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NEW YORK CITY TEACHERS' RETIREMENT SYSTEM
INVESTMENT MEETING

Held on Thursday, June 1, 2023
Via Videoconference
10:09 a.m.
ATTENDEES:
THOMAS BROWN, Chairman, Trustee
PATRICIA REILLY, Executive Director, TRS
DAVID KAZANSKY, Trustee
VICTORIA LEE, Trustee
BRYAN BERGE, Trustee, Mayor's Office
ALISON HIRSH, Trustee, Comptroller's Office
ANTHONY GIORDANO, Trustee
ANGELA GREEN, Trustee
DEVON ALEXANDER, Rocaton
AMANDA JANUSZ, Rocaton
KATE VISCONTI, Comptroller's Office

REPORTED BY:
RIVKA KAPLAN
JOB NO. 9520833

0002

ATTENDEES (Continued):
LIZ SANCHEZ, Teachers' Retirement System
THAD McTIGUE, Teachers' Retirement System
JOHN DORSA, Comptroller's Office
KOMIL ATAEV, Teachers' Retirement System
RON SWINGLE, Teachers' Retirement System
STEVEN MEIER, CIO, Bureau of Asset Management
DAN HAAS, Bureau of Asset Management
ED BERMAN, Bureau of Asset Management
JANET LONDONO-VALLE, Bureau of Asset Management
TOM CARROLL, Bureau of Asset Management
ENEASZ KADZIELA, Bureau of Asset Management
ALLAN MACDONNELL, Bureau of Asset Management
MINJOO NA, Bureau of Asset Management
JENNIFER GAO, Bureau of Asset Management
DINA FARHOUD, Bureau of Asset Management
DAVID LEVINE, Counsel
JIMMY YAN, Comptroller's Office
SUMANTA RAY, Mayor's Office
KEVIN LIU, Mayor's Office
JOHN GLUSZACK

0003

ATTENDEES:

MARC RIVITZ, StepStone
DEV SUBHASH, StepStone
JAMES MAINA, StepStone
YING LIN, StepStone
JUSTIN THIBAULT, StepStone
ARISTA AFTOOMIS, Teachers' Retirement System
ISAAC GLOVINSKY, Teachers' Retirement System
MAREK TYSZKIEWICZ, Office of the Actuary
SEAN BARBER, Hamilton Lane

0004

Proceedings

MS. REILLY: Good morning. Welcome to the Investment Meeting of the Teachers' Retirement Board of June 1st, 2023. I will start by calling the roll. Kevin Lu?

MR. LIU: Here, representing Mayor Adams.

MS. REILLY: Thomas Brown?

MR. BROWN: Here. Good morning, Patricia.

MS. REILLY: Dr. Angela Green?

DR. GREEN: Dr. Green here, present.

MS. REILLY: Thank you. Alison Hirsh?

MS. HIRSH: Present, 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'll turn it over to members of the chair.

MR. BROWN: Good morning. Thank you, Patricia. Good morning everybody. We will start with the Passport Funds First Quarter of 2023 Performance Review. I guess we will ask

0005

Rocaton to do that.

MR. FULVIO: Thanks, Tom. Okay. This is an excerpt from the quarterly report which was distributed ahead of time. Happy to address any questions. But I was just going to cover off as a reminder for everyone what the Passport Funds' performance essentially was for the quarter. We saw a fairly strong start to the year across equity markets, which resulted in positive results across the funds. You will recall the diversified equity fund was up over seven percent in the first three months of 2023. We saw a positive value driven ad by active manager contributions in both developed, and excuse me -- in US and non-US equity markets. So that was certainly positive to the performance of the funds in the quarter.

Across the other balance funds, we also saw positive returns -- excuse me -- the passport funds. The balance fund had a return of just over 3.5 percent. The international equity fund was up just about eight percent ahead of its benchmark, and we saw very strong

results from the sustainable equity fund in the first part of this year, with that fund up over 14 percent, and then beyond that the two index funds offered as part of the Passport Funds' offering, both up over six percent with the US outpacing non-US, by just shy of one percent.

So again, it was a very strong quarter in terms of both absolute market performance and relative results. Again happy to address any questions in more detail, if there are any. Otherwise, we will move ahead in more recent news and go through the report for April.

MR. BROWN: Any questions relative to the Passport Funds April 2023 performances review? Okay.

MR. FULVIO: I will pull that up as Amanda is beginning to present.

MS. JANUSZ: Amanda Janusz. So the month of April was a bit more subdued after a pretty active first quarter. So despite some of the ongoing concerns related to the banking sector, the month of April was largely

positive across the board, although relatively small absolute returns.

So looking across the Passport Funds, all positive absolute results with the exception of the sustainable equity fund, which goes down about 70 basis points for the month of April, although as Mike mentioned, it had a very strong start to the year. So if you look out to the year-to-date period, the fund is still up 13.6 percent year-to-date.

For the diversified equity fund, which is where the bulk of the assets are for the Passport Funds, for the month of April, up right around 1.2 percent and in line with that index. We did see a bit of underperformance from the acting US equity component. Although the active international equity managers did outperform, offsetting that end of performance from the US equity managers and that has carried forward to the year-to-date period as well. So you can see the international equity composite is up over ten percent year-to-date through the end of April.

In terms of some of the other options

here, the balance fund, up about 75 basis points for the month of April, and 4.3 percent year-to-date through the end of the month and just slightly outperforming that balance fund benchmark, and -- in your index funds, down towards the bottom of the page, we're tracking their benchmarks as we would expect for both the month of April and the year to date period. So are there any questions on April?

MR. BROWN: Questions for Amanda?

MR. MEIER: So we're going to go to now to May 2023 Market Performance Update. Devon, do some magic here. Please state your name for the court reporter.

MR. ALEXANDER: Devon Alexander for the record. So for the month of May, we did see a sort of mixed of flat performance across the board. We saw that the global market composite benchmark was up by .3 percent, and the diversified equity funds up by almost one percent. The rest of the performer for the period for the month of May was sustainable equity fund, with unrealized funds were up by 4.76 percent and 4.99 percent, and so the

weakest performer for the month was the international equity benchmark, which was down by 3.46 percent.

On the year to date calendar basis, we would like to address that, I guess, point out that we are starting to see some separation between the regions. If you want to look at the rest of 3000 Index, you can see that it's up by 9.39 percent year-to-date versus the ex-US, which is only up by 6.3 percent, and even further down the page, emerging market index is only up by 2.52 percent. So again, we are starting to see some outpacing in the US market versus the international market.

So the main takeaway for the month is that we are starting to monitor -- well, continue to monitor market reaction to the debt ceiling agreement recently. Also monitoring any re-emergencies of stresses in regional banks, and as always missionary and missionary trends. And yeah, any other questions?

MR. BROWN: Thank you. Any questions for Devon. So let's move on. Thank you,

Devon.

We're now at the Fund's Strategic Asset Allocation, also known as SAA, Capital Market Assumption Review. We go to Fulvio's office to speak.

MR. MEIER: Actually I've asked Ed Berman will speak shortly. Thank you, Chairman Brown. Also let me just reflect, it's a 30-minute presentation, but because of the importance of the strategic asset allocation, I wanted Ed to go first. So if he runs long, I'll go shortest. We will make up some time in the back end.

MR. BROWN: Okay.

MR. BERMAN: Good afternoon. Before we jump into asset allocation, just to mention that for the purpose of time, we are skipping the regular risk update, but the materials are available on Convene. Broadly speaking, there are no big changes from the biggest quarter, and any questions I can take them now or later or at any point.

With this in mind, let's switch to asset allocation. Devon, the first page, please.

Next page. Thank you. So what you see on the screen is your current asset allocation. So it was approved by the board in 2018, and it was implemented by them by around the end of the first quarter, 2019.

So clearly there are three buckets. There is public equity, public fixed income, and alternatives, and broadly speaking, your portfolio, your asset allocation, is similar to about the 60/40 classic portfolio; 60 percent equity, 40 percent fixed income. I think you have a slightly higher weight of equity, 62.5.

