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NEW YORK CITY TEACHERS' RETIREMENT SYSTEM

INVESTMENT MEETING

Held on Thursday, February 4, 2021 via Videoconference

ATTENDEES:

DEBRA PENNY, Chairperson, Trustee

DAVID KAZANSKY, Trustee

THOMAS BROWN, Trustee

JOHN ADLER, Trustee, Mayor's Office

NATALIE GREEN-GILES, Trustee

SUSANNAH VICKERS, Trustee, Comptroller's Office

RUSSELL BUCKLEY, Trustee

PATRICIA REILLY, Teachers' Retirement System

SUSAN STANG, Teachers' Retirement System

RONALD SWINGLE, Teachers' Retirement System

REPORTED BY:

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ATTENDEES (Continued):

ROBIN PELLISH, Rocaton
MICHAEL FULVIO, Rocaton
KATIE PIRO, Rocaton
VALERIE BUDZIK, Teachers' Retirement System
LIZ SANCHEZ, Teachers' Retirement System
SHERRY CHAN, Office of the Actuary
DAVID LEVINE, Groom Law Group
SUMANTE RAY, Mayor's Office
CYNTHIA COLLINS, Mayor's Office
ALEX DONE, Comptroller's Office
MICHAEL HADDAD, Comptroller's Office
JOHN DORSA, Comptroller's Office
KOMIL ATAEV, Teachers' Retirement System
ISAAC GLOVINSKY, Teachers' Retirement System
STEVEN YUAN, Mayor's Office
JOHN O'SHEA, JP Morgan
DAVID KELLY, JP Morgan
JAMES REIDY, JP Morgan
LOUIS BENNETT
ARISTEA AFTOUSMIS, TRS
COREY SNOW, Invesco

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MS. REILLY: Good morning. Welcome to the investment meeting of the Teachers' Retirement Board for February 4, 2021. I want to start by taking the roll.

John Adler?

MR. ADLER: I am here.

MS. REILLY: Thomas Brown?

MR. BROWN: I am here, Patricia. Good morning.

MS. REILLY: Good morning. Natalie Green-Giles?

MS. GREEN-GILES: I am here.

MS. REILLY: David Kazansky?

MR. KAZANSKY: Present.

MS. REILLY: Russell Buckley?

MR. BUCKLEY: Here.

MS. REILLY: Debra Penny?

MS. PENNY: Good morning. Here.

MS. REILLY: And Susannah Vickers?

MS. VICKERS: Good morning. I am here.

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

MS. PENNY: Good morning, everyone. We are going to start with a review of the

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Passport Funds December 2020, and Robin or John -- Michael. I'm sorry. Will you take it away, Mike?

MR. FULVIO: Sure, will do and I would be happy to share the report on screen if that's helpful. Liz, are you able to enable that capability?

MS. PENNY: I think we agreed we all have copies of it so no need to share.

MR. FULVIO: Absolutely. That certainly will make speaking to it a little easier as well. So I think, you know, we already did spend some time talking about what happened in the markets during December. So I won't dive too much into December given that came up in January at that meeting, but I will spend a couple of extra seconds just wrapping up 2020 if you will and fourth quarter as well. And if you are following along on the report, you will note that last year again as we discussed, very strong year for absolute returns across the board with respect to the plan. Quite striking when you think about the volatility we saw early on in 2020.

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And the Diversified Equity Fund, you know, absolute returns certainly helped by market activity, but what we did see also in the fourth quarter was a pretty strong environment for the active managers in the program as well. So I will speak to that a little bit and what was working behind the scenes, but if you are looking at the very top line with the performance, you know, for the month of December, the Diversified Equity Fund was about 17.9 billion in assets, up about 5 percent. That put the fund ahead of both its hybrid and market benchmark. When I say "market benchmark", I am referring again to the Russell 3000 Index, which was up about 4 and a half percent during December. That brought the calendar year return for the fund to about positive 18.2 percent. So the fund did lag by about 1 percent for the hybrid benchmark or versus the hybrid benchmark for the calendar year 2020. And the Russell 3 during that time period was up about 2.9 percent.

So what drove the absolute and relative

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returns for 2020 and in particular the fourth quarter, which you see in the three-month column, pretty strong numbers as well in both absolute and relative terms. So for the year, active management for US equity strategies was something that was a drag on the fund. We talked about the dynamic with growth and value earlier in the year quite a bit. In the fourth quarter we did see that reversed, and many referred to the fourth quarter, perhaps rightfully so, as a value rally. Value indices for the quarter outperformed by about 500 basis points, and actually, you know, what was really interesting, if you look at the time period November 6th to November 24th, so really a short part of the fourth quarter, value outperformed growth by about 950 basis points in those couple of weeks alone. So it was really interesting.

