MS. REILLY: Thank you.

Thomas Brown?

MR. BROWN: Here. Good morning, Patricia.

MS. REILLY: Good morning.

Dr. Angela Green?

DR. GREEN: Present.

MS. REILLY: Alison Hirsh?

MS. HIRSH: Alison Hirsh here representing Comptroller Brad Lander.

MS. REILLY: David Kazansky?

MR. KAZANSKY: Present.

MS. REILLY: Victoria Lee?

MS. LEE: Present

MS. REILLY: We have a quorum. I will turn it over to the chair.

MR. BROWN: Thank you. Good morning,

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everybody, welcome. And especially welcome Dr. Angela Green and Anthony Giordano. Welcome to the TRS Board, our pleasure.

So we are going to start with the Passport Fund fourth quarter 2022 performance review and I ask Rocaton, Mike.

MR. FULVIO: Great, thank you.

So we did circulate in advance the fourth quarter report for the Passport Funds. We weren't going to spend too much time commenting on this given we did cover the performance at the last meeting, but I will emphasize again what unfortunately was a challenging year for markets last year. And we saw a variety of dynamics in the market as the market acclimated to the higher inflationary environment and the Fed reacting to try to curb inflation. We saw the notable selloff that we did in U.S. Equity markets. We also saw a selloff abroad in developed and emerging market equities. And then obviously we are -- you know, for one of the Passport Funds where there is a portion of the funds allocated to fixed income, the rate rise last

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year was not a friendly move for the Balanced Fund contributing to the negative market environment.

As far as the overall performance, the funds were as you would expect roughly in line with their benchmarks. Some relative underperformance driven by active management. It was a little bit of a -- there was a little bit -- I don't want to call it a paradigm shift, but a change in dynamic that we saw toward the later part of the last year where for active managers in the first nine months of the year it was an extremely challenging environment as the market essentially threw the baby out with the bath water. We saw many active managers lagging for the first part of the year.

In fourth quarter we started to see that turn, which is a happy thing to report. As you looked across the funds last year, we did see a lot of active manager outperformance on a relative basis in the fourth quarter and that's persisted so far into this year. So we will make a little bit more comments about the

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beginning of 2023 there, but nonetheless wanted to speak at a high level with respect to those dynamics.

I will pause there and see if there are any questions before we turn to January, given we have already discussed.

MR. BROWN: Questions?

MR. FULVIO: So changing gears, I put up on the screen the January performance for the Passport Funds. And you can see that for the first month of the year, you will recall January was a fairly strong month for markets. U.S. Equity rebounded to the tune of about 6.9 percent. The international markets that you can see, the International Composite benchmark which, you know, we show here as a blend of developed and emerging markets, was up about 8 percent. And the Diversified Equity Fund had a return of about 7.5 percent ahead of both of its benchmarks, again going back to the dynamic I noted earlier where we would see active managers fare much better over the recent months. So active management from both the U.S. Composite and International Equity

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Composite, albeit modest from the International Equity Composite but still positive. So that's certainly something we are happy to see.

In the trailing 12-month return for the Diversified Equity Fund, negative 8 percent and beyond that still negative 12-month numbers across each of the Passport Funds. But, again, strong month for January. The Balanced Fund up 3.25 percent. The International Equity Fund up just over 8 percent. The Sustainable Equity Fund up about 9.8 percent, ahead of its benchmark by about 150 basis points. And then the Equity Index funds, each up about 7 and 8 percent respectively for the U.S. and non-U.S. index.

So I will pause there and see if there are any questions. Otherwise, we will comment on February.

MR. BROWN: Sure.

Questions? Okay.

Thanks, Mike.

MR. ALEXANDER: Thanks, Mike.

Unfortunately unlike January, we did see some challenges for the month of February. I think there were sort of renewed concerns around inflation that sort of caused pretty much all the benchmarks to have negative results for the month. We saw a Global Market Composite benchmark down by 2.58 percent for the month. So was the Diversified Equity Fund hybrid benchmark, down about 2.5 percent. We saw negative results as well in the Balanced Fund benchmark, down about 1.69 percent and the International Composite benchmark down about 3-1/4 percent. The overall theme has been that the narrative has changed from initially, you know, January we were talking about soft landing to more of a concern about central banks having a lot more work to do. The good news on our side is that calendar year to date we did see positive results still, so the losses in February didn't completely erase the gains that we saw in January. So we still are up here today, but challenging month for the month of February.

Pause for any questions.

MR. BROWN: Questions for Devon?

Thank you, Devon. Thank you, Mike.

Now we move on to the -- let's see. Oh, to the asset allocation discussion. Is that --

MS. REILLY: Oh, the one in the middle. I'm sorry.

MR. BROWN: Yes, the asset allocation. I guess that.

MS. HIRSH: I don't think we need ten full minutes, but I think we just wanted to make sure because there is no need to vote, Valerie, right at TRS given it's part of the IPS is every three years, just wanted to note for the record that.

And, Steve, you can jump in here at any time that we are beginning the process, the strategic asset allocation review process. I don't know, Steve, if you want to walk through.

MR. MEIER: Yes. Thanks, Alison.

Obviously with the change in legislation, it gives the potential to revisit the strategic asset allocation also in accordance with the plan of every three years.

So we have actually begun engagement. We are working closely with Mike and hopefully with others at Goldman Sachs. I think Mike promised a visit in the coming weeks. We put together a team on our side to work with the five general consultants, and certainly Rocaton, in the case of Teachers. So Ed Berman, who is sitting here behind me, is going to be our point person for analytical assessment. And we also have the two CIOs, Petya and Eneasz, on the team as well as Robert Feng, head of fixed income and John Merseburg, head of equity. So we have a team in place.

We have a timeline in place, but we are actually in the process of trying to work with the consultants on an operating plan. And we don't think this is a ten-month process, although we were talking to Mike. And I think, Mike, your preference is to hold off until we have the March market assumptions and then we visit it in April and start working in earnest, so still plenty of time. Probably a two, three-month process. I would love and,

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you know, mentioned already earlier, board engagement. Obviously everything we are 1working on together would be for a presentation consideration to the trustees. But if we want to have a meeting beforehand that specifically focuses on strategic asset allocation, we are happy to do that.

MR. BROWN: Thank you, Steve. Steve, what's the operating committee?

MS. HIRSH: That memo, it was for both internal within BAM purposes and external purposes. The operating committee within the Bureau of Asset Management, we have every Tuesday afternoon all of the different like leads for that crosses investment, IOs risk, back office folks, risk admin contracts that meet every two weeks to get updated on what's going on. And that had not been edited for just trustees; it was also sent around internally to BAM that we will update internally BAM's staff every few weeks at those meetings.

MR. BROWN: Thank you.

MR. MEIER: Just to keep them on track

and make sure we are progressing as planned.

MR. BROWN: Then it is your intent that the board would -- that you would provide the board with -- we would provide input to the SAA?

MR. MEIER: Absolutely. Absolutely. The decision rests with the trustees, but we will put together a couple of different options.

Mike, does that make sense?

MR. FULVIO: I think that's the typical approach. We use a few different examples of portfolios to emphasize to the board different themes we are thinking of looking at. And I think while ultimately there would be a recommendation to the board, that would be informed by the conversation that we are all having together through the process.

MR. BROWN: So it's not that you are going to do this independently; you are going to apprise us on the way?

MR. FULVIO: Absolutely.

MS. REILLY: It's not --

MR. BROWN: It's not apprised. We are

part of the process.

MS. REILLY: Because I think in the past we have had a process where both, where there was discussion and input from the board during the whole --

MS. HIRSH: I think in the timeline, it's very clear there are monthly updates and discussions with the board over the course of the process.

MS. REILLY: And get their input?

MS. HIRSH: Right, monthly updates and discussions to get input.

MR. BROWN: How would we be getting the monthly updates?

MS. HIRSH: I think at board meetings. I am sure there would be, like we have been doing, consistently periodic offline conversations with various trustees around.

MR. BROWN: So if we need more --

MS. HIRSH: If we need more, we can always schedule more.

MR. BROWN: So just want to get on the record, that's a collaborative venture and we are part of the process.

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MR. FULVIO: I want to clarify too while I think the final recommendation would leverage the March assumptions, we are beginning the process and analyzing portfolios with our December 31st.

