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NEW YORK CITY TEACHERS' RETIREMENT SYSTEM
INVESTMENT MEETING

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

ATTENDEES:

JOHN ADLER, Chairperson, Trustee, Mayor's Office

DEBRA PENNY, Trustee, TRS

THOMAS BROWN, Trustee, TRS

DAVID KAZANSKY, Trustee, TRS

THADDEUS MCTIGUE, Deputy Executive Director, TRS

LIZ SANCHEZ, TRS

SUSAN STANG, TRS

JOHN DORSA, Comptroller's Office
RENEE PEARCE, TRS
PAUL RAUCCI, TRS
DELORES CAPONE, Office of the Actuary
ROBIN PELLISH, Rocaton
DAVID MORGAN, Rocaton
MICHAEL FULVIO, Rocaton
RONALD SWINGLE, TRS
MELVYN AARONSON

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P R O C E E D I N G S

(Time noted: 11:00 a.m.)

CHAIRPERSON ADLER: Good morning, and happy new year. Welcome to the Teachers' Retirement System investment meeting for January 3, 2018.
Thad, would you call the roll?
MR. McTIGUE: John Adler?
CHAIRPERSON ADLER: Here.
MR. McTIGUE: Thomas Brown?
MR. BROWN: Here.
MR. McTIGUE: David Kazansky?
MR. KAZANSKY: Present.
MR. McTIGUE: Debra Penny?
MS. PENNY: Here.

MR. McTIGUE: Lindsey Oates?

(No response.)

MR. McTIGUE: John Dorsa?

MR. DORSA: Here.

MR. McTIGUE: We have a quorum.

CHAIRPERSON ADLER: Thank you, Thad.

I apologize. I do have a cold, and I will try to keep my hacking to a minimum. Please bear with me.

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I will turn it over to Rocaton to give us the happy new year news.

(Laughter.)

MR. FULVIO: We will start with what was the happier part of late last year, which was the November performance, and then --

MS. PELLISH: Then we will stop.

(Laughter.)

MR. FULVIO: How we ended the year, and my colleague David Morgan, a partner at Rocaton who's here with us today, will take us through our outlook, looking forward for 2019.

So maybe with that we'll start with, again, which was maybe the only bright point during the pretty volatile fourth quarter for markets in 2018.

So you might recall in the U.S., equity markets as a whole were up 2 percent. What drove markets in the U.S. in the time period was actually value stocks which did quite well, which we haven't seen for a little while. These stocks as a whole in the Russell 3 were up about 3 percent.

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That helps performance in absolute terms, and we saw strong results from the active managers within the program during November. Again, still trying to make up some of the earlier underperformance for 2018, but that was certainly a bright point in November.

Emerging markets were also up 3 percent during November, outpacing developed non U.S. markets, which were roughly flat during the time period.

And all told, for November the diversified equity fund was up 1.7 percent. That brought the calendar year to date return to just over 1 percent; and that compared to the hybrid benchmark, which for the month was up 1.6 percent, and year to date up 1.3 percent.

As I mentioned earlier, active management in the U.S., all told was up 3 percent. That helped with the relative results and then some slight relative outperformance by the international equity composite, which, as I mentioned, did have a modest positive return for the month.

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In terms of performance for the other Passport funds, the balance of funds for the month was up about 70 basis points. Year to date the fund was down 70 basis points through November.

The international equity fund, which, as as you recall, the structure -- that of the international equity composite -- the diversified equity fund. That was up again about 33 basis points. Year to date that fund through November was down about 9 percent.

What really, again, what was driving returns during the year to date time period in the non U.S. markets was a pretty negative year to date time period for emerging markets as a whole, down a little over 13 percent, and developed markets down about 9 percent.

The inflation protection fund, that was flat for the month. The year to date return there was modestly negative by about 30 basis points. And the socially responsive fund was up about 3.4 percent, outpacing the S&P 500 during November.

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I'll pause there before we change gears and look at December.

CHAIRPERSON ADLER: Any questions about November?

(No response.)

MR. FULVIO: So December, as you are all aware (laughter), global -- sold off quite a bit, a little more than 7 percent, actually the worst December in more than 50 years.

And in addition to what we saw with respect to equity markets, we saw the opposite with fixed income markets, with yields going down quite a bit on U.S. Treasuries. Oil prices took a sharp decline as the weakening global outlook in December.

Emerging equity markets actually fared quite well relative to the rest of the world. They were down about 3 percent during the month. The U.S. was down about 9.3 percent.

So if you don't mind, we handed out a December report. You can see there the very first number on the top left, the

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Russell 3000 down about 9.3 percent. The international composite benchmark, again, a mix of developed and emerging markets, that was down about 4.5 percent.

Developed markets as a whole, developed non U.S. were down 4.8 percent; and emerging equity markets for the custom benchmark here, actually because it didn't include some of the markets that were down more, the custom benchmark was down one percent during December.

The defensive composite did provide some downside protection. You can see that was down about 5.8 percent. And all told, the diversified equity hybrid benchmark was down about 8 percent during December.

So what does that mean really for calendar year to date? You can see, all told, the U.S. equity market last year was down about 5 1/4 percent. Developed non U.S. equity markets were down about 13 percent. And emerging markets, based on the custom benchmark there, down about 14 percent last year. So, again, some pretty

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notable numbers there.

With respect to the balance fund, last year that fund finished down 1.8 percent. The inflation protection fund's underlying strategy, that fund was down 4 percent last year, compared to some preliminary -- on CPI, but CPI was about 2 1/3 percent last year.

And then the underlying strategy for the socially responsive equity fund last year was down 5 1/2 percent.