So just to remind you the process of asset allocation broadly speaking, goes through two distinct stages. In the first step, we will formulate the capital market assumptions, which is really a projection for the next ten years over the median expectation for the returns, for risks, and for public deals -- correlation for how asset classes interact with each other.

On the second stage, we actually do the -- we selecting the individual asset

clauses, we assign the weights, and it's done using the statistical technique, the scope, meaning the optimization, to use a technical term.

So today we're talking about the inclusion of the first step, Capital Market Assumption, arguably probably the most important step of the process and obviously no one knows the future. It's unpredictable and unknowable, and yes, we are aware we are making projections, and there is really no widely commonly accepted methodology, because we're talking about the future. It's some blend of historical events, mini version, and some holistic views on the economy, on the markets, and some further projections.

We are in a somewhat unique position for the benefit of seeing across five systems, and so the unique feature for this presentation, we're stepping outside of the teacher's portfolio, looking across all five systems, which gives us a broad horizon, broad overview, and a good point of comparison how your assumptions could be used by Rocaton. We

have Mike here on standby for any questions I hope, and --

MR. MEIER: I should also comment that obviously we work very closely with Mike and his team and the collaboration has been great, but this is more informational. So if you know by contrast, your general consultant is responsible for strategic asset allocations, so we have been working closer. But because we have the purview of looking across the five plans and the assumptions of five general consultants, we thought it made sense to present that to the board.

So it's probably the most important decision that you will make as trustees. So we want to make sure we give as much information, be as transparent in the process. So the idea that Ed's going to go through a series of wonderful slides that Ed's put together, but the idea to browbeat any of the general consultants have them change their views, as Ed said earlier, no one knows what the future is going to be. I do think that the Rocaton Goldman Sacks have a unique

approach, so Mike as well, and Rivka, I have a habit of interrupting Ed too often.

MR. BERMAN: That's fine. Just as Steve mentioned, Rocaton's approach is slightly different from the other systems, where Rocaton, I'm not going to speak in-depth though, if you have questions ask Mike, but it's common across asset management consultants to model individual asset classes, starting with the basic building blocks.

I think Rocaton is slightly different. It's identified the main fundamental driving forces in the economy and the markets, so both factors, and model assets from there.

What you will see later on, there is some difference, some minor differences, how Rocaton came across all other systems, but the end results are actually very similar, and in line with other systems.

But the important question to ask is why we're talking about this today? Like why is it relevant for asset allocation? So let me give you the answer to the question. First of all, it's the markets. So obviously when

we're still going go through extraordinary time, with inflation, COVID, the ground war in Europe, and I think talking to all five systems, all consultants, the message is that the majority of their clients are the pension funds, their peers are going through the same exercise right now.

So the time is ripe and we will be probably talking about it any way, but, of course, the pension systems within New York State, the state have, as everyone knows, something a unique and strange, the basket clause, which was just relaxed from 25 to 35 percent. So these two reasons combined pushes us towards for asset allocation.

So let's spend a couple of minutes on the basket clause. Can we go to the next page, please? So obviously it's all legislation from the 1960s, and broadly speaking the basket clause has three types of assets. You can see them color coded on the screen. So the green category is non-basket assets, which includes essentially the listed public equities and fixed income instruments

domestically. There are no restrictions, and that's, of course, the US equity sleeve, the core fixed income, and the TIPS.

The second category, the assets that we can hold up the ten percent, but anything in the excess of ten percent comes to us in the basket clause. You can see on the screen that first of all, it's the foreign equities. You can see the combination of two sleeves. It's Developed ex-US plus emerging markets, and currently you are close to 20 percent utilization, which means that 9.8 percent counts towards the basket clause.

High yield, in the domestic fixed income is still restricted. That, as you can see, we have plenty of capacity.

So the basket clause legislation is taking the holdings over ten percent. The current utilization is 23.5, is plenty for high yield. We will be talking more about it in the presentation, and finally, the alternatives, which is probably the biggest utilization of the basket clause currently, and clearly, private equity, private credit is

hundred percent counted towards the basket clause, and that's where we are restricted, and the real assets, which is defined as infrastructure plus real estate is exact of ten percent. So you can see currently there is non-utilization basket clause, but we are cutting close to the slip.

So the impact of this basket clause on your pension system, your pension fund, it appears there are some distortions. So first of all, the US asset allocation is probably higher than what it should be. When I say higher than it should be, I am really thinking about the MSCI ACWI, which is a broad measure of equities. So you have higher allocation of US equity, which actually worked quite nicely in the past, because it was one of your asset classes globally.

And then on the alternative side, so private equity and private credit. That's where the allocation is lower than it appears, right? So it's probably more typical to see low double digits maybe up to 20 percent. You have much less than that. So as now we have

another ten percent of the basket clause.

On the next step of the chart, we will be talking about the most efficient utilizations, which we will not talking about at this stage, but we can touch up on it, as we go through the presentation.

So the rest of the presentation is structured in three broad sections. So the first section we will talk about the 2018 projections, and how they stacked up against the realized performance, the realized outcome. The second section we will take a look at the 2018 projections against the current image, the average across all the five systems and finally, probably, the most interesting section we will look at the dispersions across the consultants, and we will see some outliers with these asset allocations.

So with this in mind, let's dive into the first part. A lot of charts. But they are all structured the same way. So what you see at the top is the comparison of the returns. The bottom row gives you the

comparison of the risks of volatility and what you see here, the gray bars, is the average across all five systems. The light orange bars shows the performance of corresponding market activities. So that's why you do apples to apples, because market assumption is formulated across all markets -- not for the managers, and finally, the orange bar is the average performance of the systems. Again, we're talking about the average, and that's where you see the effect on the manager's selection.

So let's start with chart one, which is

the public equities, the fixed sleeves. The first thing that jumps at you is US large cap, and performance of US equities. All of the assumptions were conservative. All US equities performed well and above expectations, and put into perspective a long term performance for US equities, about 7.5 percent.

So it's clearly excellent period, and the same to the less extent calls for developed ex-US. So the developed ex-US

exceeded expectation.

MR. MEIER: I want to mention, but the assumptions are -- they're ten-year assumptions. It's over much a shorter timeframe, three, four years. All those assumptions still may be correct.

MR. BERMAN: Yes, they still got six years to go. On the risk side, you see how the assumptions lined up with the realized outcome quite nicely, and that's not surprising, because generally speaking the risk level of the volatility tends -- and the economy, and the markets rather.

The only interesting takeaway is that the emerging markets will project is a high risk asset. That's probably the perception of most people. That's not how it played out. Actually you can see that the risks in the emerging markets are much lower than United States, and that's really because of high exposure to technology sector which tends to be high risk high volatility.

On the fixed income side, chart number two, what you see is really a consolidated

period for US fixed income, and most US treasuries, and however many hundred years, you can see it's a unique period, but clearly the outcome was disappointing. We don't know why it is. Probably it will change for the next six years, and as much as it undershot on the performance, it overshot on risks, and again we all know that the volatility of fixed income is a strong unprecedented time.

But the interesting thing that jumps at you in chart two is high yield, and the other -- is presentation, and what jumps to me is the predictable nature of this asset clause. You see how well the realized return lined up against the assumptions, and also the risks. The case gets lower, which is a good income?

And finally the last thing that kind of jumps at me from this page is the positive impact of the managers, right? We're talking about the orange bars that are the light orange bars, the US large cap you don't expect much, given that the majority of them is like 80 percent is index. But across all

other assets, developed ex-US, you see a positive contribution. Emerging markets, more than ten percent of outperformance. It's hard to complain about that. US Core -- large variety comes from the outperformance. Again, the one thing that comes outperformance in turbulent times, I see it as a positive.

And finally, high yield, again, you imagine, you live at 40 basis points outperformance, which is usually positive, which is interesting, it delivers outperformance, while taking less risks, and that's unusual. Again, it's a positive outcome. So altogether I say the results were good for the past few years.