If you peel it back a little bit further, it wasn't just value but what we also saw was more of a rally in the highest beta stocks relative to the lower beta stocks in the US and higher beta outperformed by about

28 percent during the fourth quarter. Small caps also outperformed large caps by about 11 percent for the quarter, so those are all things that did work well for active management during the fourth quarter.

You can see here again, pretty strong relative result of 22.7 versus 14.7 for the active composite in the US, and all told last year was also a pretty strong environment for the International Equity Composite that you can see with a return of about 15 percent versus its composite benchmark at 10.67. It's worth noting the Defensive Composite did lag its composite benchmark for the year, but it did contribute to the overall absolute returns in perhaps a meaningful way up about 19 percent, you know, versus the fund return which I noted earlier about 18.2. So all told, pretty strong absolute returns there, and again we are going to spend a little bit more time looking at the active manager performance for defensive when we review the composite in a little bit more detail during the second quarter of 2021.

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MS. PELLISH: Just to jump in, particularly notable -- and we will talk more about this as Mike mentioned -- when we focus on the Defensive Composite in coming meetings with the performance to convertible strategies and the Defensive Composite particularly notable for the calendar year up between 32 and 33 percent.

MR. FULVIO: Thanks, Robin. So beyond the Diversified Equity Fund, you can see the returns for the rest of the Passport Funds. The Balanced Fund with just over 500 million in assets, that was up about 8.7 percent for 2020. The International Equity up about 14.5 percent ahead of its benchmark. The Sustainable Equity Fund, again if you think about the types of companies that are being populated or purchased in that strategy, they tend to be larger cap US growth strategies that have obviously met the sustainable criteria of the fund manager given that that large growth part of the market did really well last year as well. This fund up about 38.7 percent. The US Equity Index Fund, I noted index returns last year, you know, the fund, the underlying strategy for this fund was up about 20.8 percent in line with the US market.

What jumps off the page here is the fund's specific return that participants got who were invested in this fund for the whole year, they were actually up about 40 percent, and again what's driving that is the timing of cash flows. So you will note that notable cash flows came into this fund, you know, after the markets sold off last year, and so there was more money invested in this fund to catch the rebound given that this fund was really only launched on 1/1/2020. The same dynamic is true for the International Equity Index Fund. Again, this fund, the underlying strategy if you will, the mutual fund that is underlying the Passport Fund option was up about 11.1 percent and roughly in line with its benchmark, but the fund itself was up about 29.9 percent.

So I will pause there and see if there is any questions, and if there is not, we will

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move ahead and speak about what we have seen so far this year.

MS. PENNY: I guess you could move ahead.

MR. FULVIO: Great. So everyone should have the attachment that was circulated. We just called it the January preliminary benchmark report, and what you will note here is returns for January that nearly everywhere across the board are negative. Mostly modestly negative but what we did see in January if you will recall was a pretty strong start to the year with respect to markets. The markets did shake off some of the political turmoil and what we saw in Washington during the first week of the year, and it wasn't until really the later part of January that we saw equity markets, for example, sell off a little bit.

The Russell 3000 ended the month of January down about 40 basis points. International stocks were more mixed, so in developed markets outside the US, the EAFE Index was down about 1 percent, but emerging markets were up about 3 percent. So that definitely served to offset the downside in developed markets. If you are looking at that report, the Defensive Strategies Composite, we are expecting a positive return there to the tune of just shy about half a percent, and the Diversified Equity Fund hybrid benchmark for the month was down about 27 basis points.

So I kind of covered the underlying asset classes as I was going through the Diversified Equity Fund, but you can see the Balanced Fund, all told, probably down about 10 basis points. I noted the International Equity underlying indices but that the international composite benchmark as a whole was roughly flat, and we saw what was a more negative month for the underlying strategy of the Sustainable Equity Fund down about 2 percent relative to its benchmark, which was down about 75 basis points, and then you can see as I noted earlier the underlying strategies for the US index and nonUS index. The US index was down about 33 basis points and the nonUS index fund positive return of about 15 basis points. Were there any questions about January?

MS. PENNY: I guess not.

MR. FULVIO: Not hearing anything, so the next item on the agenda and we had discussed at the last meeting bringing in some market experts to speak to their views on the marketplace, and so I will turn it over to J.P. Morgan and their chief economist at J.P. Morgan Asset Management, chief strategist David Kelly, but before we do, what we have done is allocated about 30 minutes for this conversation, and we have asked David to save some time at the end for questions. So if you do have any questions, it might be easier just given the Zoom dynamic to hold off and we will make sure that he has some time to address that at the end, and I think we will, you know, take it from there and I will turn it over to John.

MS. PENNY: Great. I'm sorry, David. Liz, we can give David the shared screen capability so we can certainly look at that?

MS. SANCHEZ: Already taken care of.