So again, we will talk a little more about the outlook going forward. But any questions on how we finished last year?

CHAIRPERSON ADLER: Questions on a December to remember?

MR. FULVIO: Maybe it is worth mentioning, we talked about defensive strategy within the diversified equity fund. I mentioned in November we saw value was something that did help in the portfolio.

December was a similar month in that regard. We actually saw value do a little bit better relative to growth, which we

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hadn't seen for quite some time. We also saw low beta, lowball stocks do quite well for most of December. So, on a relative basis, that should serve performance from an active management perspective quite well.

CHAIRPERSON ADLER: I just want to say, I've been a sceptic about the defensive strategies. And at least on a benchmark basis, it's really, for last year, you're looking at almost 375 basis points of better performance from this defensive strategy benchmark than the hybrid. We'll see how it turns out when we get a look at the numbers, but that's terrific.

MR. KAZANSKY: That's what it's there for.

CHAIRPERSON ADLER: That's what it's there for. And when we entered this fourth quarter of volatility, it seems, at least on the benchmark basis, it seems to have performed as expected. So that's great.

MR. FULVIO: If there's no other

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questions or comments there, we'll change gears and look forward.

MS. PELLISH: I want to make a couple comments. First, the slides that we distributed are materials we send to you on a regular basis. So you've seen this information.

And we invited David Morgan here today. He's attended a few other Board meetings. David is our chief market strategist. That means part of his role is to pull together the information that we gather through our asset allocation research, our equity manager research -- our private market research.

And the work he does with his team is to help us think through, in collaboration with our clients, how portfolios should be structured, given clients' specific objectives and risk tolerance.

And we go through, as you know, a pretty quantitative exercise, all sorts of assumptions. But David is key in helping us develop those assumptions, and then helping us provide an overlay onto the

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quantitative results for modelling exercises, when we work with clients on asset allocation.

We had invited Mike Haddad here, because he also spends a lot of time thinking about markets and the outlook of markets and expected risks in the marketplace. Unfortunately he wasn't available, so we tried to get a fill in -- (laughter) -- and I'm sure this is the kind of conversation that I know the Board likes to have on a regular basis.

And so David is here today because it's the first meeting of the calendar year, but we're happy to have this discussion as the year unfolds, to the extent there are issues or opportunities that we want to incorporate in our thinking about the pension fund's asset allocation as part of those discussions.

MR. MORGAN: Thank you.

Good morning. Happy new year, everyone. I believe I was here exactly a year ago to talk to you about markets at that point in time.

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CHAIRPERSON ADLER: How did you do?

MR. MORGAN: I think sort of the notion that I'll tell you what's going to happen in 2019 is a little far-fetched (laughter). So I think we try and take disparate strands of information and blend them together to try and understand where we are, and then think about ranges of outcomes for the future.

To expect we actually know anything about the future would be nice. But anyway, with that as a setup, I know it was for Mike to introduce us to talk about the outlook. We certainly on an annual basis create this document you have in front of you. I'm not actually going to refer to it much. I am going to talk about some of the themes in it.

We create this document with the idea that if you look at it 12 months out from here in December of 2019, there are still some things in it are are relevant; which is quite a daunting task, to actually put something down in print that clients open months and month in the future and still

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there be some relevance to the comments that are in there.

With that said, how did we get here? We certainly heard where we are in terms of quantitative -- how you've done at different points in the year. When I was here a year ago, the markets were on a tear. If you remember January of 2018 was a great month, one of the best Januaries we've seen for a long period of time.

Then literally the second day of February it all ended. It all ended with a CPI report that seemed to spook the market, and we certainly had the backdrop of a trade spat back then. Now it seems to be a trade war of varying degrees.

It was in the background, it didn't seem to be driving the markets at the time. But there was a worry that inflation was going to pick up faster than people expected, and that's what initially spooked the market out of its bull phase in January of 2018.

It sort of recovered from that after a few months' time. We had great sort of

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later spring, summer period through the third quarter, and you've obviously heard about how the fourth quarter did. And it wasn't such a great period of time, obviously. We had ended the year in negative territory for all of the equity markets, positive territory for very high quality bonds, negative territory for anything that had spread product in the fixed income market.

So, to me there's two really important issues. There's a whole host of issues we could discuss that I think are somewhat sideshows. So I'm not going to talk about things like Brexit or Italian politics or any of that; because, while it's important, those are all sideshows.

The two really big issues are the trade war in relationship with China that the U.S. has today; and also the sort of growing war, tension between Federal Reserve policy and economic growth in the U.S.

So I'll start with the trade war. I don't know how it's going to unfold from

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here. I don't know why we started it (laughter), any more of the politics, anything to that extent why we started it. But it seems, I think a year ago I made a Game of Thrones joke, image, to talk about the election we had just gone through.

What comes to mind when thinking about the trade war and its impact on markets is shooting yourself in the foot. Just seems like there is no need for us to approach international trade relationships in the way that we did.

It is ongoing, we're not sure how it's going to unfold. It feels like a giant game of chicken, global economy and markets in the middle, taking the pressure and tension of the whole thing.

And there's a certain political calculus on our side and a political calculus certainly on the Chinese side. And I will ignore trade issues with Canada, Mexico, the European Union, because I think they're absolutely secondary to the primary issue of the U.S. versus China.

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If we keep talking -- there's a lot of false narrative about what actually is going on. When we say a level playing field, fine. But we've never had a level playing field, just generally improving certain trade relationships and tariff levels between us, in various parts of the world, China included.

So to say, well, it's not a level playing field, it's sort of not actually the point; it never has been.

