U.S. COMMODITY FUTURES TRADING COMMISSION (CFTC)

MARKET RISK ADVISORY COMMITTEE (MRAC)

Wednesday, June 12, 2019

9:32 a.m. – 2:43 p.m.

Location:

Commodity Futures Trading Commission - CFTC

Three Lafayette Centre

1155 21st Street, N.W.

Washington, D.C. 20581

PARTICIPANTS

CFTC COMMISSIONERS AND STAFF:

ROSTIN BEHNAM, Commissioner and MRAC Sponsor

J. CHRISTOPHER GIANCARLO, Chairman

DAN M. BERKOVITZ, Commissioner

DAWN DEBERRY STUMP, Commissioner

BRIAN D. QUINTENZ, Commissioner

ALICIA LEWIS, Designated Federal Officer (DFO), Special Counsel, Division of Clearing and Risk

MRAC MEMBERS:

NADIA ZAKIR, MRAC Chair, Pacific Investment Management Company, LLC (PIMCO), Executive Vice President and Deputy General Counsel

B. SALMAN BANAEI, Executive Director, Global Head of Clearance and Settlement, IHS Markit

STEPHEN BERGER, Managing Director and Global Head of Government and Regulatory Policy, Citadel

LEE BETSILL, Managing Director and Chief Risk Officer, CME Group

ISAAC CHANG, Managing Director and Co-Head of Trading, AQR Capital Management, LLC

PARTICIPANTS (CONTINUED)

MRAC MEMBERS:

BISWARUP CHATTERJEE, Global Head of Electronic Trading and New Business Development, Credit Markets, Citigroup

MATTHIAS GRAULICH, Chief Client Officer, Eurex Clearing AG

FRANK HAYDEN, Vice President, Trading Compliance, Calpine Corporation

LINDSAY HOPKINS, Clearing House Counsel, Minneapolis Grain Exchange

ANNETTE HUNTER, Senior Vice President and Director of Accounting Operations, Federal Home and Loan Bank of Atlanta

VINCENT B. JOHNSON, Head of Regulatory and Policy Affairs, BP Products North America

DEMETRI KAROUSOS, Chief Risk Officer, Nodal Clear, LLC, and Managing Director, Market Administration and Surveillance, Nodal Exchange, LLC

PARTICIPANTS (CONTINUED)

MRAC MEMBERS:

DEREK KLEINBAUER, Global Head, Rates and Equity e-Trading, Bloomberg LP and Vice President, Bloomberg SEF, LLC

LAURA KLIMPEL, Managing Director, Clearing Agency Services at the Depository Trust and Clearing Corporation (DTCC) (by phone)

SEBASTIAN KOELING, Principal Traders Group, FIA

KEVIN MCCLEAR, Chief Risk Officer, Intercontinental Exchange, Inc.

DENNIS MCLAUGHLIN, Group Chief Risk Officer, LCH Group

CRAIG MESSINGER, Senior Advisor, Virtu Financial

DALE MICHAELS, Executive Vice President, Financial Risk Management, The Options Clearing Corporation

JOHN MURPHY, Managing Director and Global Head of the Futures Division, Mizuho Americas, Commodity Markets Council (by phone)

CHRISTINA NORLAND, Managing Director, Chatham Financial

PARTICIPANTS (CONTINUED)

MRAC MEMBERS:

SAM PRIYADARSHI, Principal, Head of Portfolio Risk and Derivatives, Vanguard

JONATHAN RAIFF, Senior Managing Director, Nomura Holdings, Inc.

MARNIE ROSENBERG, Managing Director and Global Head of Clearinghouse Risk and Strategy, JP Morgan

JAMES SHANAHAN, Vice President, Financial Regulatory Compliance, CoBank ACB

LISA SHEMIE, Associate General Counsel, Cboe's Legal Division, Chief Legal Officer, FX and Cboe SEF

BETTY SIMKINS, Head of Finance Department, Professor and Williams Companies Chair in Business, Oklahoma State University, Spears School of Business (Special Government Employee)

TYSON SLOCUM, Director, Energy Program, Public Citizen

MARCUS STANLEY, Policy Director, Americans for Financial Reform

PARTICIPANTS (CONTINUED)

MRAC MEMBERS:

ROBERT STEIGERWALD, Senior Policy Advisor, Financial Markets, Federal Reserve Bank of Chicago

JANINE TRAMONTANA, Senior Counsel and Vice President, Federal Reserve Bank of New York

KRISTEN WALTERS, Global Chief Operating Officer of Risk and Quantitative Analysis Group, BlackRock

PRESENTERS:

SARAH BREEDEN, Executive Director of International Banks Division, Prudential Regulation Authority, Bank of England (by phone)

STACY COLEMAN, Managing Director, Promontory Financial Group: Secretariat, Financial Stability Board's Taskforce on Climate-Related Financial Disclosures

DAVE JONES, Director, Climate Risk Initiative, Center for Law, Energy, and the Environment at the University of Berkeley School of Law; Former California Insurance Commissioner (Panel 1)

PARTICIPANTS (CONTINUED)

PRESENTERS:

NANCY MEYER, Director of Corporate Engagement, Center for Climate and Energy Solutions (Panel 2)

KRISTEN WALTERS, MRAC Member, Global Chief Operating Officer of Risk and Quantitative Analysis Group, BlackRock

MATTHIAS GRAULICH, MRAC Member, Member of the Executive Board and Chief Strategy Officer, Eurex Clearing AG

DR. STEFANO GIGLIO, Professor of Finance, Yale School of Management

THOMAS WIPF, MRAC Interest Rate Benchmark Reform Subcommittee Chairman, Vice Chairman, Institutional Securities, Morgan Stanley

BISWARUP CHATTERJEE, MRAC Interest Rate Benchmark Reform Subcommittee, Initial Margin Working Group Leader, Global Head of Electronic Trading and New Business Development, Credit Markets, Citigroup

PARTICIPANTS (CONTINUED)

PRESENTERS:

MARNIE ROSENBERG, MRAC Interest Rate Benchmark Subcommittee, Clearing Working Group Leader, Managing Director and Global Head of Clearinghouse Risk and Strategy, JP Morgan

STEVEN MAIJOOR, European Securities and Markets Authority (ESMA), Chairman

AGENDA

AGENDA (Cont'd)

P R O C E E D I N G S

MS. LEWIS: Good morning, everyone. My name is Alicia Lewis, and I am the designated Federal officer for the Market Risk Advisory Committee. And it is my pleasure to call this meeting to order this morning.

Before we begin this morning's discussion, I would like to turn to the members of the Commission for opening remarks. We will start with Commissioner Rostin Behnam, MRAC's sponsor, followed by Chairman Giancarlo, then Commissioner Quintenz, followed by Commissioner Stump. And when Commissioner Berkovitz arrives, we will give him an opportunity to make brief remarks. Now we will have remarks from Commissioner Behnam.

COMMISSIONER BEHNAM: Good morning. Thanks, Alicia.

First off, welcome to the committee. Great to see everyone. It has been a while since we last met in December of 2018. So I am excited to see all of you. And I think we have a good day ahead of us. Welcome to the folks in the audience and folks who are watching on webcast.

We have a number of important issues to discuss I think throughout the day, starting off with the first panel. And hopefully we are going to be welcoming some new individuals who might not otherwise know too much about the CFTC. Climate issues, as we will discuss later on, are very important to me. So we would welcome the opportunity to share with you what we do at the agency.

We are sort of small, relatively, by size compared to our sister agencies in town, but we do very important work. We have great staff across the board. And we are very proud of our responsibilities, and we take it very seriously.

Quickly, I want to welcome and I will say more to Nadia Zakir. She is going to be the chairwoman of MRAC. She joined the committee recently and appointed as chair. I am very pleased to have her. I have known her for a number of years. And she is a great asset and a value-add to the committee.

I quickly acknowledge the chairman, Commissioners Quintenz, Stump, and Berkovitz for their participation and their willingness to be here today. Finally, as always, thanks to Alicia Lewis, the DFO. She is an integral part of all of this, as you all know very well; and, of course, Margie Yates and her staff, who make this all come together.

Today's agenda focuses heavily on climate-related financial market risk. Worldwide economic costs from natural disasters have exceeded the 30-year average of $140 billion in 7 of the last 10 years. In 2018, the total cost was $160 billion. Our commodity markets and the financial markets that support them will suffer if we do not take action to mitigate the risk of contagion. As most of the world's markets and market regulators are taking steps towards assessing and mitigating the current and potential threats of climate change, we in the U.S. must also demand action from all segments of the public and private sectors, including this agency.

Among the many lessons learned from the 2008 financial crisis, the interconnectedness of our global financial markets is one, if not the single, most important. All risk analysis, including risk derived from climate change, must include a holistic examination of the systemic relationships throughout all of our financial markets.

The impacts of climate change affect every aspect of the American economy, from production agriculture to commercial manufacturing, and the financing of every step in between. With that said, any solutions seeking to address and mitigate climate risk must be equally focused on ensuring the safety and continued prosperity of our urban cores and our rural communities. Failing to address financial market risks associated with climate change will impede economic growth and most likely hurt rural communities the hardest.

Recent extreme weather events across the Nation's Midwest, including record rainfall and reported tornadoes, have further elevated the impacts of climate change in the lives of everyday Americans. Flooding and soil saturation resulting from torrential rains has impacted planting of major crops. On June 2nd, the Department of Agriculture reported that only 67 percent of U.S. corn was planted. The average percentage on this date from 2014 to 2018 was 96 percent. For soybeans, the number for 2019 was only 39 percent. And the average on this date from 2014 to 2018 was 86 percent.

As recently as last week, heightened fire threats in northern California at the very outset of wildfire season brought fresh reminders of the devastation sewn across the western United States last year. With all of these weather events paralyzing large swaths of our country, in fear of both making decisions amidst a complex web of unknowns and making decisions that could save lives and livelihoods, I believe it is time to examine the relationships of these terrible and, sadly, more frequent events to financial market risk and, more generally, market stability.

The human element of these tragedies is real and heart-wrenching, but the economic element is also just as real. Risk exposures to insurance providers, asset managers, pension funds, commercial and retail banks, all users of derivatives markets, to price and shift risk cannot be understated. But, ultimately, the final risk often weighs on farmers, investors, customers, consumers, and homeowners. And we collectively must act now to address the persistent risks posed by climate change.

Looking to our international counterparts who have already begun taking important steps to address the impacts of climate change on financial systems is a start. The Network for Greening the Financial System is a group of more than 40 central banks and supervisors from around the globe, including the European Central Bank, the World Bank, and the People's Bank of China, working to understand and manage the financial risks of climate change. Many of these central banks oversee the very same registrants the CFTC does as well.

The Financial Stability Board's Task Force on Climate-Related Financial Disclosure is also doing very important work in this area. The TCFD is working to provide better access to data for market participants, with the goal of enhancing how climate-related risks are assessed, priced, disclosed, and managed. Assessing climate-related market risk must be a priority, and it must start now.

As sponsor of the MRAC, my hope is that this meeting will serve as an important first step towards a comprehensive review of what we can do now to prepare for and mitigate the financial risks from climate change. My intention is to first take the necessary internal steps to form an MRAC subcommittee focused exclusively on examining climate-related financial market risk. The immediate next step is to identify experts from all relevant disciplines willing to contribute to the exercise. Each step will be deliberate, measured, and determinative of what direction will be subsequently pursued.

Today, a range of experts from public and private sector organizations in the global financial ecosystem will share their experience and perspectives on climate-related market risk. This committee and the Commission will benefit from their direct experience in considering, analyzing, and developing sensible, targeted approaches to beginning to address the challenges ahead for the CFTC and the derivatives markets. The cumulative experience and expertise of today's panelists can help identify market risks, shape targeted questions, and recommend data-driven policy solutions to mitigate these risks.