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MR. O'SHEA: So this is John O'Shea. Really quick maybe two things for you to know about David. First, I am a client advisor, been working with New York City's retirement systems for 15 of my 25 years here at J.P. Morgan Asset Management. So we are honored and delighted to be able to speak with you today. So David is the chief global strategist at J.P. Morgan. He heads a global team of 27 folks who are located in 12 countries.

So we are going to bring you a global perspective as we always do, and just secondly you might be aware of their most notable publication, Guide to the Markets, which is a reflection on current economic data and changing market conditions across the globe. But interestingly, we published this in 33 countries and 12 different languages. And we refresh the data every day.

So what we will talk about is realtime and relevant with hopefully a little bit longer term perspective, and we also have an assistant publication, Guide to Alternatives

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and for you, what we pride ourselves on is these two publications and the insights that this team generates being intelligible and digestible by a wide range of expertise. So David has got screen-share capabilities like nobody, so I am going to turn it to you, David, to take it away.

MR. KELLY: First of all, thank you very much for this opportunity, and let me see if this can work here. So I am going to try and share the screen. Okay. And now you are seeing -- hopefully you can see my screen now. I will just make this presentation bigger here. Okay. Can everyone see the presentation okay?

MS. PELLISH: Yes.

MR. KELLY: Super. What I want to do is I got 25 pages here. I am not going to talk to all of them and try to be succinct, but I will try to do and what we try to do in our group is refocus on seeing the present with clarity much more than forecasting. So I really want to talk about where we are right now on the pandemic. I think also in terms of

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the economic outlook and how fiscal monetary policy is going to play into that and then I want to talk about some issues on valuations which I think are somewhat concerning but then also some opportunities and I am going to try to do this all in the course of 20 minutes so we have time for some questions here.

So first thing though, let me talk about where we are in the pandemic now. I don't claim to be an epidemiologist, but I think we have all learned a lot about this during the course of last year. So I think there is some hope here on the vaccine and the pandemic that we shouldn't miss. Obviously the total is dreadful with 450,000 people having died from COVID-19 in the United States. That's a horrific death total, and we are still seeing about 20,000 people die every week from it. However, there are some positive signs you can see in the chart here. The blue line is the seven-day moving average of confirmed cases. The gray line is the seven-day moving average of fatalities and you can see the confirmed cases have turned down and we all know that's a precursor to a decline in the number of fatalities.

With -- so I think we are probably right now probably at the peak of fatalities and probably past the peak in terms of the number of people who are going to catch this per week. In terms of vaccines, we have got two that are actually approved at this stage and are being used in the United States, the Moderna and Pfizer one. I think it's important to emphasize that these two companies have promised they will deliver 200 million doses each by the end of June. And I don't see any reason why they wouldn't be able to do that, and also even though there is, you know, a somewhat chaotic rollout in some states and every state is different and it's really not -- there is nothing great from that perspective, I do think everybody has a huge interest in getting this job done, and they will get it done.

So by the end of July, I expect that those 400 million doses -- that's enough for 200 million individuals -- will have been

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essentially deployed to the extent that Americans are willing to take the vaccine. Now, we know that right now these two vaccines are only approved for adults. There are 260 million Americans over the age of 18, but we know that less than 70 percent have expressed an willingness to actually take the vaccine, so that gets you to about 182 million. So right now we have 182 million willing adults. We should have the capability to vaccinate 200 million people even without the approval of any other vaccines, and I think others will be approved between now and the end of June. By the end of July, then allowing for delays in when you get the vaccine in a local area and when it's actually deployed. Maybe by the end of July we will have hit that target of 70 percent of the adult population being vaccinated. However, in addition to that, sadly we have got this enormous number of fatalities, but what that also means is that actually an awful lot of Americans already had this.

So we have got 450,000 who died from

this right now. Epidemiologists say that as a rough number, about half a percent of people who catch COVID-19 die from it. So if that's true, then 450,000 people having died from it right now represent about 19 million people who have had the disease. But that's actually 19 million people as of three weeks ago. Since then, you know, if over the next three weeks sadly another 50 or 60,000 people die from this, then that gets you up to a total number of people who have had the disease at this stage at this point of about 100 million people. So that's roughly, you know, 30 percent of the population. If you look at the vaccinations, running at about 3 or 4 percent of the population right now. So already a third of the population has some immunity to COVID-19.

As we run the numbers, by the end of March 50 percent of the population will have some immunity to COVID-19, and by the end of July, 80 percent of the population will have some immunity to COVID-19, most of whom have gotten it through vaccination, but a very

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sizeable minority have got it because they simply caught the disease. At that level, at 80 percent having some immunity, I do think that the virus will die down. Now, there are mutations; we are worried about those. Everybody is. I think the medical community is working on tweaking the vaccines to be able to deal with these mutations, but I think it is reasonable to believe that if we have got this level of herd immunity as we go into the fall and if we have better contact tracing and testing, then I think that as you go into that fourth quarter, we are going to be able to more or less get back to normal. Certainly from a macro economic perspective.