That aside, why is the U.S. doing this? I'm not going to necessarily explain why we're doing it and the way we're doing it. Maybe part of the calculus from the U.S. side is that there's a portion of our growth and our economy, and therefore ultimately our markets, trade isn't as big a deal as it is for China.

China trade is a massive deal, it's a real growth and driver. Certainly looking backwards at the economic growth in China, that might be lessening as time goes on, as they build a domestic market. But it's

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still a big deal for them, and a much bigger portion of the Chinese economy than it is of the U.S. economy.

It's also a bigger deal for the European Union than it is for the U.S.

So I think if you're in the U.S. and you want to take an aggressive stance you can say, "If we have any kind of trade tension impact the economy or markets, it's going to impact them much more than it will impact us. Therefore we have the stronger bargaining, we hold the stronger hand, they have to come to the table and give us something."

Well, that makes a certain level of sense, if you're willing to put the economy and markets into sort of this kind of pressure, which doesn't seem necessary.

What I think it ignores is that we have an election calendar here and they don't. So, for China, President Ji is president for life (laughter), his election calendar is already done; whereas we obviously know what our election calendar is.

So we don't have equivalent electoral
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pressures in that sense.

What the Chinese are very worried about is their level of economic growth, and their level of economic growth is slowing more than anybody expected. So that is what I think markets started to sort of understand with an increasing degree as the year went on in 2018, certainly understood more so in December of last year.

That has a negative impact. Obviously China has a negative impact on emerging markets in general, has a negative impact on the European Union. And so we have those issues sort of holding back markets as we speak today.

So, if we wake up and Trump has called President Ji and they actually have a framework of how they're going to fix this -- not have a deal, that's months and months out in the future -- but if they had an actual agreement where they were going to work on it, that would probably be a major positive for markets and a big plus for both our economy and theirs.
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So I think it would be a starting point for changing sort of the trajectory of markets.

So the longer that doesn't happen, I think the more pressure we're going to feel in markets. Because at the same time -- and I will segue into Federal Reserve policy here -- at the same time, I think what surprises about 2018 is, the stock market for most of the year was saying things are great, and the bond market was saying, "No, they're not."

We get this at times in inflection points in the economy where the bond market might be sceptical of where we're going and the stock market still says, "No, we're still partying, it's great, we're still going up."

And then at a time in the fourth quarter, they started to notice maybe we're not in sync, and then the Fed, Jerome Powell in December said, which I

would have to say, I think we at Rocaton have been expecting we'd get to the interest rate increases, the one in
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December and the three more in 2019 like everybody was expecting, that would have pushed the yield curve into a very significant negative slope, and that just doesn't jibe with where we were in the economy.

So here we are only a few weeks further on, and now we're expecting that the Fed is going to increase, maybe once, maybe a couple of times in 2019.

Excuse me, I also have a cold.

CHAIRPERSON ADLER: Who doesn't?

MR. MORGAN: The yield curve shifted significantly. So ignore for a second what the Fed does and says. The bond market actually gives you active information on a daily, minute by minute basis.

The rest of the yield curve, as said for the last couple of months here, maybe four to six weeks, that the economy is slowing, the Fed's going to be slower, and that when we get to the end of this year we'll be much closer to a recession. We might not be in recession, but we'll
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get much closer to it. And those are things that we need to be concerned about.

The bond markets also say, maybe taking a cue here from the oil market, is that CPI inflation is going to be a lot slower in 2019 than perhaps we were expecting a few months ago.

So, what does all that mean?

Like I said, as far as a trade war goes, we can end that in moments. We can end that in moments, or it could be going on at the end of this year. It's really unknowable at this ten seconds.

If you ask me what do I worry about, I worry about there's no grownups left in the White House (laughter).

It sounds like a joke, but this time last year was a joke, this year it's not a joke anymore. It's really a concern that people who lead our foreign policy are not too strong at this point. It doesn't seem like there's anybody in the White House who's going to say "You shouldn't do it that way, that would be a mistake." Those people seem to have all left at this ten
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seconds.

So, why would we get a quick end to the trade war? We'd only get a quick end to the trade war if Trump was really under pressure, I think, this moment; or if he wants to really put an injection back into the economy so that the election period next year is stronger for the Republicans.

The question then is, when do you need to end the trade war, signal the end of the trade war so that there's enough ramp time for the election cycle to benefit from the economy strengthening?

And I would suggest to you it can't be that far out. So the most positive feeling I have is that, if you are focused on the political cycle you probably need to do something in 2019, and probably earlier in 2019 rather than later. That's as positive as I can get (laughter) on that score.

On the interest rate front, now I think we're sort of at a really interesting point. I think the Fed is under all kinds of pressure. We've obviously heard Trump

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make statements and at least go through sort of some internal process to ask, do I have the authority to remove Jerome Powell from his position?

I would say that the Fed is mostly independent, but that we'd be foolish to assume that any Fed we've ever had is immune to political pressure. They go talk to Congress on a regular basis. They're going to turn up to Congress for whatever period of time they go, every month, and face a lot of hostility from law makers and not be influenced by that? It's hard to imagine.

Their job is to keep inflation low and keep the economy humming along, a dual mandate. So we should expect that they're focused on that.

Going forward in 2019, what should we expect the Fed to do? Inflation CPI as measured, which will be released over the next few months, will tick lower, then you'll probably get your commentators on CNBC or whatever financial news network you see saying, why is inflation falling

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so low? Well, pretty easy. Oil prices fell a lot, gas prices fell a lot. It's sucking the headline numbers of CPI down and will do for the next few months, you should expect to see that.