Following the morning panels, the MRAC will receive a status report from the Interest Rate Benchmark Reform Subcommittee. Tom Wipf, Chairman of this important subcommittee and also the newly appointed chairman of the Alternative Reference Rate Committee of the Board of Governors of the Federal Reserve System will lead the discussion by providing updates on the subcommittee's three work streams: the Initial Margin Working Group, led by Bis Chatterjee; the Clearing Working Group, led by Marnie Rosenberg; and the Disclosure Working Group, led by Ann Battle.

I am proud of the accomplishments and progress of the MRAC and the subcommittee's work and contributions to the larger efforts by our domestic and international counterparts as we all collectively work to make transition away from LIBOR successful.

Before we hear from the Interest Rate Benchmark Reform Subcommittee, it is my intention to establish additional subcommittees later this morning to address other important issues related to market risk.

Finally, after lunch, I am pleased to welcome Steven Maijoor, the chair of the European Securities and Markets Authority. Mr. Maijoor will be discussing European Market Infrastructure, or EMIR 2.2; central counterparty stress testing; and Brexit. I have also asked Chair Maijoor to share his views regarding climate risks and what ESMA has done to date.

The CFTC, along with its international counterparts, is continually confronting the challenge of building and maintaining the appropriate regulatory framework for clearing in and among a population of clearinghouses with unique risk profiles that will withstand routine shocks and demonstrate resiliency in a crisis. Additionally, the continuing uncertainty surrounding the United Kingdom's impending exit from the European Union creates market risks that have been much discussed and still need to be discussed. Should a hard Brexit materialize, there will be a lack of clarity surrounding what each phase of a derivatives trade, from connecting a salesperson with a client to executing the trade, to processing the trade through a CCP, will look like after Brexit. Where each of those actions take place will be another question, and how market participants geographically shift those functions will carry substantial risks.

Whatever the disposition between the EU and the UK, the reaction to those risks should not be a deviation from the current paradigm of regulatory deference. As Chairman Giancarlo has said repeatedly, having a healthy respect for regulations that ensure market transparency and stability and which also respect local commercial custom have become a mainstay of our global regulatory infrastructure. Deference to comparably robust regulatory regimes prevents overly burdensome and conflicting regulatory requirements from reducing market efficiencies, while ensuring that global markets are successfully protected.

While we continue to look for ways to build consensus across borders, the CFTC will take necessary actions to preserve this regulatory paradigm. I look forward to working with both my fellow commissioners and foreign counterparts to make sure that derivatives markets are prepared to deal with the complex implications of Brexit. And as a part of this process, I look forward to hearing from Mr. Maijoor and finding ways to maintain and promote deference where appropriate.

A few things before I turn over to Chairman Giancarlo. I mentioned in my preliminary remarks about subcommittees. We are going to form a subcommittee on climate risk, not unlike we did with LIBOR. So we will go through a Federal Register process. It is my intention with the committee's approval and the support from the Commission to go through that process and, as I said in my remarks, have more of an inclusive invitation to a large group of experts in this space given the complexity of the issues.

Regarding the other subcommittees, we will form subcommittees formally, as we do always, but my vision is to have more informal working groups essentially established among the members of this committee only. So it will not include outside members, but it would substantially include just members from the committee. The three of us will sort of figure out who wants to be where and what expertise and what issues matter to you in the future.

So that is sort of the plan. I don't want you to think that we are going to have a Federal Register notice for each, but I wanted to give you a sense of what the plan is for the future. Certainly we welcome your thoughts. And this will largely be based on the recommendations you all made at the outset a year ago, when we reformed the committee.

We are going to hear from a diverse group of folks this morning, not necessarily focused exclusively on derivatives markets with respect to climate change and financial market risks. These are people who have done a lot of work in the recent past on these issues. And, despite the fact that they may not be focused exclusively on derivatives markets, I think it is important for this committee to hear the information that they have learned, the work that they have done because ultimately it is going to inform how we within the committee and any subcommittee that is formed tackle this issue. So we certainly will have elements of derivatives markets brought up this morning, hedging and those risks, but also we are going to hear from the Bank of England to talk about stress testing banks. We are going to hear from TCFD to talk about disclosure. And I think all of these things, as well as everyone knows, the derivatives markets will help us sort of better shape the questions, as I said, as we sort of approach this issue.

It is a difficult issue, but I certainly would challenge all of you and your firms to participate, obviously sensitive politically, but, as I said in my remarks, we are going to take this in a very measured way. We are going to focus on the issues at hand. And we are going to try to unpack some of the challenges that financial markets face as a result of climate change and as a result of the things that we are seeing every day across the country. And I think there is a lot to be discovered, a lot to be researched. And, ultimately, I think if we can produce findings or a report for the Commission to consider, I think that would be helpful, not only for this agency but for the larger financial market ecosystem as well.

Quickly, before I turn to the chairman, I want to recognize him. This will be his last advisory committee meeting. It will not be the last of the work we do. We have a bit more stuff to do before the chairman departs in mid July. But I do want to recognize him. The chairman has sponsored two committees since he came to the Commission in 2014: EMAC and now Agriculture. And I think we have all benefitted from your leadership. And to have you sponsor two I think committees, both as a commissioner and chair, you recognize and appreciate the importance of the committees and the value that they provide to each commissioner. So I just wanted to recognize you as this will be your final advisory committee before you leave us.

And, finally, I want to dedicate this meeting to Commissioner Bart Chilton. For those of you who are not in the CFTC family, we lost Commissioner Chilton about a month ago. And we had a service in this room a few weeks ago. For those of you who don't know -- and he was a very energetic, very colorful, very charismatic commissioner. He brought a lot of attention, a lot of very good attention, to this agency. He was a very principled person and someone who cared deeply about public service and the work of the CFTC, USDA, and the Congress as well. He had a long, very amazing career in public service. Bart also cared about these issues very much. He was thinking about climate change environment and energy issues long before most folks were. So I am hopeful that Bart is watching this morning and he is smiling about it because I think he would enjoy it.

So, with that, thank you all for being here. I think it is going to be a fun morning and afternoon as well.

MS. LEWIS: Thank you, Commissioner Behnam.

Chairman Giancarlo?

CFTC CHAIRMAN GIANCARLO: Thank you, Alicia. Thank you, Commissioner Behnam.

I think, in fact, the last time environmental matters were taken up at an advisory committee meeting by the CFTC, it was under the auspices of Bart Chilton and the Energy Environmental Markets Advisory Committee in this very room. And many people who were at that remember it as an extremely fun, as things always were with Bart, but also substantive meeting as well. So thank you for referencing Bart. For those of us that had the real pleasure of knowing him, he was one of life's truly effervescent persons and is missed by all of us.

With that, good morning, everybody. And a warm welcome to all of you to the MRAC meeting and to MRAC members and to today's presenters and people participating on the telephone, a warm welcome to you to the CFTC.

The subject matter of today's meeting may have attracted an audience that is unfamiliar with the CFTC and its advisory committee process. So let me take a minute to explain our long and proud tradition of robust and well-informed advisory committees. The advisory committees are composed of and conducted by recognized market experts and key stakeholders. They set their own agendas. They identify issues of their own choosing. They form subcommittees on matters of perceived importance, and they conduct studies of acknowledge concern.

The work of CFTC advisory committees is

proudly bipartisan, in both spirit and practice. And the work receives the agency's active support in the form of expert research and public meeting accommodations.

The purpose of advisory committees boils down to one essential. And that is to support this Commission and its mission to foster open, transparent, competitive, and financially sound markets for the trading of derivative products.

The CFTC has five advisory committees, each sponsored by an individual commissioner. They are Agriculture, which I have the honor to sponsor; Technology, sponsored by Commissioner Quintenz; Energy and Environmental Markets, sponsored by Commissioner Berkovitz; Global Markets, sponsored by Commissioner Stump; and Market Risk, or MRAC, sponsored by Commissioner Behnam, which we are attending this morning. And, as you know, today's agenda is particularly compelling. I am particularly looking forward to the committee's discussion of the potential impact of climate change on the global financial system, a part of which we regulate; domestic and international policy initiatives and supervisory approaches to market risks related to climate change; key risk management governance and disclosure considerations; and the challenges, the many challenges, for regulators and market participants alike. And I must say I am also looking forward to hearing a status report from the Interest Rate Benchmark Reform Subcommittee regarding LIBOR transition, of which I have spent a lot of time, but so has Commissioner Behnam and the work of this committee. And, lastly, I am very much looking forward to welcoming to the CFTC and to this meeting a very distinguished guest, Steven Maijoor, chair of the European Securities and Markets Authority, known as ESMA. And, as Ros mentioned, he will talk about EMIR 2.2, central counterparty stress testing, and Brexit. Chair Maijoor is the leader of an important regulatory agency, with which the CFTC works closely. And I know you will join me in giving him a warm welcome.

Finally, I want to commend Commissioner Behnam for his really determined and thoughtful sponsorship of this committee and its focus on such important topics and anticipate that he and Alicia Lewis and all of the members of MRAC will bring an impressive level of thought leadership to the discussion, but let me just say that so there is no doubt. Let me clearly state that this Commission fully supports the work of this advisory committee. And that is because this agency and all of its commissioners, regardless of party label, strive to understand anything and everything that impacts the markets we are sworn to oversee. That includes impacts of climate change as well as other externalities, such as geopolitics, including Brexit; technology, including algo trading and crypto assets; and new asset classes, like Bitcoin and severe weather conditions, including the incessant flooding that we have seen this spring throughout the Midwest. If it impacts our markets, we want to understand it thoroughly, and that is why we are here today. And that is why we are grateful to you for your time and your expertise to make us all a little bit more market-intelligent than when we started out.

So thank you all very much for participating.

And let's have a great day.

MS. LEWIS: Thank you, Chairman Giancarlo.

Now we will have Commissioner Quintenz.

COMMISSIONER QUINTENZ: Thank you, Alicia. Thank you for your work on today's meeting. And thank you, Commissioner Behnam, for putting a very robust and fascinating agenda together. I, like the chairman, am very interested to hear how the derivatives markets, in particular, can be used to address risks. And I fully embrace and I think it is going to be fascinating to learn -- I fully embrace an agenda where we can explore the purpose of the derivatives markets, which is to allow commercial businesses to hedge their risks. I think too often, the derivatives markets are viewed by some or publicly as an opportunity for financial entities to take one-sided bets on specific risks. In order for products to be able to serve the risk management needs of commercial businesses, there needs to be liquidity or there needs to be counterparties willing to take the other side of those trades. Those entities are the exact same firms that would be targeted by the language of one-sided risky bets in markets that we regulate. And I personally reject any of those characterizations. So I fully embrace the opportunity to explore today how the derivatives markets can be used to address risks in general and climate-related risks specifically.

I was reminded recently of the fact that the CFTC has actually already approved ESG futures contracts to be traded on Eurex I think as recently as this March. And while we have a special approval process for foreign boards of trade, we do have a well-known self-certification process for domestic exchanges to list new futures and derivatives contracts. And I would be very open and interested to hear of any exchanges' plans or interest in contracts related to this effort.

Let me also join the chairman in extending a very warm welcome to Chairman Maijoor. I have had a number of opportunities to visit with him personally and present with him on panels. And I think that this is going to be a great opportunity for us to hear directly from him on a very important topic for both of us.

So thank you again, Commissioner Behnam, for the opportunity.

MS. LEWIS: Thank you, Commissioner Quintenz. And now we will have Commissioner Stump.

COMMISSIONER STUMP: I will be very brief. I just want to thank Alicia for all of your work. Thanks to Commissioner Behnam for putting together a very interesting agenda. I know you guys worked really hard on this.

And a particular thanks to Nadia for agreeing to be the chairperson of this committee. I think in my short time here at the Commission, I find these dialogues to be extremely useful. You all taking time out of your day jobs and your day-to-day lives to be here in Washington with us is extremely beneficial to the Commission. As has been noted, the risks that we are tasked with allowing people to hedge and mitigate is always shifting. And so our agenda is always shifting, and I think the discussion today is very timely.

MS. LEWIS: Thank you, Commissioner Stump. Now we will have Commissioner Berkovitz.