So what does this mean in terms of the economy? Well, you know people asked me at the start of this, are we looking at a V-shaped recession? W-shaped recession? It was always going to be a weird shape and that shape is now emerging. So it's also going to be a plunge, a surge, a crawl, another surge, and then a normalization. And we have seen the plunge. You see that in that chart and

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you see the surge in the third quarter of last year and another 4 percent added to GDP growth in the fourth quarter, but of course, even though the numbers look similar on the way down and way up, they are not, of course, because 30 percent from the top is far more important than 30 percent from the bottom. So we are still very far short, about 2 and a half percent below where we were a year ago in terms of overall output and even further relative of where we should be.

Going forward, we think the fourth quarter is going to be very slow economic growth. It would have been anyway, and I think the passage of some coronavirus relief at the end of December will help. I think we will avoid an overall negative quarter, but I am looking for economic growth about 1 to 2 percent for the first quarter. But then it should begin to accelerate. Just getting past the pandemic will cause it to accelerate mightily because as you go into the fourth quarter of this year, there is going to be a pent-up demand and pent-up supply of consumer services. Hotels, restaurants, travel, leisure, entertainment, personal services, all these things that were basically shut down because of the pandemic are going to reopen. There are many businesses like restaurants which unfortunately are going to open up under new management, but it doesn't change the fact that there is going to be a ferocious demand for these things. I mean, after all this period of time, people are going to want to get out and party. I think the challenge of the fourth quarter of 2021 is going to be trying to find a table at a restaurant or a seat in an airline or a bed in a hotel. I think that you get that surge of economic activity and then that was going to happen anyway and then you are going to have, after we sort of satiated our need to see, travel around the country, I think things die down again and you have more normal growth as you go through the second half of 2022.

But superimposed on this is the new coronavirus relief bill. Now where we stand right now is, as you know President Biden has

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met with ten Republican senators in a hope to reach some bipartisan compromise on this bill. I think I take the president absolutely at his word that he would like to be bipartisan about this, but the reality is he probably cannot cut his bill enough to satisfy those ten senators and achieve what he wants to achieve, and if he falls short of those ten senators, then he is going to have to go reconciliation, and that's what's going to happen. When he is using the reconciliation process, he only needs to keep all the Democratic senators in line, and that may mean some compromises which I think will reduce the overall size of the package but we are still talking about a massive package. I mean, he proposed 1.9 trillion dollars. I wouldn't be surprised if we end up with 1.5 trillion dollars getting past Congress, signed into law by the middle of March using the reconciliation process. If that happens, if you look at the details, it's so frontloaded, over a trillion dollars will probably be spent between now and September, and that will supercharge an already improving economy. I think it will shorten the pandemic somewhat by helping with vaccine distribution and testing and tracing. I think it will help support households through the end of the pandemic by inhouse unemployment benefits and expanded unemployment benefits. I think it will help state and local governments. I think it will do a lot of things but also leave the economy with tremendous momentum going through the end of the year, so I think you will see supercharged growth as we go through to the end of the year. The result of that if you look at the next page is I think unemployment will come down at a record pace.

This is a really unusual recession. We got the highest unemployment rate since the Great Depression early on. We are now down about 6.7 percent. That 6.7 percent understates the level of economic weakness right now because we know that 4 million people have left the labor force in the last year and they left the labor force because their industries are shut down and they are not looking for jobs so they don't count as

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unemployed. If you add those people back, you are about 9.3 percent in the unemployment rate, but even without that, given the rate of economic growth, I expect those people, most of them will come back into the labor force and the unemployment rate itself will fall to below 5 percent by the end of this year and then fall in the course of 2022 down to close to 4 percent. So I think you will see a fast recovery on unemployment.

On inflation, I think you will see a little bit more inflation. Now, right now there is the number we look at on inflation is down here. Let me draw a picture here. It says PCE deflator. That PCE deflator, that's what the Fed is targeting, and they want that number to be 2 percent. We are not there, but by April I think we will be there because a year-over-year comparison is very easy.

If you look at April of last year, you can see how much prices fell, so that is very easy. I think you hit 2 percent inflation then, and then as you wind through this year, if you have got all that extra stimulus pouring into the economy, I think the inflation rate stays a little bit above 2 percent as measured by the consumption deflator in the fourth quarter of this year and throughout 2022. If you look at profits, profits have done remarkably well in 2020 given all that was going on. I think you will see some further gains in 2021 to a new all-time high. In 2022, we can see some further gains, but you are going to see higher interest rates, higher wage costs. You are going to see a slowdown in the economy, so there won't be much of a natural increase in 2022 even though we have been at a record high.