MR. BROWN: But we will have detailed discussions at the board.

MR. FULVIO: Yes.

MR. MEIER: If it's appropriate, next month we will have monthly updates to say these are the things we are working on, some of the things we are looking at, and the process we are going through. So, for example, I took ten themes or things I was concerned about that I thought might impact strategic asset allocation policy. Ed Berman took it and actually put it into three macro themes, so we are working with consultants to see how that gets incorporated into your thinking and --

MR. BROWN: Great. That's good. So one thing that I think might be helpful as we start the process is especially since there is some people on the board who weren't around,

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in fact I think a majority of the board people on the board haven't been around since we have done the last asset allocation CIO included, that maybe it would be a good idea to almost do a little, you know, recap and review of the last process what we did; what it was before we changed it, what that process was like, what some of the thinking was, timeline on that just so that way those of us who weren't involved have some kind of understanding of what was done last time, what the changes were. And then as we move forward, you know, we have something to measure it up against and also help refresh the memory of the people who did it last time, since it was three years ago and we are all around the age where remembering what happened three years ago is harder than it used to be.

MR. BERGE: I had a quick question on procedure. Sorry for being pedantic. So I understand that the IPS contemplates three-year cycles of SAA so there is no need to pass a resolution, but this particular cycle has a novel feature in that it will involve input of the specialty consultants with respect to their areas of expertise. Is there a need -- I don't know if that's a part of the TRS IPS or we need to separately vote on that aspect of it, which I believe wasn't included in other board resolutions.

MS. BUDZIK: I would say no.

MR. BERGE: That's the question.

MR. MEIER: The only comment I would have -- and I know that Rocaton has responsibility for the strategic asset allocation review as a general consultant, but what we like to do is have the specialty consultants for you, to feel you have access to specialty consultants, particularly given to the changes to the basket clause legislation, it may provide opportunities for higher allocation into private assets. So we want to make sure that Mike and his team had access to those special experiment specialty consultants, but ultimately it's your responsibility.

MR. FULVIO: Absolutely. And I would add while I think that was added as a formal

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part of the work plan, Bryan, which you pointed out, we did I recall in the last process have a number of conversations with Hamilton Lane in incorporating and thinking about the private equity allocation in the past. I think we were a bit more divergent from them in terms of our view of forward-looking returns of private equity, so we had a number of conversations to coalesce around what we thought made sense for this portfolio last time. So maybe it was less formal then, but it was definitely a part of the process too.

MR. BERGE: To be clear, I think it was a good idea. I was really asking a very narrow question if authorization is needed.

MR. BROWN: I am pleased with the conversation to reiterate that the trustees are going to be an active part. The asset allocation process is probably the most important thing we have to do as board members and I am sure I speak for everyone that we want to get this right. Let's do this long process. I am glad Alison provided the

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timeline and look forward to working with you to achieve this. Thanks, I appreciate it.

Any other questions about the strategic asset allocation process?

Great. Let's move on. So we are going to have a discussion about the net zero by 2040 plan. Who is going to be taking that?

John Adler I see out there.

MR. ADLER: That would be me, Mr. Chair.

MR. BROWN: Hey, John.

MR. ADLER: Good morning. With permission, I will share my screen. Let me know if you can see it.

MR. BROWN: We can.

MR. ADLER: So we are going to talk about the net zero implementation plan. Pleasure to be with you this morning, Board Members.

So just to refresh the history here: In October of 2021, TRS board voted to set an aspirational goal to achieve net zero by 2040 across your investment portfolio to mitigate the systemic risks of climate change and consistent with your fiduciary duty. At that

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time you adopted the net zero asset owner commitment of the Paris-aligned investment initiative and adopted a preliminary climate action plan that required the development of a net zero implementation plan in a year. Obviously it's been more than a year, but as we met with you over the course of last year we thought it was important to take the time to get it right and hopefully the plan that we are discussing today gets it right. The broader framework here is our goal is to decarbonize the market or the economy, not just our portfolio, in order to keep fossil fuels in the ground again consistent with fiduciary duty and recognizing that we can't do this alone. This requires collective action by all of the players, governments regulators, companies, and investors to keep global temperature rise well below 2 degrees centigrade. So here is the sort of four buckets of the net zero implementation plan and what I am going to do is go through it sort of piece by piece. And if there are questions please feel free to, you know, stop me and go through them.

So first on the disclosure of the emissions and risk, the plan calls for us to annually measure and report Scopes 1, 2, and 3 public portfolio emissions and the progress of the plan. So let me just stop right there and ask whether you want me to go through the definition of Scopes 1, 2, and 3 which I have a depiction of on the next slide. Okay, I am not hearing anything so I am going to keep going. The plan sets emissions reduction targets for Scopes 1 and 2 of 32 percent by 2025 and 59 percent by 2030. That's from the 2019 baseline and, again, I will go through that in detail in a couple of slides. We are not proposing that we set targets for Scope 3 today because we really only have one year of Scope 3 data from last year, so without a trend line it's kind of difficult to set Scope 3 targets that, you know, have any validity for them. So we are saying that the goal is to set Scope 3 emission targets by 2025, that the board would do that. And then we also plan -- those emission reduction targets are

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just for public markets, for public equities, and corporate bonds. We also are going to develop interim portfolio emissions reduction targets for private markets, but we don't have the data yet. So once we get that data, we will come back to you and we can discuss emission reduction targets in that part of the portfolio as well.

So this is the slide that shows the definitions of Scope 1, 2 and 3. I know that many of you have seen this before and it's in the plan. If anybody wants me to go through it I am happy to, but otherwise I will just keep moving. Okay, I will keep moving. Okay, so this chart shows the emission reductions so far and what's planned. So from the end of 2019 until June 30, 2022 the TRS portfolio, public markets portfolio, went down in emissions by 27 percent. And that is about 3 percent more than the benchmark portfolio, which only went down 24 percent. So the proposed targets reduce the emissions from 2019 by 32 percent in 2025. So that's only an additional 5 percent over the next three

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years. And then from 2025 to 2030, it would take it down from 29 percent to 59 percent. So if you look at how steep the line is very steep over the last two-and-a-half years, less steep over the next two-and-a-half years, and then steepness increases again but not as much as it was during that first period. Again with the thinking that, you know, you get the low-hanging fruit, but then you want to keep making progress but you don't want to be able to count on making progress quite as, you know, rapidly as we have done so far. If we can exceed those targets, great. But these are good -- we believe these are good stretch targets and they are consistent with the ranges that the net zero target-setting organizations have set.

Okay, I am going to keep going. So I am going on to the next bucket, which is engagement for alignment action. And engagement is really the heart of how we intend to take action to achieve these goals. So here is the first piece is that we want to increase the science-based targets in the

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portfolio to 70 percent of Scopes 1 and 2 portfolio emissions by 2025. So we are currently at -- Nehan, help me out. I think it's 23 percent for Teachers?

MS. NAIM: That's correct.

MR. ADLER: So approximately 23 percent of your scope emissions are from companies that have adopted science-based targets which are targets to put the company in target, in line for 1.5 degree temperature rise in the economy. The goal is to increase that from 23 percent to 70 percent by 2025. That is not the number of companies; that's the amount of emissions that's covered. And then that goal would go to 90 percent which you would include Scope 3 by 2030, and to do that we would engage the highest emitters in the portfolio and collaborate with other institutional investors around that engagement. We calculate that to get to 70 percent -- again, help me out with the number, Nehan, for Teachers.

MS. NAIM: It's 108 companies.

MR. ADLER: Thank you.

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There are 108 companies in your portfolio that if they adopted science-based targets would get us to the 70 percent threshold by 2025. So that's the corporate engagement. Then we also are going to engage with all the managers and ask them to either have net zero goals or science-based targets and plans by 2025. In other words we want them by 2025 to set these goals and plans, not that they have achieved net zero by 2025. And then the last bucket in engagement is we need to develop the just transition assessment and criteria, and the goal would be to come back to you by the end of this year with a proposal on that. That's part of the plan that you adopted in 2021.