COMMISSIONER BERKOVITZ: Thank you, Alicia. And thank you, Commissioner Behnam, for sponsoring this very timely and fascinating meeting today.

I would like to welcome all of the participants. I am very interested in all of the items on today's agenda.

In terms of a couple of things I find particularly interesting, one is political systems may or may not be immediately responsive to emerging trends, but markets are extremely responsive. There is a lot of research about the collective wisdom of markets. And so I think it is very informative to look and see how the markets may be responding to climate change. Also, I have read a number of reports and news items about potential threats to the financial markets from climate change. I am particularly interested in today's discussion in terms of what the impacts of climate change may actually be on financial market stability and the financial system.

So I think it is a fascinating agenda. Commissioner Behnam, I thank you for putting this agenda together and for all of the committee participants for traveling here today to advise the Commission on these matters.

Thank you.

MS. LEWIS: Thank you, Commissioner Berkovitz. Again, thank you all for your opening remarks. And now Commissioner Behnam will introduce our new MRAC chairwoman.

COMMISSIONER BEHNAM: Thanks, Alicia.

As I pointed out in my opening remarks, it is a pleasure to welcome Nadia Zakir. She is an executive vice president and deputy general counsel at PIMCO and the new chairperson of the MRAC. Prior to joining PIMCO in 2013, she was an associate director in the Product Review Branch of DCR at the CFTC, the Division of Clearing Risk, and also served as special counsel in the Exchange and Data Repository Branch of the Division of Market Oversight.

As I stated in my opening remarks, Nadia's deep experience and knowledge of markets and policy is a huge asset and will be a huge asset for the MRAC. I am very grateful for her willingness to do this and her public service. And I welcome her to the committee.

Thank you.

CHAIRPERSON ZAKIR: Thank you, Commissioner Behnam, Mr. Chairman, and commissioners. Thank you, Commissioner Behnam, for the opportunity to chair the Market Risk Advisory Committee. And thank you to each member of the committee that has made the time to be here with us today.

The MRAC's mission is to identify and reduce systemic risk, to promote market transparency, safety, and efficiency, and to prioritize customer protections. Getting each of these issues right is critical to ensuring a stable marketplace. And I look forward to working with my MRAC colleagues to continue the important work of this committee to assist the Commission in its oversight of the derivatives market, and to further the growth of deep, liquid, and well-functioning derivatives markets for all users. As we engage in thoughtful discussions running the topics of today's panels and future sessions, I hope we can leverage our varied backgrounds and perspectives in order to develop and provide meaningful recommendations to the Commission regarding market risk mitigation in today's markets.

Turning to the day's agenda, before we begin, I would like to do a roll call of the members on the phone so we have your presence on the record. After I say your name, please indicate your presence. Alicia Crighton representing FIA. Alicia Crighton representing FIA.

(No response.)

CHAIRPERSON ZAKIR: Laura Klimpel, DTCC.

MS. KLIMPEL: Present.

CHAIRPERSON ZAKIR: Thank you.

John Murphy, Commodity Markets Council.

MR. MURPHY: Present.

CHAIRPERSON ZAKIR: Suzy White, HSBC.

(No response.)

CHAIRPERSON ZAKIR: Scott Tucker, Tradeweb.

(No response.)

CHAIRPERSON ZAKIR: Just a few logistical reminders. Committee members and panelists, please make sure your microphone is on when you speak. This meeting is being simultaneously webcast, and it is important that your microphone is on so that the webcast audience can hear you. Also, please lean into the microphone when you speak, and keep your phones away from the console.

Members, if you would like to be recognized during the discussion, please change the position of your name card so that it sits vertically on the table or raise your hand, and I will recognize you and give you the floor. Members on the phone, we will give you an opportunity to ask questions or make comments, either at the beginning or end of our discussion.

Our first order of business is a discussion of climate-related financial risks. Members of the first panel will discuss current domestic and international policy initiatives and supervisory approaches to address climate-related financial risks, followed by a second panel of industry experts, who will discuss how market participants are evaluating, managing, and factoring climate risk, including climate adaptation and physical risks, into their respective businesses and portfolios. I would like to ask our speakers on the first panel to please take your seats.

With that, let me introduce our first panel.

MS. LEWIS: One second. Audiovisual, can you please bring up Sarah Breeden? Thank you.

CHAIRPERSON ZAKIR: Thank you.

On videoconference, we have Sarah Breeden, executive director of International Banks Division, Prudential Regulation Authority, Bank of England. Joining us in person, we have Stacy Coleman, managing director, Promontory Financial Group, representing the secretary of the Financial Stability Board's Task Force on Climate-related Financial Disclosures. We also have Dave Jones, director, Climate Risk Initiative, Center for Law, Energy and the Environment at the University of California, Berkeley School of Law and former California insurance commissioner.

With that, let's get started. Ms. Breeden, you have the floor.

MS. BREEDEN: Thank you very much. Commissioner Behnam, Chair, members of the committee, thank you very much for the opportunity to speak to you today about the Bank of England's work on the financial risks from climate change.

The Bank of England has been clear for some time that climate change creates financial risks that are relevant to our mandate of the safety and soundness of the firms that we supervise and financial stability more broadly. These financial risks manifest through two channels: physical risk and transition risk.

Physical risks arise from damage to property, land, infrastructure from climate and weather-related events, whether they be heat waves, drought, wildfires, floods, or rises in sea level. And these events can cause financial losses, increased insurance claims, and impairments to asset values and borrower creditworthiness. These are not just risks for the future. They are risks for today. By way of example, inflation-adjusted insurance losses for such events have increased by a factor of five in recent decades.

Transition risks arise in the adjustment to a lower-carbon economy. Changes in climate policy, technology, market sentiment can prompt a reassessment of asset values as changing costs and opportunities become apparent. And the need to transition is widespread, affecting energy, transportation, infrastructure, agriculture, real estate, to name just a few.

Now, the timing of all of that transition is of, course, inherently uncertain, but already, too, we are seeing risks materialize, tightening energy efficiency standards impacting property markets, or credit risks associated with the low-carbon transition emerging in automotive and energy sectors.

In addition, liability risk can arise as a consequence of these risks as those who have suffered losses seek compensation from those that they hold responsible as a result of action or inaction on climate change.

In our view, the financial risks that climate change creates are distinctive. They are far-reaching in breadth and in scope. They are foreseeable. And their future size will be determined by the actions that are taken today. And so raising awareness and understanding of these risks in our view is necessary.

Sizing the risks is highly complex. We need to translate a myriad of possible climate pathways with different physical and transition effects into economic outcomes and financial risks, looking ahead over many decades. And many of the modeled estimates that we currently have are, quite frankly, not very good. The models are partial, heavily dependent on assumptions. And they do not capture well the nonlinearities that are a key feature of most recently climates analysis. Data gaps, too, are significant. We are, therefore, working together with industry and other regulatory authorities to build intellectual capacity, develop new toolkits, and identify best practice.

In the bank's work with the financial system, we are taking a two-pronged approach, tackling the issue top down and bottom up. In terms of the individual institutions that we supervise, we have issued supervisory expectations covering governance, risk management, scenario analysis, and disclosure that set out how banks and insurance companies need to develop an enhanced approach to managing the financial risks from climate change.

Tis important to the development of best practice. We have established the U.K. Climate Financial Risk Forum, which brings together regulators, the PRA, and the Financial Authority as well as industry, banks, insurers, and asset managers. And the Climate Financial Risk Forum has established four workstreams covering disclosure, risk management, scenario analysis, and innovation with an aim of publishing practical guidance.

The bank is a clear supporter of the disclosure of financial risks from climate change in light of the standards set out by the Task Force on Climate-related Financial Disclosures. Disclosure is critical if financial markets are to be able to weigh risks and investments accordingly. But disclosure needs to be forward-looking, speaking to future risks and opportunities and not just the current position. And that needs scenario analysis, data-driven narratives that help anchor risk assessments and enable us to focus not on what will happen but what might happen.

Scenario analysis can help us consider this risk at the level of the system as a whole as well as at the level of the individual institution and, in so doing, can help us bridge the gap between our top-down and bottom-up understanding of risks. And to that end, the Financial Policy Committee and the Prudential Regulation Committee of the bank are considering including climate-related factors in a future biennial exploratory scenario stress test. And we are asking U.K. insurers as part of our market-wide insurance stress test this year to examine how their business would be impacted in different physical and transition risk scenarios. And the central banks' and supervisors' network for the greening of the financial system plans to set out voluntary guidelines for how central banks can use scenario analysis to help assess system-wide financial risks from climate change.

If I might just finalize by saying in our judgment, this is an immature field, and we have much to learn by working together. Thank you.

CHAIRPERSON ZAKIR: Thank you, Ms. Breeden. We will now have Ms. Coleman.

MS. COLEMAN: Thank you very much. I very much appreciate the opportunity to be here today to talk about such an important issue with the committee. And the impact on financial markets that could happen is very real, as Sarah described. So, with that, I am going to talk a bit about the task force, the work that we have done, and a little bit of where we are going.

So, despite broad recognition around the world that climate risk is real and it is now, disclosure about those risks has been fairly limited and quite lacking in many respects. And without the right information, I think you have heard many people say today investors and others can't make the right financial decisions about how to allocate capital. And these will have major implications for the markets if we don't understand the potential risks and the potential cost associated with them.

And so, going back a little ways to April 2015, coming out of one of the G-20 meetings, the finance ministers and central bank governors, they asked the FSB, the Financial Stability Board, to take a look at how the financial sector could look at these issues and think about them more. And so as part of that, the FSB pulled together a lot of private and public sector participants, held a workshop and determined that one of the themes coming out of that workshop was basically that investors and others need better information about climate risks so that those risks can be more appropriately priced and factored into decision-making. And, against that backdrop, our task force was formed. And so in December 2015, they formed a task force and asked them to develop voluntary climate-related financial disclosures.

Michael Bloomberg, who is the founder of Bloomberg LP, was asked to chair the group. He still chairs the group. He is supported by a secretariat that includes, actually, a woman on the back wall, Mary Schapiro. And I am sure she would have loved to be here today. She speaks on this issue quite a bit, is incredibly supportive of the task force's work. And there are also 30, roughly 30, members on the task force. And they come from various private sector organizations. They represent what we refer to as users and preparers of climate-related financial disclosures.

The reason it was structured this way was so that the task force would have a very balanced view that you would take into consideration the views of people who want to use the disclosures, the investors, lenders, insurance underwriters, and balance that against the challenges that preparers have in developing these disclosures and so on the major ones in terms of data gaps and conducting complex analyses to better understand the risks.

So after significant public consultation by the task force, we developed a set of recommendations four recommendations. And they are focused and structured around four major areas that we thought were sort of common core elements of how companies operate. So our recommendations relate to governance, strategy, risk management, and then metrics and targets.

In addition, we attempted to develop the recommendations so that they were applicable to a wide range of companies across jurisdictions. And so they are fairly broad. They are supported by 11 specific recommended disclosures, again somewhat broad because we need to cover a wide range of companies, but we did create guidance that addresses specific industries to help people implement them.

I think one of the most distinguishing features about the task force's recommendations -- and

Sarah touched on it -- relates to asking companies to talk about their potential financial risks related to climate change and to use scenario analysis to identify those risks. The task force generally avoided saying how someone should disclose information, but this was an area where the task force felt it was important to highlight the use of scenario analysis and strongly encouraged companies to use it to understand the risks.

Another factor of the task force's recommendations I want to highlight that makes our framework a little bit unique is that there are many other climate-related disclosure frameworks out there. I think what is unique about the task force's recommendations is that we focus on the actual or potential financial implications to companies from climate change, not so much, much less on the impact a company has on the environment. And so if you are familiar with ESG reporting and other types of reporting, the focus is often the impact the company has on the environment. We very much want to focus on what the investors and other people need to make financial decisions, which is how climate change will affect the companies.