It's already somewhat low, but it's going to get lower; not all the way below one percent probably, but it's going to be weak for a few months here.

That's going to encourage the pundits to talk about recession more than they were doing a few months ago.

When at the same time the economy is actually fine, we grew at 4 percent in the middle of the year. The Federal Reserve's job was to slow that, it was intending to slow that, that's why it was pushing up short term interest rates.

So what surprised us for most of 2018 was, the Fed was trying to slow the economy from its 4 percent pace. It always succeeds. There hasn't been a time in economic history where short term rates doesn't slow the economy.

Obviously it's going to slow the

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economy, but the stock market is seeing 4 percent growth, this is great. Earnings are good, things are great.

So it was clear to us there's a tension growing between the way the bond and stock markets solve things. Now we're sort of seeing this tension play out.

What happens going forward? It's hard for us to see interest rates rising significantly from here. So, what does that mean? It means interest rates could be 3 percent -- talking about the ten year Treasury rate now -- interest rates could be 3 percent, could 3 and a quarter. I don't think it could be 3 and a half to 4 percent.

Why do I think that? One, inflation's not going to be high enough to suggest they should be all the way up there. U.S. rates are already higher than anywhere else in the developed world by a long way, long way.

So there's no reason why U.S. interest rates should be higher, just based on those couple of statements. But also, if

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they were higher -- I think this is what you've got to understand about today's markets, which I want to be very careful in saying this is different, because I know that's a big failing statement, should stay away from that.

But I think what people miss about the bond market inflation and the way things work in today's world, is that the amount of debt that we have today versus three years ago, pre-credit crisis, is far higher.

The entire global economy is way more sensitive to interest rates today than it's ever been.

So what that means is, when you see a 25, 50, 75 basis point rise in interest rates in the U.S., certainly anywhere else in the world, it's pushing the borrow cost and suppressing growth.

So you keep bond yields in a range, and that's what we've seen now for the entire time we've been at Rocaton; so, 16 years. For 16 years we've sat in front of clients and said interest rates probably won't

rise much. And I think we've had lots of clients year by year by year come to meetings like this and assume that interest rates were going to rise in that particular year, and they haven't for the most part, they've generally fallen.

Where we are today, 264 I think this morning on the ten year, I don't see interest rates necessarily falling much from here. But I wouldn't see them north of 3 and a quarter, which I think is roughly where we got to on the ten year Treasury rate.

The economy's not going to be strong enough in 2019. It's going to continue to weaken with or without the trade war. And so, I think we're sort of stuck in that trade zone.

Again, back to the stock market. Really, I think it depends on what happens with the trade war. It can all be made to go away in very quick order. Maybe it will. I think when they went to Buenos Aires a few weeks ago and there was a tweet that came out as a result of that

meeting, that's probably how we're going to find out the trade war might be over, (laughter), through Twitter. But I think you also want to see sort of a similar statement from the Chinese to signal that it's over.

Without that, I think what we don't know going forward is how much slower the Chinese economy grows. Of the things that we should be worried about, Chinese growth is one that we should be really concerned about going forward from here; because that has a big impact on a whole range of different markets around the world, certainly emerging markets.

And then talk about all the things going on in Europe. I think Brexit, a hard Brexit as you heard about in the press, is a really low probability. The press doesn't say so, the politicians don't say so. You just got to imagine that British politicians on both sides of the equation have weak hands, and so they bluff all day long. The only thing they've got to bluff with is hard Brexit.

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There really isn't anything else. So it's become a little bit of a side show.

They'll figure out a deal, put something in the future. As I'm still a British citizen, dual citizenship, I hope that they have a second referendum; because why would you want your child or grandchild to go from having a passport that's eligible in 28 countries to a passport that's just eligible in just one? And that's without talking about anything else.

CHAIRPERSON ADLER: We should make all of our children dual citizens.

MR. MORGAN: I know we made bad political decisions here in the last few years as well. So be careful as I say, the worst political decision in generations. It deserves to be part of the conversation.

But there's a risk there. There's a risk of Italian politics being being messy and impacting the periphery there. I think they're relative sideshows. I don't think they're going to drive markets. I

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think it's really the U.S. versus China that drives markets, and it's the Fed versus the economy that drives markets as well.

The positive aspect of market prices falling at the end of the year has made some asset classes quite interesting in terms of investing going forward. So, for many, many years -- this time last year we would have said there's no markets that are cheap. We said there's a lack of opportunity anywhere in the world.

Today we have credit markets that are repriced. They're not all the screaming buys. They're all much more interesting than they were a year ago, and suggest more attractive returns going forward from here.

MS. PELLISH: When you say credit markets --

MR. MORGAN: Anything below investment grade, anything with credit risk sold off either all year long or progressively as the year went to a close, and aggressively in December.

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So something like high yield. Bank loans had a really bad December alongside the equity markets. So the bank loan market, for example, has an average price of 93 today. It doesn't mean that it's a screaming buy, it just means you've got a floating rate coupon which is attractive in today's world; Libor results 3 percent.

You've got an attractive coupon of 5 and a half or 6 percent, and a discount to 7 percent off of a market where we expect volatility going forward and we expect credit risk, but we also expect that we will get paid reasonably well for taking that risk.

High yield also sold off. High yield has more challenges to it, but it is cheaper today than it was a year ago; other markets in the credit world which are more interesting, something like your OFI program, can take advantage of.

We've also seen, I would say, not only prices fall towards the end of the year, but liquidity fall at the end of the year. And something like the OFI program is

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designed to take advantage of liquidity to credit markets when we enter a period like late December, when the -- are hung with a variety of different types of asset situations they don't want to keep on their balance sheet, they're willing to part ways with that patient capital liquidity providers, and like your OFI program, at a discount, basically.