Okay, I am going to keep moving. Just a little more detail on the manager net zero piece. Again, everything has to be consistent with fiduciary duty and we want them to cover at least the assets that they manage for us, if not all of the assets that they manage. And we are asking them to cover Scopes 1 and 2 and Material Scope 3 emissions. Material

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Scope 3 emissions are considered if Scope 3 is at least 40 percent of the companies or the portfolios emissions. If they don't have adequate date for Scope 3 because Scope 3 is still very much a work in progress, they would develop a plan for that. And then for general partners that is in like private equity or other parts of the private market investments, there has been some pushback on setting a net zero by 2040 or by 2050 goal because, you know, the funds only have a 10 or 12 or 15-year life. And so they say to us not without reason, well, we don't even know what we are going to own in 2040 or 2050; nothing we own today is still going to be in our portfolio then. So the fallback then is to say, okay, then have the companies that you control adopt science-based targets while you hold them that would actually have a real world impact if you don't want to set an overall net zero goal for the firm or for the fund.

So here is the things that BAM commits to do as part of this manager net zero

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alignment. We need to develop proposal for non-control investments, because that last piece I mentioned is for control investments. What about investments where our manager doesn't control the holding company, what can we do in that case, and we would have discussions with the managers with ideas about that. We want to review the proxy voting records of all of our public markets managers. We -- historically, you know, we do our own proxy voting so we don't really bother with them, but how they vote their proxies certainly has an impact on climate issues and net zero so we want to review that. We will provide you with an interim report this year on where the managers are at, an in-depth progress report next year. And then in 2025 if there are managers who have not agreed to set targets or plans we would recommend, come back to the board with recommendations for what action to take or some acceptable alternative approach. All of this is subject to board review.

I am going to move on. So climate

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solutions. This is essentially unchanged from what you have already approached in the 2025 goal, the 2030 goals approached in 2021. This number here, 2.2 billion, is the amount you have currently in terms of exposure to climate solutions investments and it represents roughly 2.5 percent of your AUM as of June 30th last year. The goal is to get to 4 percent or 4.2 billion by 2025, so that's what we are working towards. And one of the things that we want to do is assess is there a way that the strategic asset allocation is constructed to prudently increase allocations to climate solutions investment across multiple asset classes. So that's something, you know, that the team -- and that means the consultants, BAM staff, and of course the board -- would take a look at in the course of doing this asset allocation review that you just discussed a few minutes ago.

Again, and then this is the last slide in terms of thinking about exclusions. In private markets when the board approved fossil fuel divestment two years ago at the beginning

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of 2021, you asked BAM to come up with an approach for that in private markets because that was just for public markets. So the proposal is that we ask all private market managers to exclude exploration extraction and production of oil, gas, and thermal coal or provide an opt out of such investments. If the manager does not agree, then we would bring that to the board's attention and the board can decide on what action to take. I would just tell you informally, informally our private markets managers are not in this space anymore. It's not consistent with their risk/return objectives, so we don't expect this to be an obstacle in any of the asset classes. And then in general if managers or companies fail to comply with the parameters to align with science-based pathways to keep us to 1.5 degrees celsius, then the board will decide what to do which, you know, consistent with your divestment and exclusion policy where, you know, engagement is preferred, we will engage. And then if engagement proved futile, then the board can decide what, if

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any, action to take.

So that's the presentation. Any questions, I am happy to address or open up for discussion.

MR. BROWN: Thank you, John.

Any questions for John?

MR. ADLER: I will stop sharing my screen.

MR. BERGE: I just have a quick comment to thank John and his team for their work on this document and for their work in general in keeping TRS really on the ball in terms of what's an obvious global risk to the potential performance of our portfolio.

I would also like to note that John and his team were also very helpful in engaging with our concerns from MOPI about certain aspects of this. We really grilled the team on just how these targets were developed, what the methodology is for, you know, for developing the numbers themselves. My impression is that this methodology is still being refined to a certain extent even for Scope 1 and 2, and I would encourage BAM and

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this board to not be unduly rigid or adherent to what is, you know, the path right now if it turns out that, you know, as the methodologies are refined, different paths become preferable. This is kind of an area that is evolving pretty quickly and I think that's understandable. That's not mentioned as a criticism.

I would also like to note we worked pretty extensively with John and team on the divestment language which I think in its current form we feel really makes clear that for something like this, engagement, engagement, engagement is key. You know, we are engaged really in an effort to try to change along with the world. And we have to be careful at all points that we have really had conversations to the fullest before we talk about, you know, turning our back on any given company. There are a lot of difficulties that certain companies might face that aren't the same just based on their sectors and we have to be mindful and sensitive to the scope of the change that we are hoping to help achieve here, but I think in that -- the current form of the document which is uploaded reflects our changes and we are certainly supportive of the initiative going forward.

MR. BROWN: Thank you, Bryan.

Any other questions? Comments?

Are we ready to take a consensus? It was just a discussion.

MS. BUDZIK: I have it on as a discussion.

MR. BROWN: Did we want to lay it over? What are we voting on?

MS. HIRSH: We are voting on the net zero implementation plan that is in convene. That was our --

MR. KAZANSKY: Does this implementation plan require a resolution of the board to go through or is this something that we can just do via consensus at the investment meeting?

MR. BROWN: I would think it's a resolution.

MS. HIRSH: Everything we vote on here we then approve at the board?

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MS. BUDZIK: No, not specific investments done by consensus can be -- there is the overall delegation to the Comptroller's Office of investment authority and consensus just on individual items. I do believe that there was a resolution on the initial adoption of the goals in agreement to the goals, so probably appropriate to have a resolution on the plan. We have this as a discussion item and we could do that at the next board meeting, if the board desires.

MR. KAZANSKY: Next board meeting is next Thursday, right?

MS. HIRSH: Okay.

MR. BROWN: So do we need a consensus? We are going to do a resolution or just --

MS. BUDZIK: So hearing that you are requesting that there be a resolution for the next board meeting to adopt the implementation plan, so we will prepare that.

MR. BROWN: Okay.

MS. BUDZIK: Comptroller's Office will prepare that.

MS. REILLY: Can you clarify something:

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So when we do consensus, it's just on investments? Like if you are going to have a resolution, you don't need consensus because you are going to have a resolution on net zero plan?

MS. BUDZIK: Correct.

MS. REILLY: So usually you have consensus on individual investments?

MS. BUDZIK: I think what I understood Tom to say is that the board is requesting that the resolution be prepared.

MS. REILLY: Okay.

MR. BROWN: Okay, so we don't need consensus if that's the resolution.

MS. BUDZIK: The resolution will take care of -- -

MR. BROWN: Okay. Any other questions?

I think we will move on to the next item on the agenda, the Pension Fund performance update quarterly presentation. And I guess that's the comptroller. Steve.

MR. MEIER: Thank you, Mr. Chairman.

Kate, is it possible to pull the slides up? Thanks, Kate.

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Well, I mean maybe just a couple of comments at the top and then basically I echo what Michael and Devon have mentioned earlier. 2022 was a very challenging year for the U.S. economy as well as the global economy, certainly financial markets. In the States here we saw slow economic growths. Remember, the first and second quarter had negative GDP growth. We had a peak in CPI inflation in June of last year, 9.1 percent. We saw substantial declines in prices of both bonds and stocks in tandem which is unusual, but not unprecedented. We had elevated geopolitical risk associated with Russia's invasion of Ukraine, we saw a changing dynamic between the U.S. and China which is ongoing, and we had the most aggressive Fed rate hikes in 40 years. So a challenging year. Unfortunately, I think 2023 is likely to be another challenging year for both global economies as well as financial markets. I am going to take a quick look, maybe do a little bit of a deeper dive into the conditions past and present that will drive those assumptions and

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some outlooks for financial markets for 2023.

Next slide, Kate, please. So obviously inflation is the primary concern. It's been high and elevated here and abroad. In the Euro zone it's come down a little bit off the boil, but still over 8 percent. In the UK still high. It's come off over 11 percent, but still above 10 percent through January. As Fed Chair Powell reflected at the last Fed meeting, the disinflation process is started here in the U.S. although with recent strength and many key indicators I think he is trying to walk that back a little bit.

In the next slide take a look at U.S. inflation. Both CPI and the Fed's preferred measure, the PCE deflator, they both have come down. You can see CPI has come down nicely; it's still over 6 percent, which is much higher than the Fed would prefer. I think the most important aspect of this note is if you look at the PC deflator, that yellow line, it's still sticky at around 5 percent, slightly below 5 percent. And I think that's going to be more of a challenge for the Fed

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going forward. We have a new CPI print early next week to give the Fed more information.