And the next page, we can go to the next page 3, the same exercise in private markets. I would say it's in line with public markets. First of all, the assumptions, I'm looking at private equity, the grey bar, the assumptions included about the 50 percent premiums, the liquidity premium, and you can see the outcome reflects the liquidation of this market. The results, is public equity of that outcome than

US large cap. It's not a good comparison, but nonetheless, you can see it across all assets clauses. Infrastructure, really positive performance. Private credit, comparable to high yield, about a two percent outperformance, as you would expect. Core real estate really probably the most standout feature of this chart. You can see the core real estate delivered strong high performance over non-core, which is public -- but again positive performance for asset clauses for the managers.

Just one word of caution, looking at the volatility at the bottom row of this page, you can see that the realized outcome is significantly below the projection, and that's simply the nature of this asset clause. So there is no -- volatility of smoothing, since the asset is not marked market to market, it's marked to model? So how do we deal with this in terms of projections and --

We usually think of volatility as a product of risk. We recognize that they -- for shield -- not necessarily a problematic

risk. So to compensate for it, all five systems, all five consultants tend to bring the volatility higher. But how much higher, we will see in the next section. But that's why you see that the field for volatility is significantly exceeding the US outcome. It's significantly higher, and we will see more of it going forward.

So shifting towards the current assumptions, the next page, please. So here we are looking it at the change in the average assumptions across the systems. Again, the gray bars represent the assumptions from 2018. The black box represent the average of the current -- for 2023, and I would say the message here is about evolution, not revolution, especially on the public equity side, you can see the numbers change slightly, probably in line with -- performance. You can see that the US large cap most likely higher, not dramatically. Developed world ex-US probably in line with emerging markets --

Just to put these numbers into historical perspective, if you look at it long

term, about fifty to hundred-year performance, obviously US is over a longer period, other markets, less. For US large cap, a long term performance is 7.5 percent. So it's yielding slightly above these projections.

Again, you just saw that in the past four years, the performance was extraordinary. So you can probably expect some mini versions, not surprising, and on the emerging market side, the long-term performance was 6.8 percent, so the projection returns is significantly higher. But again, you can see these emerging markets, it's probably less of a guidance.

Just think about China, right? So 50 years ago China was a footnote. Currently China is now the -- economy, and one of the main competitors of our economy. So I would say in the emerging market history is less of a -- and on the fixed income, clearly the projections reflect the risks and risk prices for fixed income. The yields mostly risk higher, than the US Treasury and Core side. So you can see US Core, the projected returns

went from 3.4 to 4.4. The fixed income for Core Domestic public fixed income is 6.6 percent. But again, to put this in perspective, the interest rates of the -- is performed over 20 percent. They declined to almost negative level before the pandemic. Mathematically it's hard to extend the same fixed income value from the confines of 5.6 percent, with the high yield of 20 percent of the full market.

So it's completely understandable the pricing on the return side, and also on the risk side of this, is slightly higher consistent with the current market environment.

Again, I would like to single out high yield. The returns are slightly higher. The risk assumptions stayed about the same and again going back to my message of predictable nature in the asset clause.

Moving on towards alternatives, can we go to the next page, please. The same message, it's evolution, not revolution. You see that the returns is mostly slightly

higher, in line with public market. No future surprises on private equity or private infrastructure side, but you can see it's good a point of reference.

And on the right-hand side of the page, you can see the private credit. It just stays about two percent liquidity premium versus public markets. Core real estate, the risk is slightly higher, again in line with the -- performances. Non-core is about the same.

So with this mind, I think let's move towards a more interesting section. Turn to the next page. Where we look at the dispersions across the five systems, and we start with the fundamental building blocks like the macro assumptions, and that's the inflation, cash, and treasury assumptions. Of course inflation is the biggest one, right. It's hard to tell how it will play out, the different projections, there are different opinions, but the truth is nobody knows.

So with this in mind, it's interesting to see chart number one, that all five systems are in broad agreement on the issue of

inflation. So you can see, it's mostly at 2.5 percent, and it's probably not that surprising, given first of all that it's not far from the number of the federal reserve of 2 percent, and also the inflation projections were probably similar.

So again no big takeaway from this charge. We will see more of dispersions in chart number two, cash assumptions. Okay. If we put into perspective historically the cash assumptions is slightly below inflation. But obviously the big question, the elephant in the room, is the path towards disinflation, and when you see the difference in projected returns, it's how we position from this high inflation environment to the normal environment over years.

You can see for example, Callan, it's like came out at the low end, at 2.8 percent assumption, and that is because they yield a faster path of disinflation. So they see inflation coming down fast. On the other side of the spectrum, you see Wilshire and NEPC at 4 percent. It's the opposite. They assume

that inflation is stay elevated for a longer period of time, and then come down to the same level, so they assume returns are much higher.

Rocaton again, Mike in the room, maybe on the low end, but probably closer to the average. Again there is no huge disagreement.

But I single out this chart, because cash is the most fundamental building block. It goes into building assumptions for all other asset clauses, and later on we will talk about Sharpe ratio that we will able to see.

And finally, chart number three, US Treasuries. To be honest, given chart number two, cash assumptions, I expected more dispersion, that's not really so. You see that the whole system is in broad agreement and again this is more about the shape of the u-curve, which is considerable. Given similar inputs, it's not surprising that the assumptions are like similar. So nothing to take away.

So let's dive into the individual asset clause, and go to the next page, please.

Thank you. So I started with public equity,

so we look at all these sleeves. Look at chart number one. US equities. This really is the most important building block for your portfolio. So you have a 27 percent allocation for large cap. Maybe it will come down slightly, with the basket clause, but it's interesting to see how broad range the consultants put on this asset clause, right. So the returns, again Rocaton came in the middle of the range, but you can see the assumption ranges from 5.4, from low 5.4 to a high 7.7. It's a broad range.

On the risk side, the volatility, chart number two, there is more of agreement, which is not surprising that the volatility -- over time, and that's what you see here a big the difference. Rocaton comes in slightly lower versus the other systems, and the same message is across all three equity sleeves.

So what's important is when you make this comparison is not really looking at US equities, Rocaton talk -- about versus the assets, and asset clause, what's important here for asset allocation is to see the

consistency within each consultant, right?

The same theme runs through all asset clauses. Rocaton comes in slightly lower risk, so on a rapid basis there is consistency, which makes that similar outcome for asset allocation. Probably the only difference you see here on the emerging market side is more dispersion, which is again not really not surprising to me, given that this asset clause underwent a lot of changes, again because of China, and so we see China now is -- the economy of China is in a very peculiar stage. I would say it's probably one of the biggest positions for the next 5, 10 years, over for all -- so it's not surprising to see more disagreement, but again, the broad picture is very similar.

MR. MEIER: Questions?

MR. BERMAN: Moving towards fixed income. Thank you. Again probably similar messaging. You can see that Rocaton came somewhat close to the beginning of the range. US Equities follows the asset clause, which is smaller dispersion, which is not surprising given the uncertainty around inflation, and probably the only chart -- on this page is high yield. In chart number 3, performance and --

And first of all, obviously the NEPC is higher than other asset clauses, which is not surprising. Rocaton is falling at the lower end of the range. But also you see both the current and risk assumptions become lower, which is consistent. Right, so when it comes to asset allocation compared to Sharpe ratio -- it's not really as much as an outlier as it seems to give on this page.

And moving on to the private, the alternatives. First of all, private equity. Obviously it's an interesting asset clause. When I say interesting, we not really have that much of history, right? Obviously we have more than hundred years for public and US equity. Private equity probably came on its own, really after global financial crisis. So it's probably just -- a long before that? But this scale indicates private equity really probably after 2008, so we don't really have

that much of history to fall upon. But you can see that the practically speaking all consultants, it's roughly about 9.7 percent. So it's about a three percent liquidity premium.