I think a key question which I don't have an answer to is are there votes in the Senate to increase the corporate income tax. We know there are votes in the Senate to pass spending increases or to pass tax cuts. I am not sure whether the Democrats will want to pass or all of them will want to pass a corporate tax hike before the 2022 election. If we do see that corporate tax hike up to 28

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percent, then I think probably it will turn negative in 2022. If not we still have a small positive but either way probably will grow more slowly from here.

Turning to the global picture, this is our global PMI heat map. Green is good, red is bad. Got the developed countries up top. We have got emerging markets down below. This is a composite index, by the way. This is looking at the purchasing market industries for services and manufacturing, and you can see the big great financial crisis recession over here. And then you can see the pandemic recession here. What we are seeing right now is China down here. China came out of this thing early. Because they went into the pandemic first, came out first also. But China has got what I would regard as not terribly effective vaccines, and they have got to vaccinate 1.4 billion people so I think the West is going to catch up with them and over. By the end of this year, the point is the right-hand column on this chart is going to be basically kelly green. It's going to be green all over the case. Entire global economy will be booming since because of a wind-down of the pandemic, and then last basic point that I think is important is that we do think that over time the dollar will probably come down. Now it's strengthening a little bit today, but in the long run you can see the chart on the left. The dollar is actually very affected by how fast US economic growth is relative to the rest of the world and in the late 20-teens because, first of all, Trump tax cuts which gave us a boost in economic growth even late in the cycle and then because of the trade war which definitely hurt all of us but it hurt the rest of the world more than us, the US actually caught up with the world on growth, but going forward, particularly when you get past 2022, the world is going to reaccelerate relative to the United States.

The US does not have enough population growth. Immigration is stalled to basically zero or close to zero. Our natural economic growths is simply slower than places like India and China, and that is going to allow

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the global economy to grow faster than us and that should push the dollar down and that enhances the return on international investments. On fiscal policy I do think that we get further deficits this year. These numbers show what the Congressional Budget Office thinks the deficit would be without further policy changes. But I think you will have significant deficits. Does it cause a blowup? Not until interest rates go up. The real problem here would be if the government had to try to finance this debt at interest rates of 4 percent or 5 percent or 6 percent. But right now, financing costs are below 2 percent that's not causing a crisis.

And then turning to the Federal Reserve. So what the Federal Reserve is uberdoveish. It was doveish under Ben Bernanke. It was even more doveish under Janet Yellen. It's certainly doveish right now. What the Federal Reserve has said is that they are not going to raise the federal funds rate until they have achieved their two objectives of maximum employment and inflation at 2 percent and on target to exceed 2 percent for some time. Now, on maximum employment, what's interesting is if you look at the forecast that the Fed officials make on the unemployment rate, they think that the unemployment rate will be down to 3.7 percent by 2023. I think that's reasonable. But they also think that even at that point, they will keep the federal fund rate at its current range of 0.25 basis points. So what that tells you is their vision of maximum unemployment is a low, low, low unemployment rate, and that says to me that it's going to be a long time, probably late 2023 at the earliest before the Federal Reserve actually raises short-term interest rates. So what could they do? Well, a thing they could do is cut back on bond purchases. Now, Jay Powell was asked about this at his press conference, and he says first of all, he needs to see substantial further progress towards these goals in order to back off on asset purchases.

Now, if you look at where we think we are going to be at the end of 2021, so the end

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of 2021, the Federal Reserve believes real GDP growth will be 4.2 percent year over year. Unemployment at 5 percent inflation at 1.8 percent. The thing is I think growth is going to be stronger than that. I think unemployment will be lower than that. I think inflation will be higher than that, and if that's the case, the numbers as they are printing at the end of this year would really suggest that the country has made substantial further progress, and the Federal Reserve ought to back off on its asset purchases. But Jay Powell has also said if that we see an increase in inflation as the pandemic ends because everybody wants to go out and party, he will regard that as transitory and also that the Federal Reserve will take -- announce what it's going to do well in advance of any actual moves.

So taking those two things into account, I believe that at the end of December or perhaps at the January meeting next year, the Federal Reserve will announce that it intends to reduce its bond purchases but won't actually reduce its bond purchases until sometime maybe the meeting in the middle of March or the meeting at the end of the April. Either way though, within the next 18 months I think you will see a tapering of bond purchases, and remember this is occurring in an environment where you have got booming global growth, you have got a big US budget deficit, you have got inflation running over 2 percent. All that suggests to me somewhat higher interest rates.