So we would hope when the dust settles and we start getting reports of what happened in December, that the OFI program has been a big beneficiary of the fallen liquidity in December.

I will stop there.

CHAIRPERSON ADLER: Questions?

MR. KAZANSKY: I've got a question about the Fed and the interest rates. So, prior to like the global financial crisis, the ten year Treasury rate was much higher, 3 or 4.

MR. MORGAN: Yes.

MR. KAZANSKY: So I understand that when the crisis hit that, in order to put more credit out there to folks, we brought

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the interest rates down.

So, do you ever see it getting back up into the 3s and 4s? Would it make sense to bring it back to where it was? Or are we in a different universe now where, you know, high 3s or even low 4s are just not possible?

MR. MORGAN: I think it's a really good question, and it's one that we struggle with all the time. Because if you ignore what's actually happened in the last fifteen years, for example, actually go back before the credit crisis. Just think about what components of the economy have been important in figuring out what the right level of interest rates should be. The only conclusion you can come to are that rates should be quite a bit higher than they are today.

Under normal situations, the ten year Treasury is actually tracking nominal GDP very closely. So nominal GDP is whatever GDP is, around 3 percent today, plus inflation, call it 2 for argument's sake; it suggests a 5 percent ten year Treasury

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rate.

And through time, that's been a pretty good guesstimate of where the ten year Treasury should be. Today it was 264, this morning.

So I know you are all teachers and sit in front of a classroom and say, "I told you this five times, why didn't you understand? Do I have to tell you a sixth time?" We have sort of the same feeling when we talk about interest rate outlooks with clients; because for --

MS. PELLISH: My whole career.

MR. MORGAN: -- you whole career, for a long time now, every year we have meetings like this or any meeting with a client, and the expectation is that interest rates are going higher. Every meeting, almost without fail.

And I think one of the things we've tried to do in meetings like this is say, we understand that rates look like they should be higher. But for all of this period of time they've confounded what we would have expected. So you should learn

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something from that, that there's something else going on that we can't quite explain. We can rationalize, but we can't quite explain.

So the rationalization, as I suggest, is massive amounts of global debt, way more than there was pre-credit crisis. The credit crisis, as explained, there was too much debt. Today we've got a lot more. So how is it the economy is functioning nice and fine, yet we've got way more debt? What does that all mean?

I don't know if it's an explanation, it's a rationalization, that if rates actually rose to 5 percent as suggested by the nominal GDP that I just talked about, it would strangle the global economy to a standstill.

Who could pay much higher interest costs? Businesses couldn't. They've been enjoying borrowing at next to nothing for a long period of time. Many businesses that could borrow at much higher interest rates still function fine, like your Apples of the world. But most of the

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below investment grade couldn't withstand a percent or two higher in interest rates.

So, I agree, it's always looked like rates should be higher, but it hasn't happened. So there's some other explanation.

The other thing to point out is, we still have quantitative easing in parts of the world. Japanese liquidity into markets, European Union, CCB is still playing with liquidity into markets.

There's still trillions of debt that has a negative yield on that. Imagine that.

Years ago Robin and I had a smart guy who worked for us and he and I sat around and said, "Could interest rates be negative?" It was just a thought experiment. We didn't think -- we came up with the answer that they could. We didn't it would actually happen.

And then, not only did it happen, but trillions of global debt now have a negative interest rate to them. So think about that. If you're in Germany and

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you're an insurance company that has to make a spread from fixed income markets to build a function as an ongoing insurance company, you have to find somewhere in the world that you can earn that spread.

You can invest in your own securities, in Germany -- export capital. Many regions of the world they have to export capital. To them, our interest rates don't look low, they look high. German ten year is I think around zero, maybe slightly negative; ours is 264. That's a big spread.

You pay for that through hedging of currencies today. But you still are able to pick up significant yield from being able to do that. The Japanese, big exporters of capital, and have been for more than a generation, because very little returns from their fixed income assets.

So all of that capital from those -- needs to find somewhere to get invested. And I don't see that changing. This still is a safe harbor, if you like, in global

financial markets, for being able to invest a lot of money.

If you ever think about the size of the Chinese reserves, as one additional example. If you have a hundred billion dollars to invest in a quarter, because that's what you accumulated in reserves, where else are you going to go? There isn't anywhere else to go.

There's nowhere else to go, other than sticking that money under the proverbial mattress. If you want to invest in something that will pay you a return and give your money back in a few months' time, you have to come to the U.S. for that kind of size.

So I think that we're the beneficiary of global flows. I think we're the beneficiary of quantitative easing. I think we're the beneficiary of this massive amount of global debt that we've got.

So we should at some point get back to higher rates. I don't see the path today.

MR. DORSA: I have a question. I

read an article this morning -- glanced at an article -- that mortgage applications were down approximately 10 percent in 2018. We have debt-ridden recent college graduates, folks that graduated in the last ten years and are saddled with debt from educational loans.

Does that come to a head if we're entering a period where people can't sell a house, or if there are less applications I presume there's less turnover of housing. Does this repeat into what happened in 2008?

So you have the added component of the educational debt saddled on top of that; in the periphery in 2008, really more about mortgages, other things.

Do we see that come to a head this year?

MR. MORGAN: I think that's two questions, really. The last page of the presentation we handed out talks about the housing market. The housing market -- I think -- where I get most excited is, there is a common perception in the

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marketplace fueled by the press about a particular theme, which totally misses the actual fundamentals.

And then -- to bring together what we think we know with what's out there in the press and say, "No, actually things are different, you should have a different expectation of this." And I think the housing market is a great example.