On the next slide U.S. core CPI is sticking at around 5 percent. You can see it measures year over year, three and six months, and they kind of cluster around 5 percent. So assuming the Fed continues to raise rates and their policies take hold I expect to see that decline, but it may be sticky at around 3 or 4 percent which means the Fed is going to continue to raise rates and keep those rates higher for longer than I believe the market currently expects.

On the next slide a quick look at U.S., Euro, and UK inflation. They are all moving directionally in the right way, but I think that far right-hand side of the slide reflects there is a lot more work to be done in all three economies.

On the next slide, the drivers of inflation are different here versus what we are seeing in Europe. On the left-hand side you can see U.S. inflation is really dominated by services inflation. That dark blue

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component is actually food and energy which is a smaller component of inflation here, but it dominates on the right-hand side in the Euro zone and that has to do a lot more with the Russian invasion of Ukraine and prices of energy and secondarily food price increases there. So again different drivers, but the same result with inflation being high.

On the next slide, just a look at the key drivers in the States. You can see that green line as it comes down, that's goods inflation. So goods inflation is getting back to where it should be, reasonably lower. That's more reflective of the supply chain bottlenecks going away and the economy repairing itself. I think the disconcerting aspect of this slide is the service sector. You can see that's a line that continues to move up at a little over 7 percent service sector inflation. And we are a service sector economy, so that's a challenge for the Fed.

On the next slide expectations for the next year based on the University of Michigan survey, that's come down nicely. You can see

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that, but there is still a 3.9 percent which is much higher than the Fed's target of 2 percent. Some of the drivers on the next slide. So we had a monthly employment report in January that was published in early February. We have another February unemployment report non-farm payroll report now tomorrow morning at 8:30 which everyone is going to be looking at very carefully, but in January the unemployment rate hit a 53-year low of just 3.4 percent and it was referred to as being stunningly good. So, again, that's a challenge for the Fed. That was well above expectations.

On the next slide you can see where that inflation is at 3.4 percent the far right-hand side. I think what's more interesting though is that 3.4 percent unemployment rate occurred while more people were coming into the labor force which is a positive development, but that moved up to 62.4 percent. We continue to watch that. And I will show -- in two slides I will describe why.

The next slide, the inflation pressure

we are seeing here really very focused on the services sector as I reflected earlier. On the far right-hand side you can see healthcare services, professional services, and lastly leisure and hospitality are really driving inflation higher.

On the next slide, this is a look at why we think that the improvement in the participation rate may help the Fed in terms of slowing the economy. We still have a fundamental shortfall or, I should say, a structural shortfall of workers. We have 11 million open positions and only 6 million people unemployed, so that 5 million-person gap has to be narrowed over time, again, hopefully with increasing the participation rate in our economy. On the left side, a look at economic growth. Remember, we had first two quarters in the U.S. of negative economic growth. The fourth quarter came in, earlier expectations were 2.9 percent. It was revised slightly lower to 2.7 percent, so still a little on the sluggish slide. We have had some positive news on the lower left-hand side

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as you can see the headline: As China Reopens Its Economy, It's Expected to Help Both the U.S. and European Growth. However, China was expected to come out with a growth forecast and expectation of over 6 percent and their stated goal for this year is just 5 percent which disappointed the market somewhat.

On the next slide again a reflection that GDP around the globe is starting to stabilize after a period of multiple years where it was very tumultuous, again primarily driven by the pandemic. In consumer sentiment on the next slide, this is an interesting slide. It kind of touches on something that Devon said earlier. We had a great January. Markets rallied, stocks were way up, bonds were down, yields were down. As a result of that we saw more people started looking at houses as the 30-year mortgage rate came down almost 100 basis points. You can see that increase on the far right-hand side. That upturn is interest in people, just traffic, in looking at homes for sale. I would except that to reverse itself because we had almost a

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hundred percent retracing of that rally and rates and now mortgage rates are close to 7 percent than 6.

Investor sentiment on the next page, this is the most anticipated recession of all time. These are professional forecasters, 45 percent are expecting a recession in the coming 12 months. I suspect there is probably a higher likelihood that we are closer to having recession than not. A lot of people say it's 50/50 which isn't really any kind of a forecast, but I don't think it's inevitable; but I think it's perhaps likely.

On the next slide we look at four basic economies, the UK, Euro zone and the U.S. That's up in right-hand side, and expectations are up for recession in all three of those regions with the outlier being China on the far right-hand side. Again coming out of COVID, relaxing their COVID protocols, that economy again is expected to see a 5 percent growth rate in 2023.

On the next slide, just a look at where -- why we have such a substantial backup in

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global interest rates. Again concerns about 1970-style inflation pressures, which I guess most of us haven't seen. Unfortunately I remember too well that was when Tuna Helper showed up on the Meier family dinner table followed quickly by Hamburger Helper; I don't know which is worse. But interest rates in the UK and Euro zone are expected to be raised by another 50 basis points. Those central banks have already telegraphed that. The Fed has intimated or indicated its intent to hike rates at least another two times. I suspect given the recent strength, depending upon what component looks like tomorrow and CPI looks like next week they might even have a little bit more to go after that.

On the next slide, just a look at where we are in the rate hiking cycle. On the far upper side we are at 4.75, 4.50 to 4.75 official rates. Financial conditions have actually eased a little bit with again that January rally in stock prices, credit spreads tighten and rates came down so again that makes the Fed's work a little harder.

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On the next slide, just a quick look at that very quick pace. The red line is the pace of rate hikes for 2022 into '23. Like I said, there is probably at least another two coming and perhaps another three or four coming and we look at this. Initially you parallel that to that blue line that is 1994, '95 when we had the issues with Orange County bankruptcy. They owned inverse floaters and as rates went up, their funding costs went up materially.

On the next slide, a look at financial conditions here and abroad. The white line is in the U.S. Those financial conditions are pretty close to neutral or at least they are positive. The financial conditions are much tighter in Europe; negative 3 percent, 3.1. Quickly looking at credit spreads and treasury yields, the bond rallied significantly in January only to give it all back, and then some in February and that's continued into March. So far year to date we have had rates that started -- the treasury yield began at 3.88, went down as low as 3.35, and is now

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about 4 percent. So, again, a challenging time in the market. The lower right-hand side talks about the yield curve inversion. That means you are not getting paid a premium to invest further out and quite the opposite. So right now we have got two-year yields at about a little over 5 percent and 10-year yields at just 4 percent, which means you are earning a lot more in two-year obligations if you buy treasuries versus 10s.

Next slide, just more of the same. It shows the yield curve through the end of the year. You can see the inversion on the far left-hand side and again the inversion on the right, which reflects at about 80. And that's increased substantially in the last couple of days given Chair Powell's testimony and concerns for additional rate hikes.

Quick look on the next slide, just the 2s and the 10s. And, you know, the market continues to move, but in green those are the 10-year yields and in white the 2-year U.S. treasury yields of 4.88, well above that near 4 percent level. And that actually indicates

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that the market is expecting a recession in the near term and then rapid rate cuts following that, so we will see.

Next slide looks at credit spreads. So I think credit spreads from a high-yield standpoint, which are in yellow, about 400 basis points over comparable U.S. treasuries. And on the white, those are investment grade credits about 120 over. I think they are fairly valued for an economy that's not going into recession. I don't find those levels to be compelling from a buy perspective and we will see how those trend over the coming weeks and months.

On the next slide, a quick mention. The dollar is off the boil, but it's still relatively strong, still strong based on historicals.

On the following slide, we look at the three big currencies that are typically looked at. So up top, the euro now buys a $1.06. It used to buy only 93 cents in the latter part of last year in the fourth quarter of 2023. The pound sterling now buys a $1.20. It got as low as buying only a $1.03 cents in the fourth quarter. And lastly the U.S. dollars buys a 136 yen now, whereas at the end of last year it was close to 150. So again the dollar is weakened somewhat, but still relatively strong.

On the next slide, a quick look at stock and bond market returns. I don't mean to beat a dead horse here, it was a tough year. S&P 500 has a loss over 18 percent, closer to 20 percent bonds. Had one of their worst performing years in over a century. I don't know how they get these figures. Mike, maybe you can tell me. But I saw a quote that went back to the 1780s; it's the worst bond market since 1780s and I didn't know we had -- I don't know.