So, with that bit of background, I just want to touch on what the task force has been doing since June 2017, when we issued our recommendations. And I can't believe it has been two years, but it has been. And the task force has done various initiatives to support and monitor the implementation of its recommendations. We have held workshops around the world about the recommendations. We worked with industry associations and similar types of organizations that bring together financial and nonfinancial companies to work on how to implement the recommendations. We believe that working in industry groups has been very beneficial for companies to bring peers together to talk about the issues and how they might best think about the risks and measure those risks, the types of information that they need. In many ways, it feels like a collective action issue that you need people to come together to talk about these issues and solve some of the challenges in identifying climate risks.

The task force has also issued two status reports. The last one was fairly lengthy, I have to say. But if you read the executive summary, you will get the gist. The last report was actually just published last Wednesday. So I am still catching up on sleep from that, but I just want to highlight the overall finding from that report, which was that disclosure of climate-related financial issues is growing. And it has grown a bit since 2016 to 2018. That said, the task force feels pretty strongly that that growth is not sufficient. In particular, more information needs to be disclosed on financial impacts of climate change on companies. Understandably, it is a difficult and challenging issue to address, but it is the information that people need and the importance of this group in moving that forward as well in my view.

And while I have a bit of a down note on climate-related disclosures perhaps, I do want to highlight the momentum we have seen around adoption of the task force's recommendations. I don't know that any of us expected the take-up that we have seen. So when we launched our recommendations in June 2017. We had 100 CEOs support us, which we were thrilled. We are still thrilled that they support us. But today, we now have nearly 800 companies from around the world, financial and nonfinancial companies, that support the task force's recommendations. Sarah talked about, as did Commission Behnam, the NGFS, Network for Greening the Financial System, which is a large group of regulators that support the task force's recommendations. The companies that we have involved represent market capitalization of over $9 trillion. And the financial firms are responsible for assets of over 118 trillion. So we have a bid part of global markets.

So in the coming months, the task force and secretariat will continue to support and monitor adoption of its recommendations. And we are going to issue a third status report next September. As part of its efforts to support implementation, we are going to focus quite a bit on scenario analysis and how we can make that more accessible to companies in terms of a qualitative assessment. There is a fair amount of work going on on the quantitative side. And the task force will look at where it may add there, but I think one of the key features of the task force is that it looks to other initiatives. It is not trying to create its own system. It wants to leverage whatever it can and help push these issues forward.

And, just to wrap up my remarks, I want to highlight a report that actually scared me quite a bit and probably others who have read it from the Intergovernmental Panel on Climate Change, which is a group of climate scientists and who write fairly technical and dry reports. And so I think it is important when they say things like “Urgent and unprecedented changes are needed to meet the goals of the Paris Agreement to keep the temperature well below 2 degrees Celsius,” the temperature increase, and those findings will likely lead over time, if not very soon, to governments around the world as well as private sector entities to consider a range of options for reducing global emission. And so that could result in disruptive changes across economic sectors and regions in the near terms. And so now, more than ever, I think it is critical that companies start to look at climate-related issues, understand what the implications are for bad, and what that might mean for their strategy, for their operations going forward.

Thank you.

CHAIRPERSON ZAKIR: Thank you, Ms. Coleman. Mr. Jones?

MR. JONES: Thank you very much. And I want to thank the chair, Mr. Behnam, the other commissioners, and the Market Risk Advisory Committee for the opportunity to address you this morning for taking up this critically important issue.

I have some slides, which I think we are going to try to display on the overhead. And someone is going to show me how to do that. Wonderful. And apologies to the commissioners whose backs are turned to the slides.

My name is Dave Jones, and I currently serve -- aha. Technology. My name is Dave Jones, and I currently serve as the director of the Climate Risk Initiative at the Center for Law, Energy and Environment at UC Berkley School of Law. I am also senior director at The Nature Conservancy. And for the prior eight years, I served as California's insurance commissioner. I have been told there is a rocker here that will move this forward or I can go old school.

So just a bit about the California insurance. As I think everyone here knows, insurance in the United States is regulated at the state level. Each state and territory has an insurance superintendent or insurance commissioner.

In California, the insurers collect $310 billion a year annually in premiums. It is the largest insurance market in the U.S., fourth largest insurance market in the world. There are about 1,300 admitted insurance companies that were regulated by me in my department, with over $5.5 trillion in assets.

So, as both Ms. Breeden and Ms. Coleman pointed out, it is generally accepted that there are three principal kinds of climate-related financial risks. There are physical risks, the kinds of things you would I think initially think about with regard to climate change and climate risk, the physical impacts of climate change, sea level rise, drought, wildfire, those sorts of physical impacts on assets, and potentially on the financial sector related to those assets. Transition risks, which, as Ms. Breeden and Ms. Coleman explained, are risks associated with transition away from a fossil fuel-based economy to one that is less reliant on fossil fuels and has less emissions of greenhouse gas; and then liability risks. And those are risks associated with actions taken or the failure to act in various ways around climate change and the potential consequences from a liability standpoint.

So, just to give you a little flavor of physical impacts in California, in 2017, the aggregate insured losses associated with the wildfires in California -- these are insured losses -- were slightly over $13 billion. If you think about economic losses, you can probably multiply that by 2 or 3 times to come up with a total economic losses that California suffered in 2017 alone.

What the climate scientists tell us and the fire experts tell us is that fire is more frequent and severe in California, in part, due to climate change. We have had drier conditions, longer periods of drought. And that has had an impact on frequency and severity of fires. So we are seeing more frequent and more severe fires. No longer do we have a fire season in California. It is year-round.

Not to pause with regard to 2017, in 2018, we had an even more severe fire season. We lost 86 lives lost in the Camp Fire alone in 2018. Fourteen thousand, four hundred homes were destroyed in that fire. A total of 25,000 structures were destroyed in that fire. There were $12 billion in insured losses overall for the 2018 fires. Even though the Camp Fire was the most destructive fire in California's history, it impacted an area where the median home value was significantly lower than the area impacted by the 2017 fires, which is basically the North Bay, where the median home value is about three-quarters of a million. Camp Fire was in Butte County. The median home value is around $250,000. So, even though more homes and structures were destroyed in 2018, the insured losses were less per home but in the aggregate, $12 billion in insured losses for the 2018 fires.

It brought down one small insurance company, which was overexposed in the area of the Camp Fire.

Thankfully, all the rest of the companies were adequately reserved and are paying claims, but the fire and the exposure of the insurance company, this particular insurance company, two policyholders that suffered losses as a result of the fire resulted in the insolvency of the insurance company. Now, thankfully, in California, we have a guaranty association model, where the insurance have a consortium that will cover claims for insolvent insurers. So the policyholders were made whole, but there was a direct financial consequence on insurance companies as a result of this particular fire. It brought it down.

You probably also have been very well-aware of another impact of the 2017 and 2018 fires, and that is the filing by PG&E, one of our largest public utilities in California, for Chapter 11 bankruptcy. They were facing about 30 billion potential liability associated with the fires. I think it is important to note that PG&E for quite some time has fully disclosed the potential legal liabilities it faces associated with wildfires. It took about a year for the rating agencies to downgrade PG&E and for the markets to downgrade PG&E. So, even though in 2017, the 2017 fires, a substantial number of them were caused by PG&E, and PG&E disclosed that fact, it wasn't until 2018, by and large, that the rating agencies and the markets downgraded PG&E and then the bankruptcy filing resulted. I share that with you to give you some sense of sometimes there are delays in the market's reflection of these sorts of risks and it probably took longer than most would have thought would be the case for the markets to catch up with regard to the kinds of risks that PG&E faced.

So I am just going to quickly move through five areas in the insurance context in which regulators have been engaged with insurance companies around climate risk.

The first of these involves the National Association of Insurance Commissioners climate risk disclosure survey. So you are probably familiar that the NAIC is the accreditation and standards-making body for insurance regulation in the United States. It is a mechanism to try to create some level of consistency across the state-level insurance regulation. In 2010, the NAIC developed a climate risk disclosure survey asking insurance companies questions with regard to how to address in climate risk, and they are reserving underwriting and business operations. In 2011, 5 lead states began administering that survey. We administer that survey to insurance companies with over $100 million in premiums annually. It reflects about 1,000 insurance companies, reflects about over 70 percent to the U.S. insurance market by premium volume, and we would collect that information and make it public annually on the California Department of Insurance searchable website.

In broad measure, what that survey told us was according to the insurers themselves, 61 percent of the insurance companies surveyed have climate change risk management policies, 69 percent are considering the impact of climate change on their investment portfolio, 60 percent of them have altered investment strategies in response to climate change considerations. However, as we collected this information over the course of the last years, that eight years that I was insurance commissioner, it became very apparent that insurance companies in the U.S. are far more focused and spending a lot more energy on the underwriting risk associated with climate change, as opposed to the risk to their investment portfolios.

So one of the risks I mentioned a moment ago is transition risk, and that is the risk that is a result of market forcers and policy changes. There will be a move away from reliance on fossil fuels in the economy. And, as a consequence, the potential that the value of those assets in various portfolios, including the portfolios insurance companies, will decline over time.

Taking coal as an example, the Dow Jones U.S. coal indices dropped about 92 percent over a 6-year period. CalPERS and CalSTRS, our two largest pension funds, lost about $840 million as a result. We have got about 42 U.S. coal companies that went bankrupt in that period. We see a number of global insurers divesting from coal, AXA, Allianz, Swiss Re, Munich Re, and others. Also, a number of banks have declined to invest in new coal or lend to new coal infrastructure, including, most notably, Deutsche Bank, which announced the other year that it would no longer lend it to new coal infrastructure.

So in 2016, with the California Department of Insurance, I launched the climate risk carbon initiative, which was principally a disclosure and transparency initiative designed to try to collect information from insurance companies with regard to their investments in utilities, gas, oil, and coal, the four sectors that I and my department concluded were most at risk from a transition away from a fossil fuel-based economy. There were essentially two objectives. One was to increase the insurers' understanding of what they were holding in terms of those assets. Surprisingly, there wasn't a lot of knowledge within the C suite and within the companies themselves with regard to what they were holding in those areas and also to increase regulators' understanding of the degree to which insurance companies were holding investments in those categories and also what exposure those investments might face with regard to transition risk.

So there were two principal components. The first was requiring insurers that had over $100 million in U.S. premiums, 670 of them to disclose publicly their investments in oil, gas, coal, and utility investments. We disclosed those in a searchable database by insurance company that is available to regulators, to publics, to anyone who would like to use it. As well, my department and I, we reached the conclusion that thermal coal faced a high risk of becoming a stranded asset on the books of insurance companies. And so I asked that the companies voluntarily divest from thermal coal. I did not have evidence before me to suggest that any given insurance company's exposure to thermal coal imperiled its economic enterprise. So I did not issue an order. It was a voluntary request. But I did conclude that thermal coal as an asset ran a high risk of being a stranded asset. And one of my jobs as insurance commissioner was to make sure insurance companies were investing in ways that retained value, not lose value, hence the request.

What were the results of that? We learned that the companies had about $555 billion in fossil fuel-related investments. That is versus $5.5 trillion in assets under management. So it gave us some perspective on their degree of exposure. And we got company level information as well that allowed us to see what each company's individual exposure was. About $21.4 billion invested in thermal coal enterprises. About $4 billion was divested from thermal coal and fossil fuel overall as a result of the request, and 4 commitments were made to divest another $944 million. Six hundred seventy insurers told us they had divested some or all or had no coal holdings, and another 325 said they would in the future refrain from making future coal investments.

So this is just a graphic of the display of information that is available on our website with regard to the fossil fuel disclosures. There are various charts and graphs that one can use to drill down with regard to each individual company's exposure and also look to see what particular investments the companies have in the area of fossil fuels, coal, oil, gas, and utilities. I am just going to plunge ahead here. So Ms. Coleman has already briefed you on the Task Force on Climate-Related Financial Disclosure. So I won't dwell on that other than to just say that as insurance commissioner, I fully supported this work, endorsed the work, and encouraged insurance companies to take up the recommendations with regard to the kinds of disclosures that should be made. I think it is a critically important body of work.