Rocaton came slightly higher on the return assumption. It's probably more important on the risk of volatility of assumptions. You can see that Rocaton was slightly below. So what it means is when you go through asset allocation, the optimizer will naturally favor private equity slightly more -- slightly higher than asset allocation. The same is true about private infrastructure. No big takeaway. Hedge fund is here just as a point of comparison. Clearly you do not have asset allocation in hedge funds.

MR. GIORDANO: I just had an information question. In terms of volatility in private markets, how is that calculated by -- understand public markets in terms of volatility; is the assumption that's given the markup, like what's realized ultimately? How does that work, just from an information

standpoint?

MR. BERMAN: So we had a number of interesting discussions when we brought specialist consultants with the general consultants, and I think there was more alignment in terms of returns, even though you will see on the next page, especially you will see a little bit more up to -- on the risk side, specialist has taken in terms of volatility, but then keep in mind, the specialists do not have the asset allocation -- so they shield the asset clause in isolation, where I would say all five general consultants showed a slightly different term. With this in mind, I'll pass it to Mike to talk about specific methodology of Rocaton.

MR. FULVIO: So we're -- our numbers are definitely a little bit of an outlier, and just over 21 percent in a volatility standpoint, but we are thinking about it more in terms of, I think, the other consultants are usually a little higher, thinking of it more along the lines of if you were actually

marking all of those assets to the same changes or fluctuations, if you will, in public markets, maybe just not to the same extent, around the same consideration more broadly as it relates to leverage, and to just sort of the fees you carried in getting incorporated in our assumptions more broadly for public markets -- excuse me -- for private market.

But when we think of our private market assumptions in general, I think what we found, which has led to us being a bit of an outlier is rather than just assuming in our private equity modelling that you're going out and you're getting sort of the average return across all offerings in the private equity marketplace, we're actually making the assumption that if you're going to take the decision or make the decision to invest in private equity, we are probably applying a pretty rigorous process to identifying those GPs that tend to outperform. You're not going to do that by the way when you're say you don't invest in private equity, and rather

than just ascribing to a sort of average level of return and volatility, we are saying you're going to get compensated a little bit better for a longer rigorous process in achieving more than the fortieth percentile outcome, for example. And so you'll be better compensated for that tracking error. We're not implying the same amount of market volatility that the other consultants have.

MR. GIORDANO: I've never seen volatility expressed in this way --

MR. MEIER: If I heard the question, you're asking how -- so it's marked to model. It's not marked -- you're right, we don't have the option of observable outcomes on a quarterly basis, and it's usually done with a one quarter lag.

MR. GIORDANO: So it's fixed --

MR. BERMAN: When we think about volatility and private assets, so fundamentally, it's still equitable. So they clearly they -- it's a different investment process how private equity works ways to control companies, but over the long term,

there needs to be -- conversion for public market, private market and there is also no element of leverage that is in private equity.

So the common approach to establish relate private equity is start with public markets, you apply some leverage, you apply some adjustments for a different process, so if public markets run in about 15 to 20 percent range volatility, you base that volatility for private equity, given it's leveraged nature of the asset clause to be between 20 to 25 percent, and that's exactly where this is.

MR. FULVIO: I would say that the fact that our expected volatility of private equity is a standout to the lower end is consistent with the fact that our public equity volatility is also a little skewed to the lower end. Again we're applying that leverage factor to the -- so it's not surprising that we consistently are shifted a little bit.

MR. GIORDANO: It makes sense. Thank you.

MR. MEIER: What I think is unique about

Rocaton's approach, as Mike just described, if you look at the top 40 percentile in private equity, and some of them we can say, you know, we're got strong capability -- we're investment managers selected within the Bureau of Asset Management, but we also leverage through size, the collective size of the five plans, which is big enough on our own to get better assets and better economics. So we get through that process of the size -- when we negotiate down guarantees. Also Mike and his team do a number of things around is -- that really average down the expenses.

MR. FULVIO: The last thing I'll add is private equity is one of the few asset classes where we do tend to see persistence in the value add that equity managers had, where on the public side it's very challenging to find.

MR. BERMAN: So we will go to the next page. Let's just finish this. And next page, please. So here we make the assumptions of the specialists, and just to mention before, it comes to no huge surprise to everyone that generally speaking specialty, the returns in

the market is fixed returns, the material is higher, and this -- the risk is materially lower.

MR. MEIER: So those volatility number are actually observed volatilities as opposed to --

MR. BERMAN: It varies. You can see on the bottom of the page. Hamilton Lane makes an adjustment risk -- equation. They still come at the lower end. StepStone is usually just the risk volatility, and you can clearly see how much lower it is. So 10.7 percent is seeking from the -- of public market.

And just to finish the second set of alternatives. We will go to the next page, please. Thank you. Private -- again the same theme as I keep mentioning about high yield, obviously it's pretty equivalent. Fairly small market dispersion. All consultants obviously assume a liquidity premium for the asset clause. Core real estate is where you see probably more dispersion, and it's not surprising. We just talked before about how accelerated the performance was for core fixed

income. Probably is a big -- universe going forward. How much, nobody knows. So you see some dispersion. The only standout is really -- it's not for us to discuss today.

And finally, the same exercise in the next page will be the specialists into the picture. The same messaging. The returns assumptions are materially higher, maybe not as much as for private equity and the risk assumptions are materially lower, and again, nothing surprising.

So the next page, I just want to spend some time to talk about Sharpe ratio. The Sharpe ratio is the just definition of excess returns of volatility. The reason we talk about Sharpe ratio is because it gives an indication of how optimized and being sought out the asset clause is. So it's probably we'd assume that the high Sharpe ratio is the asset clause, that's not always so.

First of all, we need to think about the correlation between the asset clauses, and also keep in mind that we talk about the volatility as a measure of risk. It's

definitely a measure. It's not the measure. It's more complex, and it's something we need to make -- it gives you a good idea of how asset clause --

The other thing to keep in mind before we dive into the numbers is the long term Sharpe ratio for the asset clauses, and if you look at the US large cap, and this will probably be the most historical track record. So over a long time US large cap has Sharpe ratio .37, which simply means that for every one percent of volatility, you realize about 37 percent of excess return.

Maybe somewhat surprising is that that's actually all asset clauses have the same Sharpe ratio, over a long time. So all asset clauses tend to emerge about Sharpe ratio .37, give or take. So it's a useful amount to keep in mind, back of your mind, as we go over these numbers to kind of level set the rest of the numbers.

So let's just dive straight into it. I will start with equities, public equity. It's the top row. So first of all, let's look at

the US large cap. So you can see that the average Sharpe ratio across five systems is .19. It's five below the historical average of .37. That's again simply a reflection of extraordinary performance delivered by US equities in the past.

So you can see that -- larger dispersion here. But again Rocaton comes, let's say in the middle of the range. Again so we talked before that Rocaton may be a bit of an outlier in terms of three terms, and the risk assumptions. But when we bring it all together, and as I mentioned before, despite the difference in methodologies, it stayed about the same. You can see that for US large caps, Rocaton comes stays close to the middle of the range.

US TIPS, chart number four, is an interesting asset clause. If you recall a few minutes ago, I mentioned how little dispersion there was for the TIPs. The return assumptions and the risk assumptions were very similar across all five systems. Yet here we are, we see a larger dispersion across for any

asset clause, and the answer simply is the cash assumptions. Just remember Sharpe ratio is formulating excess return, excess cash, and you can see the way the Callan .24; the Wilshire is almost negative, but again Rocaton is somewhere in the middle.

And finally, I'll give you this core fixed income is not a huge takeaway for Rocaton, of course in the middle of the range. High yield again, going with my theme of how predictable this asset clause is, you can see it's probably the least amount of dispersion across five systems. So the Sharpe ratio tends to be on the high end. It's the high Sharpe ratio stage. 26, and I would say across five systems, Rocaton is mostly in the middle of the range.