What I would really like on the next slide, Kate, the far right-hand side, the last bullet, "Bond Route of 2022 Ends the Golden Age for Fixed Income." Fixed income benefit from a 40-year secular decline in interest rates since the 1980s. That seems to have come to an end. I think the zero interest

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rate policy probably puts a stake in that statement.

The next slide, just a look at world bond markets over the past 12 months. We haven't had a dramatic move up in yields. Here I am looking at the far right-hand side. So up top those are U.S. Treasury 10-year yields for last year, up 211 basis points. That's a big, big move. And across the board all the way down in every developed currency, these are sovereign, comparable 10-year sovereign yields. They are all pretty massive, with the exception of Japan which is moving in that direction and China which suffered from very slow growth and easing monetary policy.

On the next slide, a look at volatility. Left-hand side, that's the VIX; that's the measure of the implied volatility for equities. Below that green bar it's typically risk-on below 20 and above it over 30 is typically risk-off environment. We are right about 19 or 18 today. On the far right-hand side which is more interesting to me -- I shouldn't say that as a bond person. But it's more interesting as the level of volatility, the MOVE index looks at volatility in treasuries, implied volatility. And on the far right-hand side, you can see it's still well above the historical 30-year average.

The next slide basically just underscores what I said. The green line at the top is the MOVE index, so it's significantly higher than the VIX which just indicates again where inflation is and where monetary policy is going, where rates have been, more volatility relative to historicals for interest rates. Very quickly market returns have come back a little bit. On the left-hand side you can see the UK, Euros, developed Americas, ex-U.S. and U.S. -- sorry, the U.S. developed market, ex-U.S, and emerging markets. They have come off the bottom, but still a ways to go we hope. Far right-hand side is the Barclays U.S. Aggregate. It's come off its lows seen in October. The slide is a little stale because I think there has been retracement on the

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downside as well.

And with that maybe move ahead two slides, Kate. One more please. And the question is why is recession always six months away. The economy actually is relatively strong, which you saw earlier. GDP growth around the world is starting to normalize coming off those tumultuous post-pandemic years, so we saw positive growth and the labor market in the U.S. is very, very strong and that's -- again, we get another read on February non-farm payrolls tomorrow, but rest assured the market and Fed is looking at it very carefully.

Food for thought on the next slide, this looks at -- it actually overlays inflation relative to where we were in the 1960s and '70s and early '80s. And basically the take away here is from peak inflation till where we got to more normal level on the three cycles in the 1980s, '70s, and early '80s was about two years. And that's just an example we have probably a long way to go in terms of getting inflation under control, which means the Fed is going to keep rates elevated probably longer than the market expects.

Last slide before I get into performance, everybody is so anxious for the Fed to stop raising rates. Because traditionally on average when they stop within next five months, the S&P 500 goes up 15 percent so we will see what pans out this time.

Taking a look at performance, I am going to try to focus on the fourth quarter because it was relatively strong. One more, Kate. And you can see that evidenced by the Q422. Positive across the board with the exception of very, very long duration fixed income assets in the middle, but other than that we had a nice recovery off of a really bad year which still ended within 12 months a poor outcome for all manner of public markets, both equities and fixed income. On --

MR. KAZANSKY: Can I interrupt you for a second. So you were talking about yields before and you mentioned the long-term duration is not doing that well. So one of the things that we implemented several years ago was to build out our long-term duration and we have racheted it back since. Is there a need now to revisit that and bring the duration down even more or is where we are at kind of fine? What do you see going forward?

MR. MEIER: Well, rates have moved up nicely so I don't know that it's the right time to be reducing duration right now. I think there is probably a little bit more upside, but at some point the Fed will pause and hopefully inflation will continue its downwards trend. Depends how quickly, but --

MR. FULVIO: I agree.

I think the other thing to think about, which would be part of the asset allocation review, is you are getting paid a lot more for fixed income today. The yields were a lot higher than they were three or four years ago. And, you know, while we didn't see the diversification benefit that the added interest rate exposure we would have expected to have provided last year, you know, I don't think we have changed or revisited -- we

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haven't changed or revisited the perspective that over the long term we expect fixed income and duration to provide diversification for equity risk of which the portfolio has a lot, right? So -- but that would be a key item that we review as part of the SAA.

MR. KAZANSKY: Okay.

MR. MEIER: So this is your allocation to cash in portfolio. It's to be more strategic and focused more on long-term returns, but now cash is yielding -- we have got six months T-bills yielding over 5 percent, so we always have some level of cash to meet payments as well as capital calls. We had a rebalancing meeting yesterday where we discussed perhaps raising a little bit more cash tactically, only because we don't want to be raising cash for distributions or for capital calls at the end of the month, at the end of the quarter given the volatility. And you are getting paid to wait so we may inch that up, but that's really in the magnitude of 1 percent; it's not above normal range.

MR. KAZANSKY: Thank you.

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MR. MEIER: Sure.

Next slide, Kate. That's good, yes. Just a look at where we are for the net private manager returns. You can see looking at one year, the information doesn't bounce around as much. Mark to markets are less volatile. But you can see even in the one-year sector through the end of the year private equity, all manner of private assets generated a positive return. So, again, a good outcome. Certainly Mike just talked about fixed income providing that balance for the portfolio and it is unusual; 87 percent of the time bonds and stocks don't move in tandem. This is one of the 13 percent where they did. So challenging year, but the good news is we have a material allocation of private assets which provide again that offset and a little more balance for the portfolio. On the bottom part of the slide you can see the total Teachers' Retirement System plan return for the three months was 5 percent relative to the policy return of just 4.9 percent. That's really rounding. I think

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they were in a couple of basis points, fraction of a basis point so pretty close.

The next slide actually looks at that attribution. Investment manager selection on the far right delivered about 40 basis points of return and some of the asset allocation effect was just we just happened to be slightly overweight to private markets, which in a volatile period of time provided that offset.

On the next slide, a look at your public market excess returns by asset class. You can see that we add a little bit of a drag in our -- the Russell 3000 and equities. World U.S. -- ex-U.S. was up. Emerging markets recovered fairly well and again fixed income was still a little bit of a lag, but overall on the bottom the total Teachers' Retirement System relative to your policy benchmark was up a couple of basis points.

And two more slides and I am done. So next slide. Just a look at the private market excess returns and they were substantial. In private equity for one year was 2086 basis

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points. Again that has more to do with the Russell 3000 selling off so significantly, but again the private equity allocation was positive for the year and dramatically outperformed that benchmark. We have a little bit of headwind for the noncore real estate which tends to be higher risk. It's opportunistic and value added. I know sometimes they have attached a spread to the noncore of 2 or 300 basis points. Here there isn't so underperformance in that one area, but again I am sure Mike would agree typically you want to look at 5 and 10 years to look at excess returns which are substantial for the asset classes. Lastly, just rebalancing. So there was a little bit of activity in the fourth quarter this year. Most of it was really to raise cash for benefit payments and to meet capital calls, a little bit of rebalance as well. I know John Merseburg was rebalancing the equities not just to raise cash, but also the climate solutions mandate in the fourth quarter and Robert Feng was doing a little bit of

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rebalancing around credit mortgages and intermediate term treasuries as well.

As well as raising again $980 million in cash and, last slide, total portfolio over and underweights, they are consistent with benchmarks. And, again, we try to adhere pretty closely to the targets relative to the cost of rebalancing in that market conditions.

So with that, there is a lot of information I will open up to questions if there are any.

MR. BROWN: You have any questions?

MR. KAZANSKY: I have got a question. Since so much of what might happen in the future is based on the Fed and with Brainard moving over to the White House and the possibility of Eberly or perhaps somebody else, is that going to materially change the thinking in the Fed? Is Eberly's voice or, if it's not her, someone else going to push the Fed to be more or less aggressive?