So I agree that the press has been setting this up for a long period of time, house prices have been rising for years now, therefore we must have a bust. Because in our recent memory we had the biggest real estate bust that the residential market ever had in real terms.

So it's sort of front and center as the last worry, if you like, as housing is concerned.

But think about that statement again. This isn't my statement. This was from Nobel Prize winner Bob Schiller, who said the last housing bust was the biggest housing bust in real terms that we've ever had in economic history.

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I take from that, it doesn't happen that often (laughter). It should be anomalous. It takes generations to set up for something that bad.

So it shouldn't happen again. That doesn't mean it won't, but it shouldn't happen again. So why should we feel like it shouldn't happen again?

First of all, interest rates are higher, were higher, a few months ago, hit mortgage rates. That's going to abate here. So it's going to be more affordable, you will actually see in the next month or two, start to see articles that talk about how mortgage rates are higher -- we should have a great spring for house buying for a period of time.

It's totally reasonable to expect that with rates rising that we slow mortgages as we get into 2018, that we slow mortgage activity.

The part about student debt has changed the complexion of what homes young people live in. They don't buy a home. They don't have the down payment anymore. They

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have the monthly check. They don't have the down payment anymore because of all that debt. So they rent.

So, where you live, I'm sure there's a building going up close to you that is going to be for rental everywhere. I live in Westchester, just about every postage stamp space of free land is having a new apartment building built on it. So, a changing complexion of what homes individuals live in.

Back to home prices. We see home prices -- and this isn't a quarter by quarter statement, this is for many years to come -- a slow gradual stability to a general rising of prices over many, many years from here.

Why do we say that? One of the impacts of the credit crisis was the decimated home building. It destroyed all the home builders. Their capital structure was gone, they lost a lot of money on land, and so forth.

We have built far fewer houses in the last decade than we built -- even if you

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take the period of time right before the credit crisis, go back another ten years and take the ten year average of the number of homes that we built from, say, 1990 to 2000, we're still building far fewer houses today than we did during that period of time. And our population is 30 million larger than it was at that point in time.

So not we're not building -- this is not just homes for sale, this is also for rental homes -- we're not building anything like the number of homes we built historically.

So, as the population grows, as employment continues to inch up, we should see stability. We'll see sort of quarter by quarter, mortgage rates are up versus down, easy to get a mortgage, hard to get a mortgage. You'll see some changes in the pace of activity.

You're going to see still some headlines in the next few months about home builders fretting about inventory and where they are. But we should see general

stability and improvements over years to come from here, in our view; with the one exception, if we do have a significant recession, things should change. But without that I think we should have stability.

CHAIRPERSON ADLER: I have a question about China. Historically we have not invested in Chinese equity. And we are considering potentially a policy change. It sounds like you're saying that it's not a bad time to go into China, because pricing has dropped and Chinese equity is priced more attractively now.

On the other hand, absent a resolution to the trade war, prospects for the Chinese economy are questionable.

So what would your advice to the Board be about going to China at this point?

MR. MORGAN: I think you should be looking to invest in China, certainly. I think there's lots of pitfalls, lots of challenges; but China is becoming a larger portion of the global equity market.

So I think one of the internal

conversations we have at Rocaton today is, it's a larger portion of an emerging market equity portfolio today, and will only grow significantly. So we're asking ourselves a question -- we haven't come to an answer yet -- but we can see at some point in the next few years where we have dedicated China equity allocations that we take outside -- maybe not outside, but add on to an emerging market equity allocation a dedicated China allocation; because you can't get enough of China from just having an emerging markets portfolio.

If you look across the globe and what has really sort of moved the U.S. market in the last decade through the technological sphere, there's a couple of places elsewhere in the world that have strong components of technology and innovation driving their equity markets, places like Israel, for example, or India, or China.

So most of the rest of the world has old industry exposure when you invest in the equity market. There's only a

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relatively narrow set of places globally where you can invest and have access to innovation. So having access to innovation is important going forward.

There is a further reason I think that you should consider Chinese equity exposure. It's a large economy, its equity market is only going to grow in market cap; and I think it's going to have lots of trials and tribulations, just in the way our own market economic history has in the last couple of hundred years. It's not going to be a straight line, it's going to go up and down and have a lot of volatility. And access is not that easy, and there are not that many products to be able to get a direct access to it today.

But I think it absolutely should be part of what you consider long term opportunities.

CHAIRPERSON ADLER: Thanks.

Other questions?

MR. BROWN: Do you have any thoughts about what's happening in Brazil with a Trumpian type person there? Any thoughts

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about that, how it might affect --

MR. MORGAN: I'm a little colored because I watched a Michael Moore documentary the other night, so more negative than normally on this type of thing.

I thought it was interesting, watching the PBS evening news last night, the section on the swearing in of -- Bolsonaro had various foreign leaders share the day with him, and it was a who's who of who you wouldn't want to hang out with (laughter). Put it that way.

I think the rise of populism generally is disturbing across the globe. What I think is a little more complicated about Brazil is, from a political standpoint sort of view and the way he handles himself, there's a lot of things to be concerned about with Bolsonaro.

What sort of mitigates that a little bit is how seemingly excited -- not an immaterial portion of the Brazilian population is for somebody like that. And it's easy to make parallels with how it

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feels with, like the same group that likes Trump likes Bolsonaro in Brazil. But I think it cuts way across that.

I think Brazilian politics has been an ugly place for a long period of time. The population feels let down by -- and looking for somebody who can deliver better times and create some change.

It's alarming that they have to choose somebody like that, to try to deliver that.