Alternatives, the next page. This orange box, the assumption of specialists, and look at Sharpe ratio one. First one is technical. I will probably go more with general consultants, and again we saw a lot of dispersions, but once you put it all together, things become more similar, right? If

anything, just as Mike mentioned before, Rocaton is somewhat unusual to bring the managers selection to the process. So the Sharpe ratio is on the high end. We're not talking about -- here. It's reasonable, and it's easy to understand.

So I'll stop here but just one point I want to mention. We talked about the returns and the risks, essentially the third component, the correlations. That table in the index on -- Rocaton. Much like with the returns on the risks, there is some dispersion of correlation assumption, which is not surprising. It all comes together in the next stage. So we will start talking about the asset allocation, and hopefully around September October we will have an update in the same fashion. So I'll start here with any questions.

MR. KAZANSKY: Dave Kazansky. We can go back. I think it's two slides to the Sharpe for TIPs. I just wanted to -- I understand different opinions. Why is Wilshire so down on TIPs? I mean their expectation regarding

inflation is lower than others, but not substantially, so why is there a version of --

MR. BERMAN: It's not so much about TIPs, it's about cash. So if I go back to on page 8, you will see chart number 2 gives you the assumptions for cash, and I mentioned before, that's where we see the most of dispersions. So in the relay of the Sharpe ratio cap, they add cash -- minus cash returns. You can see that for Wilshire cash assumption was four percent based on the TIPs. So you have zero -- and the results are predictable.

MR. KAZANSKY: Thank you.

MR. BERMAN: It's not about TIPs, it's about cash. Any other questions?

MR. MEIER: Great. Next presentation. So I'm glad we actually allocated a little bit more time for the strategic asset allocation review. It ran about 45 minutes. I'm going to give you more of a Readers Digest update on just some markets, and what we're seeing, and Mike, Amanda, and Devon have already done a good job talking about where we are in the

first quarter, and then more recently, but I'll kind of walk you through where we are. Kate, can you bring up the slides?

Just as a general matter as the slides are being brought up. Inflation continues to still be a challenge both here and abroad. Although the direction we moved down to quite significantly in the US, from a peak of 9.1 percent inflation in June of last year. We're just about five percent now. We had a good surprise in Europe today with a lower inflation over at 6.1 percent, and the viewed case is a still little on the high side.

What we see on slide three, Kate, please, you can see again, that's just an example of where we are, 4.93 CPI. More importantly though, the core PC inflator, which is the beds for birds measure of inflation. It's done pretty sticky for the last year, just under five percent, and that leads me to believe that the feds is probably -- interest rates high for longer period of time than it had been expected in the market.

On the next slide, similar to the core CPI, you can see it's sticky there around five percent, both year over year and between six months. A little more of a challenge for the fed, I think, going forward.

On the next slide, around the world, we see, as I said inflation moving down directly with one little hiccup in the UK on the far right upper hand side of that slide you can see that grey bar. Inflation actually ticked higher from 10.1 to 10.3. Now it's back down to 10.1 percent in the UK. It's still over ten percent. A little more challenge there.

Employment on the next slide. Employment in the US has actually been quite robust. We have 253,000 jobs created in April. We are still at a 53-year low in the unemployment rate of just 3.4 percent. 80P numbers came out today. There were hundred thousand above consensus estimates. We get non-forum payrolls from May tomorrow and the expectation is that we will see 195,000 jobs create, and the unemployment rate perhaps tick up a little bit to 3.95 percent, but it's

still very low. In terms of what the feds is trying to achieve is a little bit of a head one for the fed.

On the next slide, just another look at that, on the chart, you can see that the participation rate has actually moved up nicely. It's still not close to where it was pre-pandemic or certainly in 2019, but again more people are actually coming into the labor forces.

On the next slide, again still we see the levels of the participation rate below 2019. The different slide, on the next slide, to look at what the markets are expecting, and what individuals are expecting in terms of the unemployment change. It's associated with a soft landing. So towards the middle of that slide, you can see there is an example of a crash landing at the outset of the pandemic, 2020, 2008-2009, where there was a dramatic increase in unemployment. Typically when we go into a recession, you see unemployment on an average of a minimum of two percent. The consensus estimate for 2023 right now is for

to be a moderate increase in inflation and a moderate decrease in real GDP. That's the green, the dark blue is the nominal GDP, and the unemployment rates are on the far right hand side. So that's what the market is currently looking for, and what we will see how that pans out over the coming months and quarters.

On the next slide, so look at economic growth. Economic growth in the states actually picked up a little bit. We have seen a resilient consumer. Even the housing has shown some strength recently, and you couple with that a very strong employment market. We have 1.3 percent GDP, revised up from 1.13 percent from the first quarter of this year.

More importantly, Ed talked about, on the lower left hand side, you can see the reflection of China. The reopening expectations for China couldn't have been higher, and the expectation was for a five and a half to six percent growth. China is actually towed at a five and half percent and then coming in slightly below five percent at

this point.

So a little bit more of a headway in China which hasn't been an economic engine for growth, and Europe is hoping to benefit from that. So you see some selloff in European equity prices, as a result of these numbers more recently.

Next slide, I don't know if you got great eyes, but on the right hand side you can see where we were pre-pandemic, pandemic, and more recently, and that's just a reflection of the dark blue and the light blue lines are China, and US GDP growth. China, again just under five percent and US just over one percent.

On the next slide, something a little different, just a return to work, and still we are in that process. I know people have become accustomed to working remotely, which I think is a good accomodation for many people. But we continue to move back into the office at variant paces around the country. You can see those are some of the larger cities. New York is about in the middle of that mess on

the right hand side.

Another slide, looking at the return to work. It looks like the ridership of the San Francisco BART System, their tube system, and New York subway system. You can see that the New York ridership is actually going to about 70 percent of where it was using a baseline of 2019. A little more sluggish of a return in San Francisco.

Next slide, probably near and dear to, at least to my heart, is rentals are still very expensive in Manhattan, a near record high. I think it will probably be good for the economy here.

Next page, this is actually a look at expected economic growth, and you can see that the market is expecting or sorry -- this is an equity investment. This was the earnings per share. It's what's expected to be somewhat subdued and negative, so an earnings recession in 2023, which we're still not seeing at this point although we have seen markets down, but outperformance relative to those lower expectations.

And the next slide, a look at interest rates. The fed is either near or perhaps at a pause. Many people are not talking about, and I heard the words this morning about a skip. Ten consecutive interest rate hikes in 2022 and 2023. They meet again on the 13th and 14th of June, and the expectation is they probably will take a pause, but I think it's very gas dependent. We will see what the employment numbers look like tomorrow, and what inflation looks like before they have their meeting on the 14th.

On the next slide, just to look at where we are in terms of financial conditions and rates. On the far right-hand side, you can see that's evidenced of the dramatic ten consecutive interest rate hikes here in the states equal to 500 basis points. The starting point was a range of 0 to 25-basis points, and on the bottom chart, looking at the Goldman Sacks Financial Conditions Index, which was improved somewhat, but still languishing below where it had been pre-pandemic.

Now another look at the next slide at the extent about the recent hikes. Again, on the red, you can see a 500-basis points in increases over a relatively short period of less than a year, in terms of the day count below. It's actually over a year now. It's about 14 months. So that scale is not right, but just an example of how dramatic and how aggressive the Fed's been. Rates where they sit today are at 16, are high. Again, haven't been this high since before the Global Financial Crisis.

Let's skip ahead two slides to US Credit Spreads and Treasury Yields. Thanks, Kate. So in fixed income land, we see US Treasury Yields have moved higher. The market more recently has been pricing out the expectation for rate cuts this year. Some of that has to do with the robustness of the economy, and the resiliency of the economy. Also we are managing expectations around to be higher for longer.

Today, you got treasury yield pricing at 445 versus tens at 365, and we see credit

spreads has been wider. There are about 200 basis points wider for high yield than they were, say, premarket sellout last year.