MR. MEIER: I don't think so. I think probably would be really consistent. Obviously Eberly is very qualified having a

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Ph.D. in economics from MIT and a wonderful career, so I don't know that she would be -- have a different perspective so I would expect the policy to continue the way it has; again, tightening and focusing on fighting inflation. You are absolutely right, a lot of what happens in the financial markets is driven off what the Fed is doing with official rates. So again I think we are closer to the end of the hiking cycle than we are to the beginning, a lot closer, but there still may be another 100 basis points to go. I think at least 50 which is what the Fed indicated and I think given the recent strengths, again maybe another 1 or 2 after that. But at the next Fed meeting we also get a summary of the economic projections of the dot plot and what everyone is going to be focusing on there is what's the median expectation for the terminal rate of Fed funds. Last time it was 5.1 percent and the expectation will be something north of that, probably close to 5.6.

MR. FULVIO: We are forecasting 5.5 to 5.7, so we split the difference. It's

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interesting, I don't know if -- Steve, how you feel about this, but it feels like the market is more so now than ever hanging on every word that comes out from the Fed. So it's pretty interesting to see the swings reacting specifically to whatever language there is out there from Chairman Powell or others.

MR. MEIER: It's also really important to look through the noise. So we come in front of the board of trustees on a monthly basis and quarterly basis more formally to go through this. There is a lot of noise out there that's data dependent, the noise jumps around. There is an argument that can be made and we will see tomorrow morning, but --

MR. BROWN: The jobs report.

MR. MEIER: The jobs report tomorrow. And frankly there is some school of thinking there is some seasonal adjustments to the January numbers that maybe made the economy and the job markets look that much stronger, so we will see if there is any offsetting in that. Right now the survey expectations for tomorrow's increase in employment is 225,000

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jobs versus 517,000 in January, but those are the numbers the Fed is focused on. But as trustees it's hard and as consultants we are trying to focus on 5, 10-plus year returns where we think we want to be. Your strategic allocation is actually meant to perform over various cycles. There is a lot of noise out there and I hope we don't compound that by coming here and talking about every little number, but what we try to do is look through the noise and figure out what the right signals are. And those signals are impacting how we think about the strategic asset allocation and the recommendation we give to the trustees.

MR. BROWN: Any other questions?

Thank you, Steve. Well done, well-presented. Is there any reason why this is a six-week lag? Is this information available any sooner to present to us or is there a reason?

MR. MEIER: It's usually ordered by our custodian State Street with -- they don't give us audited accounting statements, performance

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statements once a month, but we are in the process of going through a custody RFP process. My hope is to get daily pricing. We have daily pricing, but it's not audited. But we do think that's something we need and we do think it's something State Street or whoever responds to our RFP can potentially deliver, so we hope to have better information faster. Although, private they are reported with significant delay and that's just market convention. So the private asset performance that you saw today --

MR. BROWN: What delay would that be?

MR. MEIER: From September 30th. Usually one full quarter and that's not just -- that's everywhere.

MR. BROWN: Okay, thank you.

Any other questions? Comments?

let's see. Actually I think we are going to go out of general session, out of public session and into executive, so do I hear a motion for that?

MR. KAZANSKY: So moved.

MR. BROWN: Thank you, Mr. Kazansky.

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Do I hear a second?

MS. HIRSH: Second.

MR. BROWN: Second. All those in favor, say aye?

Aye.

DR. GREEN: Aye.

MR. KAZANSKY: Aye.

MS. LEE: Aye.

MS. HIRSH: Aye.

MR. BERGE: Aye.

MR. BROWN: All those against/opposed, say nay. Abstentions? So we are out of public session.

MS. HIRSH: We were supposed to do the risk presentation before going into executive.

MR. BROWN: Do I hear a motion to go back into public session?

MR. KAZANSKY: So moved.

MR. BROWN: Do I have a second?

MS. HIRSH: Second.

MR. BROWN: All those in favor going back into public session, please say aye.

Aye.

DR. GREEN: Aye.

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MR. KAZANSKY: Aye.

MS. LEE: Aye.

MS. HIRSH: Aye.

MR. BERGE: Aye.

MR. BROWN: All opposed to going back into public session, say nay. We are back in public session. Liz, do you hear me.

MS. SANCHEZ: Yes. We never went into executive session, so we are still in public.

MR. BROWN: Technically we went out.

MS. HIRSH: As part of the quarterly report, there is a risk update so we will separate that out.

MR. BROWN: Sorry about that. Ed Berman will now do the risk update.

MR. BERMAN: It's a big room.

MR. BROWN: We hear. I hear.

MR. BERMAN: So we will be talking about risk today. And so obviously your portfolio is more than assets; it's reaches across the entire globe in all asset classes, multiple managers, so a lot of things are happening. It's subject to markets, subject to what's happening to the manager, to rebalancing so

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all of this is what we call risk and it's impossible to articulate all of the risks. As we go through the portfolio, that's how we generate returns. The objective here is to keep risk consistent with the investment process and with the policy statement.

So over 20 minutes or several pages, I will try to address two questions; first of all, are the risks in with your portfolio consistent with the investment policy statement as it is today and, second, looking forward to the possible future will the portfolio perform the same as we expect. So the first point, we need to actually define what risk is. And it's not a simple question; it's not a unique measure of risk, but for a large asset portfolio we usually define risk in terms of results and we define it in terms of expected performance. There are two measures of performance. Usually talk about total performance, actual returns or talk about excess returns. That's to say two measures of risk; we talk about total risk or talk about active risk.

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So you can see on this page that your total risk for the quarter is at 12.4 percent, but what does that number mean? So 12.4 percent means that you may expect over the next 12 months for your portfolio to deliver 1.4 percent return. We assign about 70 percent probability to this outcome. There is a 15 percent chance that the returns will be better and about 15 percent that the results will be much worse, but the most important question here is what value is this number. It's a good number. What is the intuition behind this number; is it something we need to worry about? So broadly speaking there are three main factors that contribute to the risk in your portfolio. It's the markets, it's the portfolio construction process, and it's anything that the managers do for rebalancing the cash flows, all the tactical day-to-day managing of the portfolio. So to understand this risk level, we will take it in steps.

First of all, the markets. We represent the markets by a simple blend 60/40, 60 percent equities, 40 percent fixed income, and

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we use MSCI World for equities and Barclays Ag for fixed income which the totals match your portfolio. You can see the first column of the market portfolio, despite I had enormous size of your portfolio and many dimensions, there are three main buckets of risk that you take; equity, rates and credit.

You can see -- at the top of this page you can see the equity allocation 60 percent, interest rate duration 2.5 years, and spread duration is 1.5. You see those numbers change obviously, but this is our baseline so what does this mean for risk? So this is market, this is baseline, and we are on the portfolio so our risk system by 1 and the risks are the outcome, so risk is 11.8 percent meaning we expect the performance of this market portfolio over the next 12 months to be within 11.8 percent range and we are slightly up for the quarter. So this is our baseline. This for portfolio construction, this increase in risk was driven entirely by markets and that's what markets delivered to us. And related to that is a second measure of risk that is beta to S&P. Total risk is framed in 12 months expectation, so the beta is a short-term measure. So beta measures how much your portfolio will move to the change in S&P, and .57 means simply a 1 percent move in S&P translates into a 57 basis points performance move for the portfolio. That includes everything; credit allocation, private markets, public markets. So now we have this baseline we can continue showing, so you understand what the risk level is for the portfolio.

So the next step in the process is to split this evident fixed income into more granular buckets. That's what we achieve by the strategic benchmark. So the benchmark has a lot of components, you see at the bottom of the page. And you will notice that the portfolio construction changes slightly. You can see on this side of the table so you have slightly more asset allocation, 2-1/2 percent meaning slightly more risk. The credit duration slightly lower, so less interest rate risk and less credit versus the market portfolio. What does that mean for risk for the benchmark? You can see on the bottom of the page, so the risk actually came down slightly. You can see how consistent the risks are within the benchmark in the market portfolio. You also see that the beta also came down slightly. We are talking about small changes, so just think about it. We now have slightly more equity, more risk, more expectation of return, but the risks came down. It's a good thing. So these are -- the asset allocation is working as it should, so that's good affirmation.

Now we can move to your actual portfolio, which is shown in the Column 3 of the table. So the -- first of all, you can see that the equity allocation is closely aligned with the benchmark. You can see that the duration both rates and credit are fairly close, but there are small differences. That's mostly because the ETI allocation being different duration profile. Again we know about it and it's not a huge surprise, so what does it mean for risk? You can see that the risk level again is broadly consistent with the benchmark and market portfolio, but translated higher. Why is that? We will ask that question later. I will give you a brief preview private markets, mostly private equity, but we will dive more into detail on the next pages.