We are seeing increasing numbers of asset managers and asset owners embrace this work. We are seeing quite a few insurers as well, AXA, Allianz, Munich Re, Swiss Re, others, issuing reports in alignment with the TCFD. And I think we are going to continue to see more of that as there is greater development and maturity with regard to the kinds of disclosures and models you can use to be compliant with the TCFD recommendations.

A third point, one of the TCFD recommendations is that all companies in the real economy as well as companies in the financial sector engage in scenario analysis. And the purpose of this is to take a look at portfolios and their alignment or misalignment with a trajectory that moves us towards no more than a 1.5-degree Celsius rise in temperature. So there are a variety of models that are available now that make projections going forward with regard to what the real economy needs to look like in order to stay below 1.5 or 2 degrees. And then you can assess one's own investment portfolio's misalignment or alignment with what the economy needs to look like in order to stay below 1.5 degrees.

So I actually undertook to perform scenario analysis on the portfolio of the 670 largest insurance companies in the United States, with $100 million in premium annually, about $4.25 trillion in assets under management. I contracted with a modeling firm, highly regarded, called 2-degree investing initiative, provided the portfolio information to them. They ran the model against the portfolio information. We prepared individualized reports for the companies, sent them to the company CEO and chair of the board as well as prepared an aggregate analysis that we published. We did not publish the individual company-level analyses because we didn't think that was appropriate, but we did prepare an aggregate analysis of the entire sector.

This gets you a little flavor for the kind of information contained in the report. What this graphic is is basically looking at coal. And the vertical axis is coal production, megawatt hours, the time on the bottom. The green shaded is the decline in coal production necessary to stay below or at 1.5 degrees. The red is coal production if we are going to be at 4.5 degrees or 6 degrees. The solid lines are the insurers' investments in either debt or equity in the aggregate. And so we can see a misalignment in the aggregate in the insurance sector with regard to where that sector needs to be vis-a-vis coal if we are to stay below 1.5 degrees. The dotted line represents where the market is overall with regard to coal investment in equities and debt.

So this sort of analysis for each of the major greenhouse gas-emitting sectors is contained in the report. It provides very useful information to asset owners and asset managers with regard to their alignment or misalignment with regard to an economy that would be aligned with staying below 1.5 degrees Celsius rise.

Sector-wide, what we discovered is that insurers are misaligned in terms of their thermal coal investments, perhaps not a surprise. Investments, you know, in the fuel sector is now aligned. Oil production is now aligned. Gas production investments are aligned. There is an under investment in renewable energies as well.

A fourth point. There has been a lot of work internationally amongst insurance regulators. So in 2017, I found an international body called the Sustainable Insurance Forum to bring together national insurance regulators across the world to share best practices and approaches to make sure that we are beginning to develop some consistency in approaches. One of the important work products of that is to develop a joint paper with the International Association of Insurance Supervisors, which is basically the international accreditation and standard-setting body for insurance regulation. And so the Sustainable Insurance Forum has become the thought leader and practice driver for the International Association of Insurance Supervisors with regard to climate risk approaches. And a joint paper of best practices was put together in 2018. I commend it to your attention.

In 2019, what this group is doing is taking a look at what insurers are doing vis-a-vis the take-up of the TCFD recommendations.

You heard from Ms. Breeden and Ms. Coleman about the Network for Greening the Financial System, central banks, and bank supervisors who have come together also to share best practices. They are looking at the macro and micro supervision, but, interestingly as well, there is a work committee that is looking at the possibility of credit enhancement for green investment. There is some number of banks that are actually tagging their loans green versus brown to be very simplistic and are doing longitudinal studies of performance to see if there is some difference in performance that might justify from a regulatory standpoint a different approach with regard to capital requirements associated with green versus brown, early days yet, but I will just note parenthetically that Chinese regulators are very convinced of this and are really driving this discussion amongst the central banks and bank regulators.

Finally, the UMBP financial initiative issued an interesting report the other week looking at essentially the 500 largest asset managers that have globally about $81.2 trillion in assets under management. They took a look at transition risk. Two of those aggregate portfolios concluded that about 13.6 percent of the portfolio is actually at risk. The value loss there is about $10.7 trillion. Not surprisingly, the sectors that have investment that are at greatest risk are utilities, transportation, ag, mining, and petroleum, also found on the upside that there is a potential for profits at $2.1 trillion in so-called green investments.

Another important conclusion of this study, though, is that there is a lot more risk to the extent that governments delay from a policy standpoint in taking more aggressive action on climate change. And this is what has been referred to as the inevitable policy response, which is if we continue the status quo of moving very slowly, at some point, there is a potential for a dramatic, very, very dramatic, policy response that would have very dramatic consequences to financial markets.

So, in conclusion, I believe that climate change does pose material risks to the financial sector. We are seeing the increasing disclosure across the sector. We are seeing increasing financial regulators in various markets, increasing requirements, increasing engagement, increasing disclosure. We are seeing investor demand for disclosure and for divestment. The inevitable policy response poses the greatest risk. And my belief is that regulators should engage in looking at both micro and macro risk. And so I commend the commission for taking up this very important issue because I know in the open remarks of the chair and commissioners, there was reference to derivatives, which is an important area of regulation of this body. And there really hasn't been much attention, to my knowledge, with regard to the risks that climate change poses to that market. It has certainly not been a focal area for insurance regulators. And so I commend you for taking that issue up because I think it is very, very timely.

Thank you very much.

CHAIRPERSON ZAKIR: Thank you, Mr. Jones.

At this time, I am going to open the floor to questions and comments from the membership. Mr. Slocum?

MR. SLOCUM: Thank you very much. Excellent presentations. Thank you very much.

Some of you had noted that the information on financial risks associated with climate change exposure is limited because we don't have mandatory or uniform reporting of these types of financial risks. Do you think that mandatory uniform reporting of climate change-associated financial risk ought to be the standard? And if so, what is the appropriate vehicle, say, in U.S. markets for such mandatory uniform reporting requirements?

MS. COLEMAN: I will jump in there and start, and I don't know if Sarah wants to add. So I guess I have probably two responses in some ways. So as the task force, our recommendations are voluntary. And so the FSB is very clear that is the point of our existence, is just to push for this voluntary disclosure.

I would say over time as a personal view, I think it has to move toward required because unless something is required, it is probably more difficult to get it put out in the public domain.

I will say the SEC back in I think 2010 issued guidance on companies disclosing material climate risks. I think there was some enforcement of that in the past. I don't think that is so common anymore, but there is a precedent out there for focusing on these issues. I think the challenge is it is so difficult to measure these risks and understand them, but we need to do that or we will lose the time we need to make the changes.

MS. LEWIS: Telecom, can you bring up Sarah Breeden?

MR. JONES: And while we are --

MS. BREEDEN: Thank you very much.

I very much support the need for further developments in respect to disclosure. I think we need to get to the point where disclosures are comprehensive, comparable, and coherent. What do I mean by that? Comprehensive across the entirety of the world economy and the entirety of the financial system so that we can understand what trajectory we are on. And so that is besides the risks. I think they need to be comparable so that investors are able to compare apples and apples and not apples and pears. And I think they need to be coherent so that we don't assume our problems away in how we undertake the disclosure.

I think that is all supported by greater standardization. And so over a period of time, speaking personally, I think one does have to move to make it mandatory, but I do recognize that these are early days. And a little bit of time to experiment and learn by doing is important. If within five years' time or three years' time, we did not take a position where these disclosures are standardized in some way and mandatory, I think we won't be able to do the job that we want of ensuring that the financial system is resilient to these risks.

MR. JONES: So I agree with both of the prior panelists with one addition. I think that there has been significant take-up of the TCFD recommendations. So it is not the case that there is not enough information out there for investors and regulators to begin to assess what these risks are. But we would be in a far better position as regulators and as market participants to have mandatory disclosure about the board. And I have supported that for some time. I believe it is where we need to be. I think the sooner we get there, the more information we will have and the better off markets will be in terms of their ability to assess each risk and to respond accordingly.

However, disclosure alone is not enough. And I want to go back to my PG&E example. PG&E has disclosed for many years the liability risk it faces with regard to its transmission lines and equipment in areas that are significantly prone to fire. And it has disclosed significantly over time and appropriately the growing risk it faced.

In 2017, we had catastrophic wildfires in California, some portion of which were caused by PG&E.

It is striking to me that the rating agencies and markets did not respond at that time by downgrading PG&E. It took an additional year for that to occur. So what that tells me is that while disclosure is absolutely necessary, that disclosure alone oftentimes is not enough and that it is important that regulators engage with their regulated markets as well to make sure that the disclosures being used, the information is being used to make adjustments accordingly.

CHAIRPERSON ZAKIR: Mr. Kleinbauer?

MR. KLEINBAUER: Thank you. I just wanted to begin by thanking Commissioner Behnam for establishing this committee and for Alicia in her tireless work on putting this together and, finally, too, to the chairman for his service to the CFTC over the years and wish him all the best in his future endeavors.

The question I had is more sort of a comment/question. We discussed that the disclosure of this information is important to assess risks. I would think that it is also important for investors to understand mainly impact investing, what environmentally conscious and socially conscious firms are using their investments for. And this information would act as a feeder in sort of some sort of environmental rating for companies that investors can then use that to make decisions on where they want to invest their money. Is that sort of one of the outputs that we would expect from adopting these standards and this disclosure of environmental risks and climate change risks?

MR. JONES: There are a variety of ratings of companies, ESG compliance, compliance with the SDGs, compliance with the Paris Accords. And I think, you know, that information is out there and available for investors to use to make decisions accordingly. It would be significantly improved on the environmental front if we had either more voluntary take-up of the TCFD recommendations or, as I would advocate, mandatory disclosure requirements with regard to the kinds of things that TCFD is recommending. So that information would then be available to the various entities that are doing ESG ratings of companies in the real economy and then would be available to investors to make decisions accordingly.

MS. BREEDEN: Can I comment on that, please?

CHAIRPERSON ZAKIR: Absolutely.

MS. BREEDEN: Thank you.

Perhaps I might add just one thing, which is I emphasized in my remarks that this is a forward-looking issue. And as a central banker, a Prudential supervisor, I naturally focused on the risks. That is my job. But there is a significant amount of opportunity here if a company should be ahead of the transition to make themselves strategically resilient to future changes in climate policy and future changes in the climate. And I think the TCFD disclosure does speak to opportunities as well as risks. And I think that is an important factor to take into account. And it does very much go to impact investing.

CHAIRPERSON ZAKIR: Thank you.

Mr. Banaei?

MR. BANAEI: Thank you. Thank you, Commissioner, for your leadership in investigating this very important topic. And thank you, Mr. Chairman, for your service.

I wanted to just investigate one thing I think the Bank of England has taken leadership on. And that is in the area of scenario analysis and specifically enhancing or better standardizing scenario analysis and making the assumptions that firms use a little bit more fixed as many of the variables. Particularly as you compound them over a long-term time horizon, many of these variables become essentially unbounded. And as a firm that has advised clients on scenario analysis in connection with the TCFD's recommendations as well as stress testing for our bank customers, we have encountered considerable challenge in implementing scenario analysis and coming up with useful outputs, both from an investment and a policy perspective. So some update in terms of the progress that is being made would be helpful.

MS. BREEDEN: Thank you. And I couldn't agree more that scenario analysis is at the heart of this issue.

What we have done to date is baby steps, early stages, if I might phrase it so. This year in the work that we are doing in our annual market-wide stress test with insurers, we have set out a number of possible scenarios containing manifestations of physical risk and transitional risk. And we are asking those insurers to report to us on what the impact of that will be on their financial resilience and on their business model.

What we are also doing is considering whether we can do what is called a biennial exploratory scenario, where we ask banks and potentially other financial institutions that we supervise to explain to us how their business is affected in certain states of the world. And we are considering whether a climate-related scenario or set of scenarios might be important, an important next one of those.

And, then, thirdly, what we are doing through the NGFS, through the workstream that I chair, is looking to publish both guidance on how to use scenarios as well as some representative scenarios. We are hoping to publish those early in 2020.