On the next slide, just a little note, on the upper left hand of the left hand side of the chart, you can see a little bump up top, that's that red line. It's very hard to see. But it's just an example that the four week treasury bills were paid at a premium to everything else, given concerns about the debt ceiling, and given the good news we've had and the progress we've had since resolving that issue in Washington, that's kind of come off and out of the market.

On the right hand side, you can see the treasury two-years and 10-year treasury spreads and -- well, narrowed a bit, they were a bit wider, over 110 ten basis points earlier this year. They're now in about 80 basis points. This was like 71, but again there has been a lot of more volatility, and fixed income than there has been in equity recently. That's evidenced on that slide.

Let me skip ahead, Kate, just for the

sake of expediency. Look at credit spreads on slide 23. As I said, the spreads have widened they're a little over hundred basis points, according to this chart. High yields of 484 and investment grade credits at 146.

Actually this morning they were at 138 investment grade, and just 460 for high yields. So credit spreads have been passing around a little bit, given expectations of the potential for a pet pause, good news coming out of Washington recently.

Skip ahead a couple of slides to the US dollar slide, Kate, slide 25. The dollar's weakened in the earlier part of the year, and it has strengthened more recently. That has to do with the fact that the US economy has been performing more resilient than those in Europe and the U.K. and I don't know if you read, but recently Germany moved to a technical recession, and the US continues to see relatively robust growth on a relative basis, relative to the amount that has been done for the first part of the year.

Kate, maybe move ahead to the US Stock

and Bonds Market Returns. So to give you a little bit of backdrop where we are economically, and let's talk about what we're really seeing in the markets. Investors have been buying fixed income given high yields credit spreads. We also see that the debt ceiling has been resolved, but the lower left hand side headline there, don't expect markets to rejoice if a deal is reached on the debt ceiling. So we've actually gone into what the treasury refers to as extraordinary measures beginning in January, when we hit the 31.34 trillion debt ceiling.

As a result of that, they've actually worked down their balance. Typically, the treasury's general account at the federal reserve bank is about $600 to $700 billion in size. It's a little under $40 billion today, so what will happen is once they suspend the debt ceiling, the treasury has a lot of issues to do upwards of a trillion dollars liquidation, which is mostly in t-bills to the end of three-quarters to the end of September, and that has a tendency, a

potential to distort markets to driving treasury yields higher, t-bills up dramatically, the cost of leverage financing for hedge funds up which can create challenges for credit spreads product, as well as equities.

So it's also going to increase the amount of money potentially the bank has to pay for deposits, and I've got an interesting slide on that in a couple of slides.

On the next slide is a year-to-year date equity returns. You can see on the far right hand side there is lot of green on the screen. The NASDAQ is up, as of two days ago, almost up 25 percent year-to-date. Obviously tech has done well. That's really an AI story, and it's very concentrated among a very small handful of companies. So it's not an even, and balanced and broad based rally.

I say more importantly if you look at the middle of that screen, under EMEA, those are the European markets. They have actually performed quite nicely coming with the challenges in 2022 and a lot of that has to do

with expectations around China's growth and the exporting to China, which has panned out to some extent, but not to the extent --

MR. GIORDANO: What's the difference between the last two columns?

MR. MEIER: Well, it's year-to-date and it's year-to-date in the currency. So in the US they are identical. And in Europe it's in Euro denominator.

MR. GIORDANO: I see.

MR. MEIER: That's a great question. So if you look at the footsie, year-to-date, its only up about 94 basis points. But because the currency had appreciated relative to the dollar, it's at 352, 3.52 percent return. Although the dollar is actually strengthened relative to the pass of the -- recent.

On the next slide, a look at bond markets, with year-to-date -- on the right hand side, you can see the US treasury moved down from the yield side 18 basis points.

I would say the biggest takeaway there is that almost all manner of sovereign ten-year debt is lower in yield, higher in price, with the one exception being the UK, given the stubbornness of inflation there, the fact that there is more -- to come, that yield has actually moved up 58 basis points.

In the next slide, so looking at volatility. On the left hand side you can see equity market volatility measured by the VIX, fairly subdued, in fact surprisingly so, given the concerns around the potential for a bad outcome with the debt ceiling. More importantly, on the far right hand side of that right hand chart, you can see that the volatility in US Treasury is persisted as by the moving it.

Jumping up ahead two slides. This is actually a look at the year-to-date performance, where it's a ten-year slide, but more importantly, we're focused on large cap versus small cap. Small cap measured by the Russell 2000 in red. That's actually really kind of moved sideways to down a little bit. More importantly, the Russel 1,000, which is a index of large cap stocks in green, is actually quite a strong performance. Again,

that's on a broad based rally, that's highly concentrated among a small number of companies, but a fairly good outcome nonetheless.

If you skip ahead two slides to recent news, Kate. I do want to talk about some of the challenges we have seen in regional banks. I'd say the regional bank construction right now is relatively calm. I do think the conditions persist in terms of, you know, higher rates and embedded losses in their long portfolios. Treasury holdings and mortgage loans, in particular, and as rates move higher, there is more competition for the banks to have to pay up to secure deposits. Right now you can invest in treasury bills over five percent, that's short, versus, you know, the average basis point return for bank deposits. TIPs is about 45 basis points. So the interest rate differential is driving a lot of investors to move out of their banks, and into money market mutual funds, as well as treasury bills.

If you move ahead, actually two slides,

Kate, and this is just an example of what I was talking about. You can see how dramatically higher fed funds target rate is on the far right hand side in green. The two lines that really converge at the bottom, the yellow and the blue, actually the national average interest rates for savings account and the national average interest rates for checking accounts, and again, it's on this slide, it actually reflects below one half of one percent and again, that's the challenges that some of the banks have right now is that these embedded losses went into their portfolios, and they need to pay up for deposits, money moves out of bank deposits, and into money market mutual funds, and treasury bills for significant yield equities have picked up.

So I do think that the banking system, although it's calm now, I think it still has a potential to come under more pressure because the conditions that were evident in March, April, and early May continue to persist, and perhaps get worse with the amount of treasury

billages we're about to see.

If you move to performance now. Kate, you can pull ahead a couple of slides. 39. The public markets returns for the calendar year. First quarter, you can see at the middle of the page it's all green, which is nice to see.

Although that hasn't really persisted through the second quarter, but it's just an evidence of a recovery in asset prices in public markets for the first quarter of the year.

On the next slide is a look at the Teachers' Retirement System debt public market returns. Those are percentages for three months. So, for example, at the top, US equities return, 7.4 percent, for that one quarter, and you can see it's green across the board. Still challenged in the one year space, because of the dramatic selloff we saw in 2022. But again it's good to see that there has been an improvement in asset crisis on the public side anyway, and I think it's certainly, as a long term investor, you're

more inclined to focus on five-year returns. So on the far right hand side, you can see that it's mostly all green, except for emerging markets and equity, so it's a pretty good outcome.

On the next slide, a look at net private markets by manager. You can see the one year returns in percentages for one year, private equity has delivered a negative 3.8 percent return, and you can see that the other returns are "positive", private real estate core, private real estate non-core, infrastructure and opportunistic fixed.

More importantly, on the bottom of that page you can see the aggregate performance for the Teachers' Retirement System plan. It's up 4.8 percent. It's right on top of where policy returns are, 4.8 percent. Still negative in the one year space, but positive in three to five years. So it's a good development.

I think the other takeaway from the bottom part of the slide is the public market equivalent 65/35 portfolio, we are looking at

a mix of public stocks and bonds is up six percent, but we have exposure to private markets, are marked with a lag. They are tracking a little bit performance very recently. That's what you see on the screen, and on the next slide is a quick example of the consistency. We're right on top of where the policy returns are, 4.8 percent, and on the other following slide, a look at the public market excess returns in bases points, and what I think what you will find striking, they're all positive, they are all green, and some are quite positive for the three-month section, the excess return.