So that's roughly speaking the backdrop, and then in terms -- I know I want to leave time to get to questions here, but where does this leave us? In markets there are some risks. I think there are some risks because large cap US equities are trading at 161 percent of their 25-year average compared to -- sorry. The top ten stocks are compared to 120 percent for everything else, so there is a problem with mega cap stocks we believe. There is a problem with fixed income which I am sure you are very aware of. These blue diamonds here are either the spread to worth

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or yield worth on fixed income categories, and there is no income there. If you do have interest rates rise, you will have capital losses and I think that's an issue and then just the broader issue of you don't know when something might go wrong. You know, nobody really predicted 9/11 or predicted that the sub prime bubble would cause the great financial crisis or predicted this pandemic recession. And so when people ask me what do I worry about, the truth is the thing that I worry about is the thing that we are not thinking about and that's the basic reason for diversification and finally in terms of messages for investing right now, obviously there are limits. You are very aware as a board of the limitations you have in how you deploy capital, but I think a few things. First of all, we have got to be realistic. We have had some very good returns. If you look at last year, a diversified portfolio gave you 10.6 percent using -- and we show the weights here. Everybody's weights are different. Everybody's constraints are different, but

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overall that is a good year following a lot of good years, and that suggests to us lower returns going forward.

Second, we do think that value stocks look cheap relative to growth. At the end of January, value stocks were 1.23 standard deviation cheap relative growth. We think that's important. So we think there is some opportunity there. We also think to the extent that you have the ability to do it, there is some opportunity in international stocks. Emerging market stocks selling well below their long-term average well below the S & P 500 and developed stocks also selling well below their normal discount to the S & P 500. We also think there is an opportunity in active management. This chart here shows the range between the 20 percentile and the 80 percentile in terms of valuations, and on average, over the last 25 years, that range has been 10.8 PE points, and today that range is 17.9 PE points.

What that says is in these markets, there are a lot of babies, there is a lot of bathwater. What happened is last year everybody basically doubled down whatever bets they were making. It's a momentum year. The fog was so thik, people just didn't know what to do. 2021 will be a better year. We will get past this pandemic, but also the fog will clear and as the fog clears I think people will pay more attention to valuations. So I think there is an opportunity for active managers in finding things that are genuinely good value in this environment and underweighted things that are too frothy in an environment of great uncertainty, but also very easy monetary and fiscal policy. Okay. I know I ran a little bit, but those are the main points I want to make and see if I can open it up to some questions.

MS. PENNY: Does anybody have any questions for David or John? John?

MR. ADLER: I have a question. Thank you for the presentation. Really interesting. I just have a question about your numbers on COVID immunity because I think what you are doing is you are saying that, you know, approximately 100 million infections in the US based on fatalities and that makes sense and that by March if you add that 100 million to the number of vaccinations, we are going to approach 50 percent immunity. But some of the people who were infected are going to get vaccinated, and some of the people that were infected early on are no longer immune. So doesn't -- aren't you overcounting the immunity? And frankly, I feel like you are being a little optimistic about our ability to come out of COVID as quickly as you said.

MR. KELLY: Good point. So there are two issues there. One, these calculations do assume unfortunately a continued number of people getting infected, and therefore, the number of people with natural immunity is going to increase also between now and March, but I did in the calculations subtract out the cross. I subtracted out the people who will get double immunity from having the virus and being vaccinated. Those people are only being counted once, and in fact, I did allow for the fact that oddly enough -- I mean, it's a bizarre reality, but if you look at surveys the people who are most reluctant to get vaccinated are also the people who are most reluctant to wear masks. And so it may well be that there is a slight -- you know, I am assuming the probability of someone getting vaccinated is independent of their probability of getting the disease, but there may actually be -- I may not need to subtract the pool across product.

With regard to fading immunity, yes, that is a risk. The studies though seem to be reasonably promising there. They say that at least through six months, they are confident that you retain some immunity to COVID-19 from having the disease. So I think some of that is there, and then I think the other thing that I think is terribly important while the rollout of the vaccination is sporadic and chaotic in many ways, there is one thing we are basically getting right, which is very obvious, which is vaccinating the old people first. Because if you look at the fatalities last year, it's really astonishing that 81 percent of the people who died last year from COVID-19 were over the age of 65. Now, that group is only 17 percent of the US population. So long we can get to them first, we can cut fatalities by 80 percent. I believe fatalities can well be down by 80 percent at some stage in April just because we have succeeded in vaccinating everyone over 65.

So I think the fatalities will fall faster, but I do grant the risk that people will catch it a second time. The vaccines themselves are not 100 percent effective, so I expect there will be a little bit positivity there. On the other hand -- I will give a third hand there -- I only assumed the Moderna and Pfizer vaccines. I have not added in the possibility of other vaccines getting used in a widespread way and I suspect they probably will.

MR. ADLER: And you mentioned in passing the fact that there are additional variances, and the vaccines seem to be less effective at this point at least against the variant that developed in South Africa and that could

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continue to happen too. I am just -- I obviously hope with all my heart that you are right, but I am a little more skeptical that by the end of July we are going to be in post-COVID.