So I wouldn't say that we have the answers yet on scenario analysis, but we are working very hard on the topic. And you should expect to hear more from us in the future.

What we have tried to do is simplify the challenge. With a view to, rather than having a myriad of scenarios or, even worse, only one scenario, we are trying to consider what a small number of scenarios might look like. We thought about it as a simple choice. Has the transition been achieved or not? And, then, has the transition been an orderly one or not? And I think with that simple two-by-two matrix, we could do a very good job of exploring these risks.

The other thing that we are trying to do, which I think takes us a step beyond much of the scenario analysis that has happened so far, is consider temperature, technological and policy change, and also macroeconomic outcomes. And I think the scenario analysis that has been done to date has tended to do bits of that, but to do that across the economy as a whole is the challenge that we have set ourselves in the NGFS. So I very much hope to meet that challenge and publish our materials early next year.

CHAIRPERSON ZAKIR: Thank you. We have time for two more questions. Ms. Shemie?

MS. SHEMIE: Thank you. And also I would

like to thank Commissioner Behnam for putting together this just really interesting topic for today.

I was wondering if the panelists could comment on I think sort of an offshoot of what we have been discussing from the perspective of many of the firms sitting on this committee, just the challenge -- and I know we have certainly touched on this already in some contexts, but the challenge of regulators in future, whether they choose to impose suggestions for disclosures, mandatory disclosures, or other ways to address climate change, perhaps through ESG program requirements, et cetera, just the challenge of viewing us as such a diverse set of market participants. So, for example, how could regulators in future look at companies that produce a widget differently from a company that may issue or trade in derivatives on that company or even exchanges, clearinghouses that may have those companies paid -- fees.

I am sure this must be something you discuss all of the time, just how a regulator could view the challenge of creating uniform future requirements or suggestions on addressing these risks when there is such a diversity among market participants.

MR. JONES: Well, I guess my first thought is that as regulators, we are organized to oversee and to regulate particular components of the financial sector. And so the work to date has been driven by, in large measure, the particular regulatory competencies and approaches of each regulatory sector. So insurance regulators are, you know, principally focused on the underwriting risks that the companies have as well as the reserving risks. Bank regulators, bank supervisors focused on the risks the banks take. You are taking up the question of the markets that you regulate.

So I think that there is a fair degree of communication internally across the various regulatory silos with regard to these approaches and a lot of trading of information and approaches that helps to inform one another. I think that there is a pretty broad consensus amongst financial regulators across different financial regulatory focus, so to speak, that the TCFD recommendations represent some of the best work with regards to the kinds of disclosures we need to see, both in the real economy and in the financial sector.

So all of this is still evolving. It is iterative. You know, I would echo Ms. Breeden's remarks about what is happening with regard to the Bank of England and the development of scenario analysis.

Our first cut at scenario analysis at the California Department of Insurance was just looking at transition risk. We did another iteration that looked at both transition and physical risk. The models are evolving and developing over time. And I think, you know, regulators are adapting accordingly, and market participants won't adapt accordingly.

So it is complicated. It is multivariate. But I don't think that necessarily uniformity is our objective as much as I think uniformity of disclosure, information that can be useful across all sectors of markets, that is very useful. But you might find different regulatory approaches based on the kinds of risks that different regulated industries face, which makes sense.

MS. BREEDEN: Perhaps I might add one point on that, which is just to say in our experience, looking across sectors has actually been incredibly helpful because there are very large gains to trade here. So if one thinks about the expertise that there is in the insurance market about modeling physical risk, that is a broader use all across the financial system. So learning from each other and sharing our experiences is really important.

And that is why the Climate Financial Risk Forum that we have established in the U.K., we have asset managers, the stock exchange, insurers, and banks to try and make sure we can learn as much as we can from each other given the significance and the urgency of this issue.

CHAIRPERSON ZAKIR: Thank you.

Ms. Rosenberg for the last question?

MS. ROSENBERG: I have a couple of comments. Also, thank you, Commissioner Behnam as well as Alicia Lewis, for putting this on. Thank you. And thank you to all of the panelists. It has been really, really interesting and I would say for me personally eye-opening, the information that has been shared. So thank you.

I did want to mention that -- so JPMorgan Chase served as a member of the Task Force on Climate-Related Financial Disclosure. We thought it was important to be at the table to help shape the recommendations and encourage all companies across a diverse array of industries to think more strategically about climate change. And just this past month, in May, we released our inaugural report, which was informed by the TCFD recommendations on how the firm is addressing climate-related risks and opportunities.

One of the questions I had -- a couple of questions. From a Prudential perspective, in assessing the risks to financial firms from climate change risks, are there any particular aspects of the regulatory framework that is the current focus by the Bank of England and other Prudential regulators?

And, then, the second question I have -- and all of the individual commissioners and the chairman focus on this a lot -- is international cooperation. So the question I have is, how much priority is placed on international cooperation among various regulators and assuring a consistent approach to both assessing the risks and determining whether there should be any kind of reporting or any kind of Prudential regulation.

MS. BREEDEN: Perhaps I might respond in the first instance to that. The focus at the Bank of England at the moment, for us and for the firms that we supervise, is on getting a better handle on the size of the risk that we are confronted with so that we can embed it into our business-as-usual risk management and have a better understanding of what the forward-looking risks look like.

I think once we have undertaken that, it is at that point that we can think about what are the actions that we and firms may need to take to reduce the size of the risk. But, at least in the moment, our focus is on getting a much better grounded sizing of the risk that we face.

And your question about international cooperation is an incredibly important one. We have put a significant focus on international cooperation. We are a founding member of the NGFS. And I chair, as I said, one of the workstreams that we are involved across all of the NGFS' activity. We are a founding member of the Sustainable Insurance Forum that Dave mentioned. And the FCA is our market counterparty, a member of the sustainable financial network that is a part of IOSCO. So we are doing our very best to ensure international coordination.

At the end of the day, this is a global problem that requires global solutions. No amount of action from the Bank of England is going to solve this all on its own.

CHAIRPERSON ZAKIR: Thank you.

Chairman Giancarlo?

CFTC CHAIRMAN GIANCARLO: Marnie, I will give a little response to your question. And then I also have a question for the panel. And I will start with two disclaimers.

One is the CFTC is not a member of FSB, although we should be, but we are a member of IOSCO. But in both of those international organizations, there has been a lot of discussion on issues of disclosure of climate risk.

And the second disclaimer is that we also as a regulator don't oversee a disclosure regime for products and offerings.

So, having said those two disclaimers, I have participated in discussions at IOSCO where our colleagues in the SEC have participated in discussions of disclosure regimes. And I would say that there is a lot of activity on this. And, yet, it is challenging, as almost all global harmonization efforts, because we all have different and rather unique regimes which they operate in.

So the SEC is not -- SEC colleagues are better qualified than I to speak to this, but, you know, theirs is one of what a reasonable investor would expect to be material. Other global regimes have more specific ESG disclosure requirements. So when our colleagues at the SEC engage in these conversations around global harmonization, the challenge is that they will start from a different standard that their respective legislatures or legal bodies have established for them to operate. With that said, there is a lot of activity around trying to find some global standards.

And then, of course, there is the challenge of -- you know, it is not like financial disclosure, where we have a set -- you know, numbers are numbers. When you get into these areas, what is the taxonomy of what is a sustainable -- and what is sustainable finance? What are the elements of ESG? And how do you measure them? How do you quantify them? And so I think the global community still has a lot of work to do around how do you quantify these issues?

That is a broad and general response to you from someone who is not qualified to give you a response since we don't operate a disclosure regime.

I have a question for the panel and then specifically for our guest from the State of California. Thank you very much for a very informative presentation.

You required insurers to report and disclose oil, gas, coal, and utility investments. Excellent. I understand those results are made public. I am not familiar with them. So I may be asking you something that is already well-known out there, but the question I would ask you is, to what extent did they disclose in that information their use of derivative products, which we do oversee, to mitigate that risk? I know that the result of that was an investment policy, but to what extent did you measure the degree to which these risks were mitigated, either partially or fully. And, therefore, maybe some of the concerns were addressed through using products -- finally, something we are qualified to talk about here, at least as a commissioner -- the products that we oversee. And I would be interested to know to what extent the mitigation with respect of these markets have served the purpose in which they are there for.

MR. JONES: That is a great question. We didn't ask for that, and we didn't get that. We found, surprisingly, it was challenging enough for the insurance companies to ascertain, interestingly, you know, what their investments were in oil, gas, cola, and utilities that met the thresholds we set. And initially we thought about some sort of greenhouse gas emissions footprint threshold, but I took a look at the models that were out there in 2016 at the time and talked to some, you know, major institutional investors, principally pension funds that have taken those models and, at least in 2016, run them against their portfolios and came out with widely disparate greenhouse gas emissions footprints from different models. So I decided I couldn't go that route. So what I used was a revenue threshold. It is basically, “Tell me your investments in oil, gas, coal, and utilities where 50 percent or more of the revenue for those enterprises is derived from fossil fuels.”

That was very hard for the companies, it turned out, to figure out. And it occasioned a lot of conversation with their external asset managers and asset advisers to figure that out. We didn't ask for and we didn't get directives. Derivatives, I took a look at this number before coming over. As an overall share of U.S. insurance companies' cash and investments. Derivatives were all an important way to hedge. And I don't want to, you know, diminish the significance of derivatives to the insurance industry, principally the life insurance industry, by the way. But it only makes up about .9 percent of their overall, you know, cash and investments.

However, I think it is an important thing that insurance regulars should be asking. And, as I had mentioned in my remarks, there really hasn't been, to my knowledge, much, if any, attention across any of this work that we have been talking about here today, much, if any, attention to derivatives. So I think it is very timely that your Commission is taking up this issue, that this committee is taking up this issue that you are going to set up a subcommittee to look at this issue, because there hasn't really been a lot of work in this space, to my knowledge.

CFTC CHAIRMAN GIANCARLO: Thank you, for that. As the committee takes it up, I would suggest it might be worthwhile looking into the use of, say, credit default indices and credit swaps on oil and gas, in which, as I recall, there is a fairly active market in that pre-crisis. I don't know where the market is today, but you build your hedge exposure to that industry. It is well-represented in the swaps market.

So I would be interested to see any information that could come out of that.

CHAIRPERSON ZAKIR: Thank you. This concludes our first panel. Thank you to our panelists for the very interesting discussion.

At this time, I ask that speakers on panel 2 please come forward and take your seats.

I would like to ask everyone to please take your seats. We are going to start our second panel of the day. We are going to hear from market participants and climate risk experts regarding approaches to assessing, managing, and disclosing climate-related financial market risks as well as the hedging of such risks. They will also discuss any observed challenges in identifying, evaluating, and managing climate-related financial risks.

On the second panel, we have Nancy Meyer, director of corporate engagement, Center for Climate and Energy Solutions; Kristen Walters, global chief operating officer of Risk and Quantitative Analysis Group, BlackRock; Matthias Graulich, member of the executive board and chief strategy officer, Eurex Clearing AG; and Dr. Stefano Giglio, professor of finance, Yale School of Management. Ms. Meyer, you have the floor.

MS. MEYER: Commissioner Behnam and members of the committee, I would just like to thank you for the opportunity to speak with you today on this very important topic.

Just for those of you who are not familiar with the Center for Climate and Energy Solutions, we go by the acronym C2ES. And we are an independent, nonprofit, nonpartisan organization. And our goal is to advance strong policy and action to reduce GHG emissions, promote clean energy, and strengthen resilience to climate impacts. Our work is informed by our Business Environmental Leadership Council, which is a group of 34 Fortune 500 companies that work with C2ES on addressing climate change risks and identifying solutions. Those companies represent a range of sectors and have combined revenues of nearly $3 trillion and have over 3.5 million employees.

In my role at C2ES I manage the activities of the business council. And that has included facilitating a working group focused on implementing the recommendations of the TCFD. The focus of this working group is to support companies in implementing those recommendations. So my remarks today will focus on key takeaways that I gathered while we organized two meetings earlier this spring with members of our business council and with other external stakeholders. The committee might also be interested in the brief that I authored last summer based on working group meetings held last year on the topic of using a scenario analysis to report climate-related financial risk.