But Brazilian equity markets, if we had a charter from the page of all equity market performance from 2018, it's a sea of red with one green light, and that's Brazil. That was Brazil based on their reaction to Bolsonaro. Also the fact that they've had a recession market and crashes for sort of a long period of time looking backwards -- large part because of Bolsonaro as well.

So I have mixed feelings on that, as anything else.

To add, again, Michael Moore doesn't feel that positive about lots of things.

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There's a couple of really big humanitarian crises going on in the world. One is Yemen. Another that doesn't get anywhere near as much play time is Venezuela. So Bolsonaro, with all the negative things about him, if he was able actually to get Latin America and maybe with U.S. help to do something positive for the people of Venezuela, that would be one thing to look forward to that might be a positive in Latin America.

MS. STANG: Question on the trade war with China. You said it's never been a level playing field, and I agree. Has the trend been positive towards a more level playing field, or has the trend been negative?

MR. MORGAN: It's been moving in the right direction -- if you go back 30 or 40 years, there was no trade with China. So we're going from, obviously there's no --

MS. STANG: The trend's been positive.

(Talking over each other.)

MR. MORGAN: We have no tariffs

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because we wanted them to sell us cheap things. They said, "We want to sell you cheap things, we won't let your stuff in or else we won't ever be able to get started."

So gradually they're moving in the right direction, but we came in, we said no, no --

MS. STANG: That's what I thought.

MR. MORGAN: -- so it's been moving in the right direction. This is what the false narrative is, because it's not a level playing field, they're just cheating on us.

They're not. We agreed that we wanted to trade with them on these terms. There's no trade agreement in place today that wasn't mutually agreed upon between both parties; right? So these are the trade deals we negotiated, that we were happy with, and that over time we managed to improve.

Yet the narrative is that we're being --

MS. STANG: Yes.

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MR. MORGAN: -- taken advantage of in many, many different ways, which is just not the case.

MS. STANG: We established that, thank you.

CHAIRPERSON ADLER: Anything else for David?

MS. PELLISH: So, I find these kind of comments really helpful in putting the myriad of facts and data we see all the time, a framework for thinking about the world and global capital markets. And I think it's also very relevant for how we think about the asset allocation, particularly of the pension fund, the variable funds, don't use as many asset classes.

And so, one of the questions -- and I'm sorry it was scheduled at a time when Mike couldn't join us, I know he has the same issues. I think one of the main questions that this begs is, okay, what should the duration of the bond portfolio in the pension fund be?

And this, we're above market but below

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target. And that's been a very deliberate policy. And so I think we should be talking about that. We have been talking about it. Certainly it's not been an issue. We, nor the Bureau of Asset Management have ignored it in any way, shape or form. But it should be something that we should continue talking about. Maybe we can consider where we are on the implementation pace for long bonds.

And I think David brought up points about the credit markets, taking a fresh look at OFI, which I know we are doing, we've had an opportunity.

In terms of our investments in global equity markets, I'm not sure, unless we rethink the weighting to those markets, I'm not sure there's much to do. We basically have largely a beta exposure to global capital markets with global equity markets, with an emphasize on the U.S.

And I don't think that anything David said leads us to reconsider that at this point. So, I think it's really a focus on, What should we be doing in the fixed

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income market, if anything different?

CHAIRPERSON ADLER: Including the risk fixed income, like the high yields.

MS. PELLISH: Yes.

CHAIRPERSON ADLER: Kind of interesting. There was this uptick at the end of the fourth quarter in the spreads. And is that a trend that we expect to continue, or do we think it's a blip? It sounds like you think there's some interesting things going on in high yield, but there's other credit markets that are, I think in your nomenclature, more interesting, like in the OFI space.

MR. MORGAN: In terms of the question, Is it going to continue or not? Exactly three years ago we had a period like this. Early 2016 when credit sort of froze up first week of December, it looked like Deutsche Bank was going to fail -- most junior debt securities. In a few weeks' time that turned out not to be the case, and we had a big rally from then on in credit. And we forgot about the volatility that we had.

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So this feels like it should be more like that; partly because the economy is still strong, even though interest rates are up, credit spreads are up, interest costs for highly leveraged companies are higher.

It doesn't feel like the economy's going to go off a cliff. It feels like it should slow. It doesn't feel like we should have a major recession, a major credit recession, as a result of that.

So the vulnerability of high yield generally, though, is that most sensitive piece to sort of the capital structures of the specific companies. It's more junior in their capital structure -- to something like bank loans.

So you worry a little about, if the economic trajectory I just outlined, if things turn out worse then it will be worse for something like high yield. In something like bank loans, with senior capital structure, same floating rate in those companies. The Libor has been only rising, the floating rate, reference rate

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has only been rising throughout all of 2018. So that's sort of another tailwind at the back of bank loans.

Bank loans can combine into low 90s like you have today -- in markets, offers some pretty decent value from our perspective.

Some other parts of the credit markets, which is emerging markets, fixed income or capital securities issued by banks. You can buy -- I don't know which bank, which is your favorite bank of the Teacher Trustees rather than the least favorite.

The major banks in the U.S., if you look at their junior level of capital securities, today are paying 6 1/2 to 7 percent in preferred markets; 6 1/2 to 7 percent for JPMorgan. I'm not sure if they're your favorite or least favorite, but that to me is a level of compensation for a fixed income investor, even that far down the capital structure, shouldn't actually exist in today's world.

And it's a rock solid bank outside of the U.S.; HSBC, 8 to 9 percent. HSBC is a

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very conservative run, stable bank.

So there's little pockets of opportunity that have grown over the last few months here that we find quite interesting in the credit space.