But overall the portfolio has still delivered a negative eight basis points relative to the policy benchmark. The 4.84 quarter was a rapid, so it's eight basis points, so it's rapid down, so it looks like it's equivalent. But there is a little bit of a drag. Most of that is due to the private asset marked to markets, which are due December 31st. So still a good outcome, I think over time.

And on the next slide, we look at the excess returns in one year for the private assets. So still not withstanding my comments earlier about the drag, potential drag on performance in private equity is delivered,

relative to its benchmark of Russel 3000, for the full year. It's still up 1452 basis points. It shows a strong outperformance relative to that public market broad benchmark of Russel 3000.
On the next slide, just to look at the summary of the rebalancing activities done for the first quarter. Again here we are really rebalancing raise cash to meet benefit payment in capital calls. You can see that on the far right hand side, raising $340 million and John Mercer would have gone through a rebalancing the large cap, and large mid cap equities in investing in the emerging managing program -- you can see that's evidenced by the 225 investments on the far right hand side.
With that, I'll open up to any questions.
MR. BROWN: Any questions for Steve?

We will move into BlackRock. Is BlackRock in the house?
MS. REILLY: They are due at 11:30.
MR. BROWN: Why don't we take a break? It's 11:24 now. We will be back at let's say 11:35.
(Recess taken.)
MR. BROWN: This is the order of the agenda, since BlackRock is not here yet, what we will do is go out into public, and into executive to do Westwood, and then if BlackRock is back, we will go back into public. So can I hear a motion to go into executive session?
MR. KAZANSKY: So moved.
MR. BROWN: Is there a second?
MS. LEE: Second.
MR. BROWN: All those in favor say aye.
MR. KAZANSKY: Aye.
DR. GREEN: I'm here.
MR. BROWN: All those in favor say aye.
Aye.
MR. BROWN: All those opposed say nay?
We are in executive session. Let us

know when we can proceed.
MR. BROWN: Any opposed say nay.
We are back in public session.
MS. REILLY: Can you give us your names?
MR. BROWN: Welcome to TRS.
MR. KAWALLER: Absolutely. I appreciate it. My name is Geremy Kawaller. I look after

the New York City relationship at BlackRock. We're very pleased to be here, and we thank everyone here for the continued partnership among our two organizations. I'm here with Jessica Tan. Jessica is the head of Sustainable and Transition Solutions.

Jessica is responsible for leading BlackRock's sustainability in transition strategy. She will discuss trends we're seeing in transition investing and policy landscape. Can you actually advance to the next slide, which has the agenda. Thank you. Also here with me is Pravin Chari. Pravin is the global client lead for Aladdin's sustainability. So Pravin will provide an update on our climate analytics framework. We're also joined on Zoom, I believe, by my

colleagues, Jess Wang, Shunondu Basu, and Matt Batizi. I'm going to turn it over to Jessica.

MS. TAN: Thank you everyone for having us here today, and thank you for being just great partners for us. I'm delighted to be talking about a few trends that we're seeing in transition investing. So first, a transition to a lower carbon economy is the one of the key forces that our clients are dealing with in terms of their portfolios and investment decisions. We see this as one of the omega forces, changing companies, supply chains, and it's going to be effecting how we invest over the next couple of years.

So it's our job as fiduciaries to study that trend, just like we do anything, whether that's inflation or geopolitical risk, and so when we talk about transition investing, we see three forces that are really powering the transition: Technology, consumer preference, and policy.

I'm going to be speaking about each of these very briefly, and also I think it's

important to note that these three really reenforce each other, and eventually once one picks up steam, it ends up being a little bit of a flywheel effect.

So technology. So technology you can see itself play out through a lot of different ways, right? As technology advances, it lowers the costs of a lot of options that are out there. So the stats on this page is 85 percent reduction in solar costs over the past decade, which, you know, if you think about that, that's really huge, and the costs are really coming down quickly across all other types of technology as well, meaning wind, battery storage, as a few examples.

So in some of these cases, these newer renewable technologies are even cheaper than some incumbent solutions, and in some cases are very much cheaper, and so through time then they replace incumbents. The second one here would be consumer preferences so the stat we have on the page here is, you know, in 2021 we saw a 2x increase in global annual sales of electric vehicles; in China sales tripled. So

again it's just something that is increasing the demand of this overall trend.

Another thing for New York right here, I read recently in a New York Magazine and New York Times, a huge uptake in induction stoves, as an alternative to gas stoves, so even though that's hard to do in a place like New York City, consumers are still doing it.

The third piece here is policy, and this, you know, has really been a huge force in driving capital into the overall transition investing space. So policy directly effects costs through subsidies and taxes and also indirectly through regulatory standards.

So I find policy interestingly in a lot of the developed markets. It's really intersecting with industrial policy. So we've been able to see that through the Inflation Reduction Act in the US. There is also the CHIPS act, the JOBs Act, which plans to invest, you know, close to 500 billion over the next couple of years, into transition investing, and also in Europe, similarly, there is a green deal industrial plan, and all

of these serve to kind of push down the cost of a lot of these technologies, and again these three factors really reenforce each other.

So, you know, we have talked a lot of forces that are driving the transition. Of course, there could also be Monolex, that we have to study. Also what if the policies potentially stop. A lot of people say maybe at the end of the decade, it will close or stop, so that's something we really have to study as fiduciaries, because that could effect investment decisions.

Obviously energy security, reliability, is a big topic, supply chains, you know, overall trade protectionism. These are all things that intercept with this important topic, and so all things we have keep an eye on, and how it relates to investment decisions, and nobody knows.

So let's go to the next slide. So given all of that, what are we hearing from our clients. What are our client interested in? So what I would say is the transition to low

carbon economy is one of several major forces shaping portfolios in investing, and clients over the last few years I think has become a lot more sophisticated in what they actually want to do with this space.

One, the data is more standardized, more reliable, and there has been more regulation in place. So there are a lot of clients who really want to look at this data from a risk management perspective, you know, we look at sustainable and transition information as we do all information. Some are really relevant for certain portfolio strategies, depending on time horizon, investment objective, asset class, and some might be less so. But that's up to investors to ultimately decide and work with our clients on.

MS. HIRSH: Sorry, you say within sustainability transition is the number one issue, so where is it sort of in a broader, like as when you talk to clients, maybe minus like the right wing, like, you know, or even them, like the conversation beyond a purely sustainable investing?

MS. TAN: That's a great question. It depends on how you define planned conversations. So for big long term structural trends, I'd say we see four mega forces that clients are really interested in understanding. So transition investments is one of them. The other one that we see is AI digitalization, you know, demographics, and geopolitical risks. So those are the big thematics that I think are long term endured in the portfolios, and even within that, I would say transition, you know, it's hard to rank, but it's probably near the top of that, depending on the client, and then other things that are more market specific, like inflation. It's hard to get away from that, for sure, so I would say that's probably more of a discussion than transition by itself, although the two are linked. But yes, that's kind of what we hear.

So, you know, a lot of clients look at this from a risk management perspective. Others are really focused from an investment opportunity perspective, and the two are not

mutually exclusive. Some clients really want to use these themes as a way to generate alpha, you know. Some really think there is a broader secular trade for tilts. I mean these are really valid, you know, investment strategies.

The other thing is we have a lot of clients who are executing on commitments. They might have a zero commitment at some place, and we want to work very closely with our clients to help them partner to get the best strategy that fits their individual needs, and so clients look at this in a lot of different ways, and again, the trends that we have seen over the years, our clients are getting more specific and more nuanced. There are certain clients who only want to invest in things that are green today, the highest bar and highest standard, and we work with clients in that.

Others want to invest specifically in higher emitters today, because they want to see their dollars at work, or increase or impact in lowering emissions. Of course, it's

not all blanket high emitters, it's those high emitters in the most credible transition strategies. The ones who might be priced at a certain level, or there might be opportunities to put those dollars and actually measure them.

It's hard to kind of categorize what we see from plan to possible work. We try to do it regionally, of course there is a lot of nuance on this. In Europe, which might be the region with the greatest interests in this, you know, we do have a lot of asset owners who have specific and zero commitment by different degrees or different dates, I should say, different pathways that they want to follow.