MR. KELLY: Well, I am not quite saying that. I think by the end of July we will achieve about 80 percent of people having some immunity, and I believe that at that point every adult who wants to have the vaccine will have had it. We still have the issue which, of course, is very important to your members of what are we doing to go about vaccinating kids and that, you know, right now the CDC and scientists are working on trying to approve a -- find and approve a vaccine that's safe and effective for children, which is very important to everybody. But I will also say that my experience of other crises in American -- in my lifetime in American history is that when you have a crisis before it happens, nobody believes it could happen. At the worst, everybody is waiting for the second shoe to drop. I mean, I remember years after

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9/11 everyone saying it's just a matter of time. I remember years after the financial crisis people saying we have this problem or that problem waiting for the banks to blow up. So I am watching the news coverage about this and trying to be as unbiased as possible about this. There is tremendous coverage of these variants, but it seems so far the vaccines have at least some efficacy against most of the variants out there, and people with MRNA vaccines, it's possible to tweak them and still go through the approval process, but as the summer is going on, I know they are working on tweaks to try to deal with these variants.

So ultimately I think science will succeed here. It's not going to feel normal for a long time. I think over the summer we will reach a point where we are kind of beating this thing, and that means hopefully we will be able to get back to normal in the fall, but I am not really going to say I feel like it's normal in the summer. I am saying we are going to act like it's more normal in the fall.

MR. ADLER: Thank you so much.

MS. PENNY: Thank you. I believe, Mike Haddad, did you have a question for David?

MR. HADDAD: I did. Thanks, Debra. Hey, David. Great presentation. I am with BAM investment staff. The question I have for you has to do with portfolio construction and one of the elements of portfolio construction that the TRS portfolio has had for a while and benefited from greatly is exposure to long-duration treasuries. We kind of use that as part of our Barclays Ag portfolio, but we have changed the weightings and changed some durations around having that element in the portfolio serve as a risk mitigant as well as income generation. We benefitted greatly from the negative correlation of returns between long treasuries and public equity markets, so I am wondering what you think of correlation going forward and if you are of the view that it's going to be less negatively correlated speaking of returns. Is there a different asset or asset class that you would recommend us to consider to serve as a risk mitigant to the risk part of our portfolio?

MR. KELLY: Yes. I mean, unfortunately, you know, if you think about long-duration bonds as a sort of a recession vaccine for your portfolio, unfortunately the efficacy of that vaccine is also diminishing over time, but if we do have another recession, there is a limit of how much of a capital gain you are going to get out of that long-duration portfolio.

You know, one of the benefits is it stops you from investing in things that are more positively correlated to a -- to the market. The stock market. So I am -- you know, I am concerned that it is going to be less effective insurance going forward. It may still have some role in protecting against recession, but the problem is if the next market correction is one in which inflation features as well as stock market decline, that can be a pretty -- you know, that could negate the ability of that long-duration portfolio to help you out at all. So if possible, I would try to dial back on that in terms of the risk that you face, but what you need then is uncorrelated assets, which are not particularly sensitive to the business cycle. So to the extent there are plenty of areas as I know John O'Shea talks about or -- but there are plenty of areas of alternatives where you can get an income stream which seems to be less business cycle sensitive. That's one area -- I think also real estate has got some positive correlation with inflation which kind of helps generating income. And then -- but the other thing then is just find some synthetic way of buying that -- that kind of protection because one of the most expensive ways I think you can buy protection right now is in the long-dated treasury market. So if there is some synthetic way of limiting risk, I think that might be the way to go. I also think that over time, you know, as I said within the equity market there is a, you know, equity is sort of changing their characteristics here. Certainly areas in value equities which I would almost regard as long-duration bonds with certainly a better yield than you can get in the fixed income market and also obviously some potential for upside, but I think you may have to think about the overall risk in the portfolio. If you are -- if your basic insurance policy is not -- is more dodgy than it used to be, that unfortunately I think does limit your ability to take risks elsewhere in the portfolio because you just can't offset that beta risk as easily.

MR. HADDAD: Thank you.

MS. PENNY: Are there any other questions for David?

MR. KAZANSKY: I have a quick one.

MS. PENNY: Dave Kazansky.

MR. KAZANSKY: So for seemingly years prior to 2020, we are always talking about how so much of the market was overvalued and there was somewhat of an expectation among some that maybe the pandemic would be the thing that kind of levelled everything off and instead everything seems to be continued to be overvalued. How does that factor into your

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look at the markets going forward because it seems to me you are saying things are just going to continue and earnings are going to continue to go up and valuation is going to continue to go up, and so do you see a point where we are going to level off and see that correction and is that coming in 2021 or beyond and is that at all tied to how successful vaccinations become?