You can see the beta again ticked up slightly with small changes, so we know that the risk levels in the portfolio are slightly higher than the benchmark. First you have applications for performance and potential down markets. Here we introduce a measure of risk which is active risk. I mentioned that risk essentially performance with actual returns and active returns, so this is a measure of the excess returns over the benchmark. It means you expect the portfolio to deliver about 2 percent of active returns. Again, it's a good thing; that's what we expect and it's consistent with our asset allocation.

So what are the main takeaways from this page, which I think is one of the most important pages in this entire presentation? This is a high-level shot of the portfolio and would summarize a single number. So, first of all, you see that the risk profile of your portfolio is closely aligned with the benchmark as intended. We can see that the changes for the quarter was driven mostly by the markets and I know we are going through a difficult market environment, volatile and turbulent which we expect will revert at some point. We know that the expected performance of your portfolio is driven mostly by the markets. I say that because we just compared this number against the market portfolio, they are very close. So markets are the most important input in the returns of your portfolio. And we also say that there are no unexpected changes in the fixed portfolio for this quarter, which is an important conclusion. Why do I say that? I am looking at these two charts in the left corner of the page, and this chart showed the last 12 months of history of all these three portfolios we just talked about and you can see that the

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relationship between these portfolios stay the same for the last 12 months. So at a high level, you can say the portfolio is mostly unchanged in terms of the risk profile. You can also see the lines were trending up through the year. That's, again, not surprising; it's the markets. So we know that because of the pandemic, everything Steve was just talking about, we are in a very volatile environment so the risk level was up; it's not surprising. You can see that it started trending down slightly and that's, again, a reflection of the market. And finally the last point to make on this page, active risk, which is active returns, again broadly the same. It's bouncing around between 1.5 and 2 percent. It went up recently, but mostly because of the market volatility; so no big surprises.

Next we will dive more into the portfolio and see what's inside this to get a better sense of the portfolio. Go to the next page, please. Thank you. So as I mentioned before, there are two measures of risk; total

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risk, absolute returns and active risk, excess returns. So let's focus on Chart Number 1 on the right-hand side of the page. Just to remind you the total risk for your portfolio is 12.4 percent, but what are the components of this risk; what drives it? You can see in this chart, and that is shown again the last 12 months. You can see the evolution. First of all, we just said that your portfolio is mostly 60/40 -- actually 62 percent allocation to equity, but first thing that jumps out of this is this huge green band in the middle of the page. So equity, even though it's only 62 percent allocation, drives the majority of your risk. In particular public equity the green band is only 45 percent allocation, but it's 66 percent of risk. The other takeaway is this blue band private equity. So private equity runs at about 8-1/2 percent allocation, but contributes 17 percent of risk. Intuitively, it makes sense. So just as Steve talked about performance, in private markets was a strong contributor.

What about fixed income; it's this small orange band on the top. You can barely see it; it's only 6 percent of risk. There are two things noticeable about it. First of all, it's thin. That's actually not that surprising; it's actually typical for most portfolios, but what's normal here is it's on the positive side of this charge. There is nothing on the negative, there is no detractors, no diverse fires and that's unusual. Again going back to what Steve was talking about, that's where we talk about the positive stock/bond correlation. Stocks and bonds move together; this is unusual. It's difficult for a high-inflation environment. They are the same in the '80s and earlier when we had inflation and we expect this to reverse. As inflation comes down, we expect the diversification to come back and we expect fixed income to become again a diversifier; so no surprises here.

Active risk, right side of the page, Chart Number 2. That's actually more interesting. Just to remind you, we saw that the active risk in your portfolio is 2.1

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percent. But what you can see it's all blue, it's all private. So private equity by far is the single-largest contributor. And why so? With benchmark private equity against the Russell 3000, it's not necessarily a representative index. It's a good measure of returns, but obviously we know that private markets behave very differently from our public markets and that's why this band, this blue band, is so wide. You also see fixed income is a detractor, which is again the same thing I mentioned before. In this case, it's not very helpful. It is what it is; that's the markets. But it means that you may expect the fixed income will detract from excess returns and that's again a reflection of passive stock/bond correlation, something we expect to reverse. You see that cash, the red line, is actually a meaningful contributor. It's small, but it's there. But where is public equity; it's this thin green band. You can barely see it. What it tells you is that in the current environment, you do not expect any meaningful excess returns coming from the

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public equity managers. And we will see a little later in the presentation the effect on performance.

So let's dive more into the portfolio and see what actually composed the distribution of risk at the more granular level. So let's focus on Chart 1 on the top of the page. Here you see the portfolio split against the main buckets. You see the public equity, public fixed income, and alternatives. The blue bar represents the portfolio. The orange bar is overweight/underweight. Actually we have cash, which is always overweight because there is no allocation. The portfolio is matched very tight to the benchmark. You also notice it's slightly different from what Steve just showed you; that's because we showed it without parking place adjustment. So we show the actual risk against actual benchmark which is more relevant for the risk discussion. At the bottom of this page, we dive into each individual asset class. First, public equity. Again all blue, all portfolio no

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overweights/underweights so check. Fixed income, the same thing; you can see it's meaningfully tied to the benchmark. And now alternatives, that's where you see a small differential. Hopefully, no big surprise. So we know private equity runs slightly above allocation and specifically infrastructure is running slightly below. There are no surprises here and we will talk about this, and it's just another affirmation of your portfolio acting as expected.

Next page, please. Thank you. So then we dive more into -- I know I mentioned before risk exposures are not the same as physical allocations. So what goes, what gives? So here is your portfolio straight along the same dimensions as the strategic benchmark, so consistent with the asset allocation. The blue bars represent allocation dollars. The orange bar represents risk or expected performance. Two things stand out. First of all, two asset classes punch well above its weight; U.S. equities and private equity. So we said before equity is the most important driver of your returns in risk, but we see now it's actually U.S. exposure that drives most of the exposure given that private equity is primarily domestic. Domestic markets prove to be the best performer over time. It's probably the strongest economy out there; it's probably the best. Fixed income, you can barely see it. It disappears and that is inconsistent with what we saw before. Fixed income act as a balance of your portfolio but what we do not see, we do not see fixed income going down. We do not see the diversification effect, so fixed income currently is not delivering what we want it to deliver.

Next page, please. And here we dive more into the -- more into the performance and the risk exposures. We are going by individual asset classes. And I keep saying that the risk and performance, it's actually the same thing. But we need to make sure that the risk as projected is consistent with performance. Why do we need to make sure of this? Because, first of all, we need to make sure that your portfolio is captured properly

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in the system, will make meaningful projections. There is another chapter to understand if there is something unusual happening in the portfolio.

So first of all starting with the total risk which is net asset returns, so you can see at the top level, at the system level the risk for portfolio is 12.4 percent that we just talked about. The performance is 13 percent. So just like that risk performance you can see is consistent, it's a good check. Fixed income -- I'm sorry. From the top, equities. So high levels of risk, high level of return. In this case it's all negative, but you can see that it is consistent. Again, check. Fixed income; risk is lower, the returns far exceeded our forecast. Why is that? Again going back to Steve's point, this is the most unusual fixed income market since the 18th Century. We do expect that the risk forecast will not provide a good protection. Just as I said, there is a 15 percent probability it will exceed our forecast. Clearly we are within this 15 percent environment; these are very unusual times. And, finally, the alternatives. High-risk levels, high returns. One standout here is private real estate, so you can see the risk level projected about 14 percent. The returns positive is a good surprise; exceeded our forecast by a huge margin. What it tells you that as good as it is, we cannot count on this performance. At some point, it's likely to revert.

Next we look at the active risk, which again is a measure of excess return. So at the system level the active risk was 2 percent. First of all let's focus on public asset classes, equities. Active risk is 1 percent. It's lower; we saw that. But within this bucket, that's not a lot of deviations. The U.S. exposure is low and this is because the majority of your exposure, at least capital exposure, is in index fund. Developed ex-U.S, high levels of risk; 2.9 percent. That's because you use active managers. How does that translate in performance? You can see in this column. The column for developed

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ex-U.S. translates into high level of performance. I will not mention any names because I am not allowed. It's not entirely unexpected. And again I see there is a validation going back, it's 15 percent probability will break through this; that's what it is. On the fixed income side, on the other hand, you can see that active risk aligns very well with the performance. High yield is small deviation, but given the nature of the asset class it's understandable. On the private side, I would say I wouldn't necessarily focus on excess returns given that the benchmarks are not representative of this asset class but, you know, they are big numbers.