So that's something that, you know, we work with them closely. In America, there are more emerging views. There are certain clients who want to integrate certain sustainability factors, and really want to lean into it more, and other ones who want to minimize that, and to be honest, it's very much driven by individual client preferences, and it's sometimes by state by state level as well.

So our role as a fiduciary is to work with clients across the spectrum, no matter if you want to lean in to do these sustainability and transition factors, and increase the weight of that in your portfolios, or whether you want to minimize that. Our goal is to provide that client choice, and within whatever mandates we work with our clients, our role, as fiduciaries, is try to maximize the suggested returns, and to be able to create the best choice and to try to maximize for suggested returns, all of that has to be underpinned by very good research, data, and analytics, and that's where we, and a lot of asset managers are focusing a lot of our time, because over the last couple of years, the data has gotten a lot better, and we've been able to get to that level where we can be more specific to clients about their individual investment needs.

In terms of the regulatory perspective, I'll break it down into a few couple of broad food groups. I would say the biggest thing that's making a difference in at least,

investment opportunity is probably the policy that we talked about earlier. Inflation Reduction Act, the Green Industrial Plan in Europe and other countries too that are following up with more industrial policies, because that really does change the cost perspective. It changes how we undermine deals, it changes how we look at the overall our portfolio construction, so-on and so-forth.

The second thing on the regulatory horizon, and this is in a bunch of different regions, the regulators are trying to get more specific about anti-green washing regulation, and we think that's a good thing. Right, so even something like the SCC Manual, which is we're expecting guidance on later this year, it's very specific about what plans you can actually call sustainable, right.

In Europe, there are similar regulations through SFDR and STR in the UK, so that's a trend that we expect to continue. It's a lot of work for organizations, but you know we're glad that they're standards.

The third thing would be, what I alluded to before so, so it's kind of this very state specific in the US, you know, regulation, on trying to dictate where ESG factors are, what states want to lean into a little bit more, and which choose to minimize. Again, as a fiduciary, it's our job to provide choices across that entire spectrum.

MR. KAWALLER: Thank you, Jessica. Pravin, why don't you talk about our analytical framework?

MR. CHARI: Absolutely, Jessica. Next slide. So given the transition to the lower carbon economy and to be able to enable investors to understand both the risks and the opportunities from the transition, we need to be able to conduct scenario analysis, given the range of possible outcomes that the transition can really lead to, and that's really where the technology and the data and the analytics really come into play, given the advancements in data, and the policy that we are seeing.

So if we look at this slide, and we

start from the left to right, the framework really begins with the industry standards scenarios, from recognizing organizations, for example, the AGSF, which is essentially a group of central banks and supervisors that are promoting the climate risk management into the financial sector, and these are the scenarios that are largely used by organizations to look at the different forms of transition, whether it's an orderly transition to a net zero, or say a disorderly transition to a net zero, and there are other scenarios providers, whether, it's the IPCC scenarios, which is again another industry body that provides these scenarios. But the objective is to be able quantify to how to understand the transition risk, which is, as Jessica indicated, the changes and the risk portfolio, and the opportunity that will be available from policy changes, technological advances, as we transition to the lower carbon economy.

If you look at the middle section, once we have these scenarios, it is important to

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Proceedings

include sector specific considerations as part of the models, and why that is important, is companies industries operating in different sectors are going to be impacted by transition differently, and that will enable the transition and industrial portfolio in the future.

For example, in the automobile industry, we know what other low carbon technology is available, but in many other industries, the technology evolution is still early, and we need to be able to incorporate that as we can analyze the different investments, and have insights that the investors can have.

So in order to bring that into the context of the data, the data in this particular space is evolving, the quality of -- and all around the world there is increasing availability of this data, and our goal is to incorporate as it becomes largely available that we can bring into our framework.

It is also very important for investors to understand the model methodology, the

0081

Proceedings

assumptions about the data that's going into the model, and also limitations. This is a passable space, you need to understand all those considerations before you incorporating into this process, and that is the foundation of everything that we are doing from an Alladin climate perspective. Again, as a fiduciary, you want to make those insights available to investors based on their considerations, and how they want to interpret that based on their investment objectives.

If you go to the next slide, please. Out of an interest of time, I will focus on couple of these areas, which are important from a transition, particularly as we look at corporate. There are segments of the market, we talk about sectors and segmentation, which is the first box on this slide, is essentially how do we capture affirm activities, which are across different subindustries and regions.

You can imagine the conglomerate, or you can imagine a company with a diverse setup in these activities, and being able to A, understand and B, being able to address what

those activities, and how that would be impacted by the transition, both again to identify the risks and opportunity is critical to be able to bring it to the insight step, the investors can have.

And secondly, the demand impact. The transition is going to lead to demand drivers in different segments that are going to look different. There are going to be companies that are going to be in the transition link sectors, that are going to have a different demand driver, and there will be companies in long term industry sectors that can be impacted indirectly. How do we bring that into again the framework, and provide that transparency on how a particular risk portfolio will do overtime is critical in the transition risk market space.

So let me maybe stop there, in the interest of time and back to Jeremy, but I will take questions.

MR. KAWALLER: Any other questions for us?

MR. KAZANSKY: Dave Kazansky. I have a

question just generally about so when we were discussing our net zero, of, you know, implementation plan, one of the things that I have been reading about recently is a lot of banks removing themselves from the net zero banking alliance, and I just wanted to get your idea of what that means for companies and banks, and, you know, a push towards for net zero, whether that hampers anything.

MS. TAN: That's a good question. So I think about the recent news in the insurance sector, so the NVIA, is believe, and from what I understand, I don't know, they wanted to, you know, do that zero their own way. It's not that they're any less committed. They thought being a part of an organization was less helpful to them at this stage in achieving their net zero commitments. From our perspective, we made the decision to join certain organizations, and to be part of the conversation, and you know we regularly evaluate all of partnerships, you know, and I think that each individual organization now

has to figure out, you know, where they are in
0084

their own commitment to themselves and their clients and whether being a part of alliance is helpful or not.
But from what I understand of those organizations, of course that prevented -- that doesn't mean they are any less committed to the overall goal.
MR. KAZANSKY: Thank you.
MR. KAWALLER: Any other questions. Thank you. Thank you.
MR. BROWN: No questions. Thanks Geremy, Jessica, Pravin, Shonundu, and Matt.
I guess we need a motion to go back into executive session.
MR. DORSA: So moved. John Dorsa, on Behalf of the Comptroller's Officer. Do I hear a second?
MS. LEE: Second.
CHAIRMAN BROWN: Thank you. All those in favor to go back into executive session, please say, aye.
Aye.
MR. BROWN: Those opposed, say nay.
DR. GREEN: Aye, Angela Green.
0085

MR. BROWN: Thank you, Dr. Green.
We're back in executive session. Thank you, Liz.
MR. BROWN: All those opposed say nay.
We're back into public.
I believe there will be an attorney-client session.
MR. SWINGLE: This is Ron Swingle. In executive session of the variable fund, a presentation from an international equity manager, consensus was reached. We provided a list of managers contracts that are up for renewal, a consensus was reached. In executive session of the pension fund, we received preliminary performances data, we received a private equity presentation, and a real estate presentation consensus was reached on both.
MR. BROWN: Great. Thank you, Ron.
We will have an attorney-client session. We're going to take a break for lunch, and then we have the attorney-client session. Do I hear a motion to adjourn?
MR. KAZANSKY: So moved.

MR. BROWN: Do I hear a second?

MS. LEE: Second.

MR. BROWN: Any extensions?

Let's do this again. So all those in favor of adjourning this meeting, please say aye.

Aye.

All those in favor of opposing say nay. Any extensions? We are adjourned. Thank you everyone.

[Time noted: 2:01 p.m.]

C E R T I F I C A T E

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

I, RIVKA 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 1st day of June, 2023.

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RIVKA KAPLAN