MR. KELLY: Okay. So there are different pieces to this. I think 1, I am a little bit at fault for not reemphasizing the fact that returns will be more modest going forward. We have -- you know, while I think the top ten stocks in the S & P 500 are much more expensive than the rest of the market, the whole thing is expensive, and I do think that that limits US equity returns. Over the next five years I would expect to be less than 5 percent in terms of total return, maybe less than 4 or less than 3 percent, but certainly less than 5 as an average return. I expect that based on just on where valuations are right now. I do think that will probably encompass a correction at some stage, and I can't time that correction in the course of this year. I don't think that correction is necessarily going to be caused by a delay in the vaccine. I mean, after all, the virus itself didn't knock the market through a loop. I think the real issue is I think inflation is the greatest vulnerability this market has. If inflation picks up and interest rates get forced up, then those valuations look particularly dangerous for long-duration bonds and growth stocks and some of the more speculative area of the markets and that's where I think the biggest risk is.

So you know, I am nervous about it, but the other thing that I think needs to be said -- this is a very basic point. We have actually in a way been heading on a disequilibrium path the last 40 years. If you look at the '50s, '60s, '70s, '80s, the total value of US financial assets was about 2 and a half times the total value of US GDP, and since the mid-1980s that has taken off and is now about 5.8 times. Bonds have gone up,

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stocks have gone up, various other financial assets have gone up. So all these assets relative to GDP, financial markets are going up much more. First of all, how have they done that, and second of all, what's the consequence? I think the reason that happens is because there has been at the same time a significant increase in inequality, massive increase in inequality really in the same direction. What happens is the top 10 percent of households back in the '70s got about 30 percent of the income -- actually less than that. Now it's over 50 percent. The reason that's so important is the big difference between the top 10 percent of the households and everyone else is the top 10 percent of households save about 30 percent of their income. Everybody else basically spends all their income if you aggregate over the other 90 percent. So as more and more income has been received by the top 10 percent, you end up with more saving and less spending. There is a circular flow of income. You produce 100 dollars' worth of income of output and that generates 100 dollars' worth of income and that income is supposed to come around and buy the output.

What's happening is every year, half that income is going to people who are saving 30 percent of it and what that's doing is leaving us short of demand and so we are trying to stimulate demand in the economy, but it's also funneling money into financial markets boosting asset prices across the board. Now, how does that come to an end? I think the way it comes to an end is if you have policies which are designed to try to redistribute income or wealth away from the top 10 percent of the households towards the rest of the population, the rest of the population are more likely to spend that money, cause excess demand, cause inflation, and that in itself could bring down the asset prices, so that could cause a compression of asset prices relative to GDP. So it's not the vaccine. What I am interested in is at what point will we reach a tipping point in terms of income and public policy by which government policy is aggressively designed to reduce the gap between the rich and the poor as opposed to sort of standing on the sidelines, and if that happens, I think that's the thing that could cause a significant correction.

MR. KAZANSKY: Thank you. Good answer.

MR. KELLY: Sure.

MS. PENNY: Great. Any other questions for David? No? Okay. So we thank you very much. This was very interesting. We appreciate your time and the presentation.

MR. KELLY: You are very welcome.

MR. O'SHEA: Thanks, everybody.

MS. PENNY: Okay. We have come to the end of our public session. Are there any other questions or comments from anyone before we go into executive session? Hearing none, do I hear a motion to go into executive session?

MR. BROWN: So moved.

MS. PENNY: Thank you, Mr. Brown. Do I hear a second?

MS. VICKERS: Second.

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MS. PENNY: Thank you, Ms. Vickers. All those in favor, please say aye. Aye.

MS. VICKERS: Aye.

MR. BROWN: Aye.

MR. ADLER: Aye.

MR. KAZANSKY: Aye.

MS. GREEN-GILES: Aye.

MR. BUCKLEY: Aye.

MS. PENNY: Any nays? Okay. We are going into executive session. Liz will put up something and we will join.

(Whereupon, the meeting went into Executive Session.)

MS. PENNY: Welcome back to public session. Ms. Stang, would you like to report out?

MS. STANG: Certainly. In executive session we had a discussion on a policy within the emerging markets asset class. We reviewed our securities lending program within the variable funds. We discussed the progress made on the investment policy statement for the variable funds. We discussed a contract issue. Consensus was reached, which will be

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announced at the appropriate time.

MS. PENNY: Thank you so much. Does anyone have anything else for public agenda? Public meeting? Okay. Do I hear a motion to adjourn?

MR. BROWN: So moved.

MS. PENNY: Thank you, Mr. Brown. Do I hear a second?

MR. KAZANSKY: Second.

MS. PENNY: Thank you, Mr. Kazansky. All those in favor of adjourning, please say aye. Aye.

MS. VICKERS: Aye.

MR. BROWN: Aye.

MR. ADLER: Aye.

MR. KAZANSKY: Aye.

MS. GREEN-GILES: Aye.

MR. BUCKLEY: Aye.

MS. PENNY: Any opposed? Discussion? We are adjourned.

(Time noted: 11:58 a.m.)

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C E R T I F I C A T E

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: 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 15th day of February, 2021.

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YAFFA KAPLAN