MS. PELLISH: But it would be hard to take advantage in our asset allocation, because they do tend to be these niches. So it would have to be through a manager's mandate to have flexibility, which is the OFI.

Anything else for David?

(No response.)

Thank you.

We can move on.

CHAIRPERSON ADLER: Yes, please.

MS. PELLISH: We want to take a very few minutes to talk about the investment policy statement. And I say a very few minutes, because to key members of the working group, Susannah and Valerie, are not able to join us today.

The decision to include this in today's agenda is really to call the Board's attention to the work that's been done

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thus far in restructuring the investment policy statement for the qualified pension plan.

There is another investment policy statement for the variable funds. That also will have to be updated.

This is, as you know, work that's been going on for many months. There's been a working group that spent a lot of time drafting and redrafting this document. And what you have today in front of you is not the final document, but it is very close to final; and we thought sufficiently close to final so that, between today's meeting and February's meeting, we would encourage you to take a look at the language and the structure of this document.

It's been significantly changed from the prior version, which you can see was adopted about 12 years ago, final form. We updated it to reflect all the work that's been done at the board level in terms of defining investment beliefs, in terms of defining asset allocation, and

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other policies.

We tried to make it more user friendly, so it's been streamlined. We added the executive summary. We added the investment beliefs that the Board adopted a month or two ago. And we extracted the policies to be exhibits, so that the exhibits are intended to be more dynamic elements of the IPS. The body of the IPS is intended really to describe the policies and procedures that are unlikely to change in the near term. For example, the asset allocation policy might change, other policies might change; those have been included as exhibits.

So, our hope is that we can have a

session in the February meeting focused on this document in which we get some feedback from the Board on the substance of the document and the overall structure.

MR. DORSA: If I may, I want to say -- she's not here, but thank you to Diane -- from the Comptroller's Office, who had been helping --

MS. PELLISH: Enormously.

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MR. DORSA: -- move all this around into a workable document. And as you can imagine, I think Robin alluded to, a lot of people had a hand in crafting this. I think people really looked at sections of this to try to make it as user friendly as possible. It's a struggle. I was here when they did this, and so you were you, in 2006.

And it's always been a very cumbersome document. I think this document, if I do so say myself, is much more user friendly, not only for Trustees and BAM staff, but I think the general public that wonders what it is we do and how we go about doing things.

I just wanted to say -- the other thing, I Diane would want me to say this is -- at the very end we'll go back through the table of contents and make sure everything matches up, things like that.

And gone through -- even looking at different fonts to make more it's more appealing to people as they go through it,

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it won't hurt your eyes. Any comments and things like that we're happy to take in e-mail form, if you have a particular font you would like (laughter).

And I want to thank Robin for really keeping us on track and adding a lot of her unique ability to pull out things that -- she's around for through the years, so she knows will come up. On a personal note I appreciate that. Thank you.

MS. PELLISH: My pleasure.

To be discussed further. We will continue the working group. We'll continue to spend some time on this, making sure -- I think the issue now is making sure everything flows in a way that makes sense to the reader. But it is very close to its final form, I think it's appropriate to get feedback.

CHAIRPERSON ADLER: Any questions for

Robin or other members of the working group at this time?
Thank you, Robin.
MS. PELLISH: That concludes the public session.
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CHAIRPERSON ADLER: If there's no other business on the public agenda, I would entertain a motion to exit public session and enter executive session.
MS. PENNY: I move, pursuant to Public Officers Law Section 105 to go into executive session for discussions on specific investment matters.
CHAIRPERSON ADLER: Is there a second?
MR. KAZANSKY: Second.
CHAIRPERSON ADLER: Thank you.
Any discussion?
(No response.)
All in favor of the motion to exit public session and enter executive session please say "Aye."
(A chorus of "Ayes.")
All opposed say "Nay."
Any abstentions?
(No response.)
Meetings carries.
(Recess taken.)
(Whereupon, the Board entered executive session.)
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CHAIRPERSON ADLER: Is there a motion to exit executive session and go back into public session?
MR. DORSA: So moved.
CHAIRPERSON ADLER: Thank you.
Is there a second?
MS. PENNY: Second.
CHAIRPERSON ADLER: Any discussion?
(No response.)
All in favor of the motion to exit executive session and go back into public session please say "Aye."
(A chorus of "Ayes.")
All opposed say "Nay."
Any abstentions?
(No response.)
It's unanimous.
Liz, let us know when we're back.
(Whereupon, the Board returned to public session.)
CHAIRPERSON ADLER: We're back in public session.
Susan, would you please report out of executive session?

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MS. STANG: In executive session a policy matter exception was discussed. Consensus was reached, which will be announced at the appropriate time.

CHAIRPERSON ADLER: Thank you very much.

I believe that concludes our business for today.

Is there a motion to adjourn?

MR. BROWN: So moved.

MR. KAZANSKY: Second.

CHAIRPERSON ADLER: Any discussion?

(No response.)

All in favor of the motion to adjourn please say "Aye."

(A chorus of "Ayes.")

It's unanimous. The meeting is adjourned.

(Time noted: 12:19 p.m.)

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

I, Jeffrey Shapiro, a Shorthand Reporter and Notary Public, within and for the State of New York, do hereby certify that I reported the proceedings in the within-entitled matter, on Thursday, January 3, 2019, at the offices of the NEW YORK CITY TEACHERS RETIREMENT SYSTEM, 55 Water Street, New York, New York, and that this is an accurate transcription of these proceedings.

IN WITNESS WHEREOF, I have hereunto set my hand this 7th day of January, 2019.

JEFFREY SHAPIRO