So in terms of some of the key takeaways from our meetings with companies, as we have heard from others today, companies are completing their first generation climate reports based on the TCFD recommendations. Companies across sectors are really eager to learn from one another during this process, but the process is iterative and gradual, as, again, we have already heard.

I would say one of the things that I have found very interesting with conversations with the corporate folks that we work with is that, unlike corporate sustainability, the TCFD's focus on financial outcomes have really broadened the climate change conversation beyond just sustainability teams corporate organizations. It actually requires coordination among several corporate functions within corporate businesses.

The framework includes elements of risk management, strategic planning, and sustainability, and where GHG reporting typically lies. Specifically, managing physical risk often falls under the purview of risk managers. Transition risk is an issue area for strategy teams. GHG management is typically the focus of sustainability teams. And often legal gets involved, particularly when it comes to recording outcomes.

So one of the key challenges the companies have spoken to us about is needing to bridge the gap among those business units and getting those units to actually speak the same language around climate change.

The other key aspect of recommendations that companies have tended to struggle with and have looked to others for assistance with implementation is around scenario analysis, which we have already heard quite a bit of today. And it is very important that companies actually consider both transition risks and opportunities as well as the physical impacts of climate change. And so for many companies, actually looking at and assessing physical risks is easier to translate that into financial outcomes because that involves looking at business continuity plans, looking at supply chains, and is easier to translate. And oftentimes, physical risks are more near-term. We heard that from Mr. Jones' presentation earlier; whereas, transition risks can be harder to quantify, specifically because of the uncertainty around the assumptions around policy or technology. And that makes it more difficult for companies to actually translate the outcomes from those modeling exercises into financial impacts.

That being said, despite the challenge of translating those outcomes, we have seen that many companies have focused the first iteration of their TCFD analysis on transition risk, often harnessing existing capabilities within their companies that focus on strategic planning that already have some of that expertise; whereas, climate modeling to look at physical impacts requires much more scientific expertise. And most companies do not have climate scientists on staff. That being said, we have seen a proliferation of consulting firms who have scientific expertise who are really ready to help companies do some of that more granular analysis around the physical risks of climate change. So that is growing, a growing field for companies to tap into.

Likewise, I would like to just point out another issue that I think has already been raised today but some of the challenges around actually modeling transition scenarios and the fact that models often look or assume a very smooth transition, and we know that climate-related financial risk is most likely to occur during times of disruption. And so many of the companies that we work with recognize this and are looking for ways to actually stress test the outcomes of the modeling that has been done so far in order to better anticipate potential financial outcomes.

Lastly, reporting is another challenge area for companies that we work with. Some companies have concerns about opening up potential legal liability once they have disclosed a possible risk. Others are concerned that scenario exercises can be misconstrued as forecasts. And while we know that models are really good at developing insights, that they are not great at delivering absolutes. So in order to kind of overcome some of those challenges, companies are looking to qualify the uncertainties, rather than delivering those absolutes. And so in transition scenarios, that means looking at policy design and the technology assumptions, knowing what it is that they are using as their assumptions, and being very transparent about them to their stakeholders.

Likewise, it is about framing the uncertainty. It is not just the uncertainty itself. And so, rather than reporting those outcomes in quantitative terms, companies are looking for ways to relay what their strategic options are and how it remains robust within a certain range of uncertainty. And the challenge is to do this without disclosing some of their strategic advantages, which could include confidential business information. So that is a very difficult balance to strike often.

In conclusion, I would just like to say that we have seen significant progress towards implementation of the TCFD recommendations. We see more and more companies that are working to assess and quantify the risks presented by climate change, which is a critical step in managing financial impacts more broadly. However, the process is still evolving and there are many challenges that companies are working to resolve, as I have mentioned. So I would just like to say C2ES is willing to continue to support businesses throughout the implementation process, and we look forward to engaging with stakeholders as this field matures.

Thank you.

CHAIRPERSON ZAKIR: Thank you, Ms. Meyer. Ms. Walters?

MS. WALTERS: Thank you. Thank you, Commissioner Giancarlo, Mr. Behnam, and also, Alicia, for your tireless efforts in MRAC. Thank you very much for that.

For those of you who do not know me, I am the chief operating officer for BlackRock's global risk management function. Thus, my comments today will be focused on my experience over the last 25 years as a risk manager with particular expertise in the fixed-income space.

First, it is important to note that the identification measurement of climate-related economic and financial risks is truly nascent. Climate and related risks are unique given the historical data available does not fit neatly with traditional risk management approaches. On a day-to-day basis, risk managers use a variety of risk models that measure risk and decompose risk on an ex-ante basis, generally based on historical data that includes actual risk events, regime changes, and the opportunity to perform back testing, leveraging historical data sets.

For climate risk, there is historical data available. However, the world has not experienced a global warming scenario of the magnitude being discussed today for over 100,000 years. Thus, as risk managers, we do not have a good starting point to develop risk measurement tools and conduct robust scenario analysis and stress testing. Potential tail risks are announced and difficult to measure with well-identified triggers, such as the collapse of an icecap or reversal of the gulfstream that could accelerate risk in a highly nonlinear way that is very, very difficult to measure and makes our job as risk managers extremely difficult.

Finally, there is a fundamental mismatch between the investment horizon and duration of fixed-income instruments and the much longer timeframe over which we expect climate changes to manifest and impact economic factors and financial markets. In fact, observable impacts that we have seen in market to date, which occur when there is an extreme weather event, that these events have only had transitory, if any, impacts with markets tending to forget quickly and focus on more localized micro and macro factors.

So what is BlackRock doing? Despite these challenges, we do believe that business-relevant sustainability issues, including climate change, in many cases can contribute to the long-term financial performance of companies and markets. To this end, we are developing a toolkit with supporting data, metrics, and reporting for portfolio managers, risk managers, and clients as well as a host of sustainable investment strategies.

Inclusion of ESG considerations in our client portfolios comes in two ways: first, ESG integration in traditional investing; and, second, sustainable investment strategies themselves. ESG integration in traditional investment strategies is the inclusion of ESG factors into financial analysis to evaluate risk and opportunities, such as an active equity portfolio manager evaluating ESG risk to their portfolio, such as the risk of a regulatory action due to a company's environmental track record to inform their investment views and positioning. It is important to note that the evaluation of these risks is no different than the evaluation of other types of risks to the portfolio with a primary objective of delivering value in the form of investment returns to clients in line with client guidelines and expectations, as set forth in mandates.

At BlackRock, we are integrating issuer-level ESG data into our trading and risk management systems. This will allow our investors and risk managers to access ESG metrics that can inform the investment process. For example, this includes stratification of holdings based on ESG ratings and scores by sector and at the absolute fund and active portfolio levels.

Second form of investing, sustainable investing, refers to the explicit cooperation of ESG objectives into investment vehicles, which largely break down into two types: the first ESG screen strategies, which avoid companies that do not meet certain ESG criteria, as specified by our clients; and, second, thematic or impact strategies that seek to focus on a particular ESG objective, such as transition readiness or green asset classes.

With regard to BlackRock-specific climate-related investment strategies, our AUM in these strategies represents over 32 billion in a suite of screened and low-carbon investment products, green bonds held in funds and institutional portfolios, and 12 billion related to an overpower in infrastructure on behalf of our global clients.

Additionally, we offer over 24 billion in real estate investments that embed ESG in investment decisions and management processes. In 2018, our real estate investments achieved a 3 and a half percent CO2 reduction and a 3.3 percent energy use reduction.

Understanding the implication of climate-related risk to financial markets and portfolios is an emerging science that will continue to develop over time. This is clearly an evolving area for risk managers to consider. And we expect our understanding of these risks to financial assets will change over time, as will the reporting and collection of the data on these risks.

Thank you.

CHAIRPERSON ZAKIR: Thank you, Ms. Walters.

Mr. Graulich?

MR. GRAULICH: Thank you very much. Thank you to Commissioner Behnam for putting this agenda together. Thank you to Alicia for getting it organized. And thank you for inviting me to speak on this panel.

I also want to use the opportunity to thank Commissioner Giancarlo for his service over the last years and the great progress we have seen. And we would like to wish him all the best for his next opportunities. So thank you.

We have heard at the beginning from Commissioner Behnam that I think global warming is really a fact. And we are experienced in seeing it and observing it on a daily basis. So we have also in Europe prolonged periods of dryness, which impact the agricultural area. We have heavy rain, which brings other problems and damages. And at the end, if we don't do anything about it, we will destroy the basis for living on this planet in a few decades or a few hundred years.

We have heard a lot this morning about hedging risks and ensuring risks, but at the end, it generates costs. And I would like to get in my remarks a bit of twist into it to say what can we do to limit climate change? What can we do from a financial perspective? What can we do to limit all of these things that what we see today is not getting worse but hopefully is stabilizing or turning at some point?

Interestingly and what we can see in Europe, which is probably not as developed here in the U.S., is the public attention on these topics. And we have had the European parliament election very recently. And the green parties, who really, really had focused their overall campaign on climate topics, have doubled in Germany, for example, their voting. So they went up from 10 to 20 percent, making it the second biggest party in Germany. And I think this is a really, really big statement that this is not a topic for an isolated group, that this is a public topic.

So I think let me start and frame it a bit. So we have heard a lot of times that there is this target to limit global warming to 2 degrees Centigrade. And what has been done in Europe, people have operationalized these kind of targets and defined concrete targets for greenhouse emission reductions or 40 percent reduction until 2030, a target that one-third of the energy mix is coming from renewable energy by 2030, and another one-third improvement on energy efficiency.

Now, Global Sustainable Investment review came to the conclusion that this requires in Europe alone an annual investment from the private sector of

180 billion euro. So this is a very big amount, which requires to have a discussion about sustainable investments and sustainable finance, which at the end is our core topic of today.

Deutsche Borse has one of the largest global market infrastructure providers with its subsidiary CRX and the European Energy Exchange and stocks have committed themselves to develop solutions to promote and support a sustainable finance ecosystem.

I would like to focus today on two specific initiatives we have supported in order to facilitate this development. The first is an effective trading system to reduce greenhouse gas emissions. As you might know, the European Commission has established a so-called EU emissions trading system. What is behind it, it issues emission certificates which firms can buy in an auctioning format and then also can buy in a secondary market. And the number of certificates which are issued are reduced until 2030 every year step by step to achieve the overall objective to reduce the greenhouse emissions by 40 percent until then.

Why is that important? Because pollution, greenhouse emissions has to have a price because if it doesn't have a price, people have no incentive to get rid of these kinds of or to lower their greenhouse emission gas and go invest into renewable energy and invest into these type of things.

Now, E-X, one of the subsidiaries of Eurex, has been chosen as the auction platform within EU 27. E-X also organizes the secondary market for both the certificates itself as well as futures on those certificates.

Now, what we have seen in the development of the last years is with a cutting of the availability of the certificates, training activity has tremendously increased. So we have seen a 90 percent increase alone in the last year in trading activity in these greenhouse emission certificates. And the price for these certificates has tripled, has tripled in just one year, which is clearly a demonstration that we are exactly sailing in the right direction with this project. And what we can see and that the interim target in Europe has been defined for 2020 at 21 percent reduction as a kind of step to achieve the 40 percent reduction. And, with all likelihood, as we can access it, access it right now, we can say that we are on a good path to achieve that 20 percent reduction in Europe, which I think is a good signal and also a signal that the system with the governmental intervention works. And, to conclude on this topic, I think, really, governmental intervention is very, very important to pave the way to achieve these objectives.

Let me briefly talk about the second topic, ESG-compliant benchmarks and derivatives. What we can see -- and we have heard it before, that sustainable investments is really a trend. And according to the Global Sustainable Investment review, already $30 billion U.S. dollars are today invested globally in sustainable assets with a very huge chunk, 50 percent of the total assets under management in Europe according to this study are in sustainable assets.