Next page, please. So we talked about the portfolio as it stands today and we saw that it's broadly aligned with the investment policy statement and what its impact. What about the future? That's a difficult question because we don't have a crystal ball. We don't know what the future will be. What we can do is estimate that the portfolio will

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perform on the broad range of stresses. So for this purpose, we identify the main drivers that drives performance in the future. What is that? Broadly speaking it's the equity rates and broad economy that impacts the markets in the future. Broad economy is represented by commodities, which is the market proxy for everything out there. Within equities, we selected these three markets. First obviously the U.S., United States, the S&P 500, the emerging markets MSCI EM, and Europe. So within these three markets, we will cover about 70 percent of the global equity. It's a broad representation of the global equity markets. On the rate side we picked, first of all, 2-year Treasury. This is really a proxy for the Federal Reserve. So even though two years is a short maturity, that's where market expectations usually changes so this will apply to what the Federal Reserve is doing and market expectations about the future of its policy. The 10-year Treasury is a proxy for the global economy so that is the mortgage rate, corporate

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borrowing. It's probably one of the most important rates for the real economy; not for national, but real economy and then the dollar.

So obviously U.S. dollar has a very special place in the global monetary system. It's the world reserve currency. Good proxy by dollar euro exchange rate. In the real nonfinancial world side, first focus on copper prices. Copper is one of the best proxies for the global GDP growth. Everything, almost anything, being manufactured requires copper. So price of copper is usually good for future expectation and future development. Oil goes with pretty much anything. And inflation which is something we have been talking about for the past two to three years, one of the biggest concerns for everyone.

So given this choice of market factors, we tried to estimate what would be the worst monthly performance in the next 12 months. So this is not a forecast for the future; we don't know where the markets will be. Instead the question we ask is what will be the worse monthly move consistent with the current market environment. You can see the answer in this Column Q4. So I want you to first appreciate the size, the magnitude of the shocks; they are truly enormous. So we see the material likelihood that over the next year, the equity markets will move by about 30 percent in one month. It's a huge move either up or down. The amount of risk of three markets, you see emerging markets and United States are roughly the same, but Europe is a much higher risk. This is more likely because of a larger move in Europe. You can see compared to last quarter, this is going up. It was a material increase. From the rate side you see the numbers are equally staggering. For the 2-year Treasury, 140 basis points; it's enormous. It came down slightly from the previous quarter, but still we are talking about big numbers. Same for the 10-year Treasury, big numbers. The dollar exchange rate, almost 11 percent. Like if we were three, five years ago, these numbers would have been unthinkable. The same is true if not more for the real world. Copper, 35 percent move. Oil, 57. You can -- see we showed the last three years of history, you can see why these numbers are not unthinkable. Oil went to being -- from being negative to 120 within the last three years. So that's why our forecast gives such a huge range.

So what does it mean for your portfolio? Can we have the next page, please. So there are nine factors that were identified. We ran tests with numbers up which is risk-on or down which is risk-off. We do it for the portfolio and for the benchmark. So altogether represents 36 stress tests. And I will not read through all the numbers here, but some several things clearly stand out here. First of all, let's focus on the equities. The S&P 500, that's your largest exposure. You can see it's not surprising given that we have domestic buys in the portfolio, but domestic buys does not necessarily mean that the companies will derive its revenues domestically. The majority of companies in the S&P 500, for example, derive a material amount of revenues from abroad. So if anything, it's an affirmation that again everything aligns as expected. I also take a level of comfort knowing that most of your exposure comes from the domestic averages. You have less exposure to Europe; material, but less. Most importantly your exposure to emerging markets, which means capitalist China, is actually lower. Given that certain future in Chinese emerging markets, it's actually a good outcome the way it plays out. The rates bucket, it's actually one of the more interesting outcomes of this exercise. So you can see that the exposure to 2-year Treasury which is at proxy for the Federal Reserve decisions is actually lower; it's only 1.6 percent. It's not the setup of the Federal Reserve to drive returns in your portfolio. What's more important? The dollar. So it's actually the dollar and the role of the dollar in the global economy that's more important to the performance of your portfolio. And finally commodities. The economy, it's copper. Copper is the most

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important by far and why? So this is because your portfolio is positioned to grow, to benefit in a high-growth environment as GDP expects. An increase in inflation is actually positive for the portfolio. Why is this so is simply because as inflation goes down, the GDP goes up as well which drives up the revenues or outcomes.

So what are our main takeaways from this page? So, first of all, it's another confirmation that the performance of your portfolio on the extreme stress, on the extreme shocks, was consistent with expectations. You see the portfolio position is slightly higher-risk level as the benchmark and why I say that, in the risk-on environment the portfolio performs better than the benchmark. The risk-off environment, the portfolio performs worse than the benchmark. So what we are saying is that the portfolio is more risky than the benchmark. You also see that the portfolio has little downside protection. When I say that, again the excess return. And, actually, total return for the

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up or down stress test is roughly the same. And you can see that again. This side of it is the portfolio outperforms in the upside and underperforms in the downside, but the magnitude of this performance is actually not that high. You can see that under all scenarios, the excess return is 1 percent less; that's consistent with what we saw in risk.

And finally just dive slightly more into this process, we will look at the portfolio in more details. Go to the next page, please. Thank you. So here we show the three most important scenarios broken down again by the benchmarks so we show the S&P 500 stress, and dollars stress, and the inflation stress. Keep in mind all these stresses, all these scenarios, have the same likelihood of happening. So first we notice that we get more bang for the buck from the equity stress. You see this simply because the dollar is much higher for equities. You also see that on the equity rallies, only a few buyers in your portfolio can perform. On the rates and

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inflation scenarios, the gains are more equally distributed. You can see the fixed income provides little diversification in the portfolio and why is that? Because obviously you can barely see core fixed income with TIPS under these two scenarios. Under inflation there is a little layer above but, it's really small again consistent with what we talked about when we looked at the position of risk in the current environment. And finally you can see that the future performance of this portfolio is consistent with our forecast, consistent with the risk as we see it today. You see that it's too many numbers, but all asset classes under all scenarios perform consistently with our forecast and that is enough information that going forward your portfolio performs as expected.

So I will stop here for any questions.

MR. BROWN: Any questions?

Thank you, Ed. Thank you. Well done, well-presented. So I think thank you, Ed.

And now do we -- well, I ask for a motion to go back into executive session I

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think.

MR. KAZANSKY: For real this time. So moved.

MR. BROWN: Do I hear a second?

MS. HIRSH: Second.

MR. BROWN: All those in favor of going back into executive session, say aye.

Aye.

DR. GREEN: Aye.

MR. KAZANSKY: Aye.

MS. LEE: Aye.

MS. HIRSH: Aye.

MR. BERGE: Aye.

MR. BROWN: All those opposed, say nay. Abstentions?

Now we are out of public session waiting to go into executive. And in the meantime, we will have a ten-minute break and maybe we can all be back at 12:10.

(Recess taken.)

(Discussion off the record.)

MR. BROWN: I guess now we are going to have a readout by Ron Swingle. Thank you Ron.

MR. SWINGLE: Yes. In executive session

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there were two manager updates. There was a discussion on an investment policy issue, consensus was reached. We received preliminary performance data on the Pension Fund and we received a presentation on real estate asset class which consensus was reached.

MR. BROWN: Thank you, Ron.

Any questions?

So I think do I hear a motion to adjourn?

MR. KAZANSKY: So moved.

MR. BROWN: Thank you, Mr. K.

Do I hear a second?

MR. BERGE: Second.

MR. BROWN: Thank you Bryan.

Any discussion?

All those in favor of adjourning, please say aye.

Aye.

DR. GREEN: Aye.

MR. KAZANSKY: Aye.

MS. LEE: Aye.

MS. HIRSH: Aye.

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MR. BERGE: Aye.

MR. BROWN: Any opposed, say nay. Abstentions?

We are adjourned. I would like to remind everybody that following this, we have an attorney-client session.

[Time Noted: 1:21 p.m.]

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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 20th day of March, 2023.

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