Now, what does sustainable assets mean? There is a range of definitions and categories. It starts on the one end with excluding certain firms which are not in line with ESG standards on the one end of the spectrum. And the other end of the spectrum, we have investments or categories which are specifically targeted to invest in projects and undertakings to reduce greenhouse emission gases to promote renewable energy and so on.

Now, what we as Eurex have done in conjunction with stocks globally, active index provider as also part of Deutsche Borse group, we have developed indices and derivatives on these indices to allow investors to use ESG-compliant benchmarks and ESG-compliant risk management instruments. So we have heard from many of these asset managers, “Yes, we are investing ESG-compliant, but if we want to manage our risks and use derivatives on certain indices, these indices also include non-ESG-compliant firms. And, therefore, we can't use these derivatives.”

Now, we have launched these derivatives in February. And, again, thank you to the CFTC for promptly approving them to also allow distribution of these derivatives into the U.S. and allow U.S. investors to use these derivatives. I would like to very briefly describe the concept of two of the indices and derivatives.

So the STOXX Europe 600 is a well-known index in Europe. And we have modified this index and excluded firms who produce, for example, controversial weapons, who are baked into BAE Co. and who are heavy in TERMCO, what we have heard earlier, or who are in breach with the EU global compact principles. And on the back of this, we have launched futures in order to make sure that people who want to manage risks with regards to these companies, that with regards to the compliant companies, that they have a tool to do so.

The other is probably an even more interesting but more future-looking index, which is building on the Euro STOXX 50 index and is called Euro STOXX 50 low-carbon index. This index leaves all constituents which are today in the base index in but applies different weightings to the firms in that index. And the weighting is based on a carbon intensity score. So the lower the carbon intensity of a certain firm, the higher is the weight and vice versa. So with that mechanism, we have reduced the carbon footprint of the firms represented in that index by 60 percent.

We have in the meantime five liquidity providers who help fueling liquidity into this product. We have a number of asset managers, insurance firms who are actively using those products. We have in the meantime built an open interest of 500 million euro, which is a tiny amount relative to the other indexes and risk management tools we are offering, but I think we are just at the start of a very long journey. And I am convinced that these type of products and initiatives help to manage these risks going forward and to ultimately achieve one primary objective next to risk management to make sure that we can live and our kids can live on this planet for a couple of more years.

Thank you very much.

CHAIRPERSON ZAKIR: Thank you, Mr. Graulich.

Professor Giglio?

DR. GIGLIO: Okay. So, first of all, thanks a lot to Commissioner Behnam, to Alicia, and to the entire committee for inviting me to speak here.

What I want to talk about today is hedging climate risks. So, you know, this is a big topic. And

I am going to just focus on the kind of main conceptual issues of it. And so let's start by thinking about what is really unique about the hedging climate risks, in particular? Okay?

And so, you know, you already see when you start that this is a hard problem because it is even hard to define what is the right target of the hedge. Okay? So if you think about, you know, we have very sophisticated financial markets. They are able to hedge a variety of different types of risks. And, you know, if you give financial markets a target, you say, "I want to hedge this particular risk," you know, we are very good at creating products that can target that risk. But with climate risks, it is even hard to exactly define what we want to target. Do we want to target, let's say, climate variables? We are going to hedge literally something directly temperature increases or do we want to target -- I don't know -- for example, the economic damages that come out of climate change?

So the first kind of very important issue that we think about when we think about designing financial markets to deal with this risk is to figure out what is the right target of the hedge? Okay? There is a second issue which, again, is very specific to climate risk, which is how do we kind of overcome some kind of very natural obstacles to market participation and development of this market for these risks? And I am going to give you a few examples of the kinds of obstacles that they are; for example, the fact that these horizons are very, very long. You know, sometimes, you know, some of the changes are very immediate. Some are going to appear over the course of, let's say, 100 years. Now, for example, how do I ensure that my counterparty is going to be there, right, if I make a very long-term bet? Or these are also markets where the information is very limited. And that, of course, discourages participants to take very large positions in that. Okay? So there is a bunch of obstacles to participation that we need to figure out how to overcome in order to develop markets with these kinds of risks.

And, finally, I want to say a little bit more about the -- actually, risks from an economic point of view, which is something that other people on the panel have brought up before. You know, in order to be able to trade this risk, in order to be able to face and deal with this risk, we kind of need to have a good sense of the likelihood of different events and the severity of these events. We are really at the starting point of this. There is a lot more work to be done.

If you think of the way that we manage risks, there are kind of two ways to approach opportunities and to think about the likelihood of different possibilities. One is to do some more structure analysis to say, “Well, you know, this is kind of what I think climate change is going to evolve over time. This is how I think it is going to affect the economy.”

So these are basically a model that I can use to make predictions and think about how I can deal with them. But this is very difficult to climate change because it is so hard to make long-term predictions. The systems are very nonlinear. The effects on the economy themselves are very nonlinear.

So the standard kind of model-based analysis of risk is hindered by the fact there would be. It almost affected a model uncertainty. And, on the other side, you know, we know we can do kind of a more useful analysis of risk from, let's say, a statistical point of view, but that is also hard because we have no data on the kind of scenarios that we think are particularly important, these very extreme events. Okay?

So these are three issues that I think, you know, we are going to need to solve, not in the very near future but over the long term as we develop these markets.

Now, there are also other operational issues to develop kind of markets to treat climate change risks. For example, you know, how do we even consider? So can we go around constructing very long-term securities? It is very hard to sustain a security or anything that has a target 100 years from now. Can we go around that with, let's say, a sequence of short term, for 4 years that can kind of replicate these long-term securities? That is something that has come up in questions. There are some approaches that we are going to talk about later, but it is an important operational question.

Another important operational question is, what instrument do we want to use to hedge this risk? Are the equities enough or they are not or do we need more specialized derivative securities?

So, you know, if you think about what you and the panel talked about, for most of the discussion, it has been, “Okay. Let's think about the firms that we currently have. And let's concern indexes and derivatives that are based on existing firms and their exposure to current risk.”

But financial markets in theory allows us to do much more. Right? In theory, we can sit down together and just write a contract that is unconnected, disconnected from the underlying firms, is literally a bet on temperature. Right? These contracts exist, a very limited volume, delay in maturity, but we could be very creative I think in thinking about what are the ideal securities that we want to trade.

And, finally, a very crucial question for which I didn't have any answer to, is what is going to be the cost of this insurance or these hedges? Okay?

It is, of course, what is going to be the price to be a very, very complicated issue, you know, but also by the adoption of these insurances and hedged, we would be very related towards the final price will be. Okay?

So these operational issues, as I said, I don't have the answers to all of these questions, but what I want to talk about, you know, is one simple example of somebody who should have doing it with -- in other quarters on trying to come and take the first step in actually building a hedge against climate risk. Okay? So, basically, we do that today. What we have to do is to take a stand on all of these issues and actually construct the hedging portfolio, hedging portfolio for climate risk.

So we have to, first of all, choose a target. And, again, there are many ways, many targets you can build. What we decided to do is to construct some sort of very forward-looking index of the perception of long-term climate risk. And we did that by looking at, basically, in using these newspaper articles, that is an example of how you can be creative and building industry to target.

You see the plot here is from Wall Street Journal. You can see the index is exactly spikes, you know, in correspondence with the big events, you know, the Paris Accord, you know, and so on. And, you know, for example, you know, the Times where the IPCC delivered some of the reports, you see the index spike. So it is I think reasonable first step is something we can clearly target. And so what we do, we will use only equities because that is what we have available so far. And we used a large cross-section of equities to construct a portfolio to attach this risk.

And we used a very basic principle from optional prices that tells us if you have a long-term objective, let's say, climate change, you know, 100 years from now, how exactly to construct a portfolio you can't replicate, an ideal security reason, exactly hedges bet, long-term risk.

Okay. So I am not going to give you all of the details, but the result is that, you know, even with these very simple, very first-step approach, we can already make some progress.

If we repeated out-of-sample, out-of-sample procedure, we can get up to, let's say, 30 percent hedging of this index. It is not the final goal. We can definitely improve over that. But it is the first step.

And so the point of this was to say, you know, that it is going to take a long time do figure out exactly what are the right things to do and what are the right things to pay attention to, what are the right targets, and so on. But we can already now do some work towards that.

And I want to conclude thinking a little bit specifically about the derivatives market. So I personally think that when we think about climate risk, derivatives market is where a lot of the action should go because of the extreme flexibility in deciding exactly what we want to target. And so I think it is important to think about what are the special issues that arise when we think about the derivative markets. Okay?

So here is kind of a few thoughts. One thought is that, you know, climate change is a risk that is kind of very natural, very naturally heterogeneous across geographical regions. Right? And so, you know, I think that, really, to maximize the benefits of kind of risk sharing, it is important that this be a global market, as opposed to a set of like localized markets. So if we think about introducing derivates on climate risk, you know, we should do as much as we can to make it a global market.

Second, I think it is a market where we really need a multiplicity of products. We are not going to find one derivative product that is good for everybody because different people care about different aspects of climate change. And so I think that to reduce basis risk and to encourage participation and to encourage risk sharing, we really need to have a multiplicity of climate change-related products.

And, finally, I think there are many interesting policy questions. One that I wanted to think about and highlight was the fact that there is actually -- you know, the climate change in general is a market where -- it is almost a tragedy of the commons. And so there are other externalities. People actually producing the risk also are not typically bearing the entire cost of the risk. And it is interesting and important to think about how introducing insurance markets may affect the incentives of people that are actually polluting. If you are a big country or a big polluter, it means that you can kind of afloat some of that, the risk, to somebody else in the planet. You might have been left with less skin in the game. And that has the potential to be very systemic effects.

So my conclusion is I think that derivatives is the right space to think about this risk. I think there is a lot of stuff to figure out before this can be actually implemented, but, really, I think this is a great opportunity to push for a global liquid market, in which this can be traded and efficiently shared.

Thank you.

CHAIRPERSON ZAKIR: Thank you.

I am now going to open the floor to questions and comments from the membership. Mr. Johnson?

MR. JOHNSON: Thank you. First of all, I want to also thank Commissioner Behnam. This is a wonderful topic and I think in the forefront of some very important issues we are going to face. Also, as an alumni of the Commission, I want to thank Chairman Giancarlo for the fantastic work you have done. It is really moving the agency forward. Thank you.

I wanted to ask Mr. Graulich. You mentioned the emissions credits that are occurring in Europe. And here in the U.S. -- and in your perspective, if you look at these similar to the certificates. So you have going on in the State of Oregon and Washington potential LCF, low-carbon fuel standards, and cap and trade programs. You have successful cap and trade and LCF programs going on in California. You have got the regional greenhouse initiatives on the East Coast and the transportation initiative that is being worked on at this present time. And looking at those are kind of individual simple markets -- and I should mention the RINs at the Federal level also. Do you see those working in a similar way as the emissions certificate says potentially a way of helping reducing they carbon and the greenhouse bases?

MR. GRAULICH: Unfortunately, I have no deep insights into the different schemes in the U.S. and the setups in the different states. Therefore, it is hard for me to judge whether that would work in a similar way. I think the key aspect to a successful program ultimately, kind of triggered by the government, is to have a shortage in the availability of these certificates because only if you have that state, then there will be active trading. And with an increasing price, people have an incentive to divert their investments into renewable energy and other things and doing business at the end of a trigger, which needs to be achieved, but sorry, I can't really judge the U.S. programs since I am too far away from the East. Sorry.

MR. JOHNSON: Thank you.

CHAIRPERSON ZAKIR: Mr. Chang?

MR. CHANG: Thank you. I would also like to thank Alicia and Commissioner Behnam and Chair Giancarlo and the other commissioners for setting up this event. I found both the first and this panel very informative. And, admittedly, I am very far from an expert on this topic.

Just a couple of sort of broad comments. The first is, just as someone who has kind of grown up in the markets, it strikes me that when we are -- just as an overall impression that we are much more likely to find solutions using market-based approaches, rather than top-down regulation. And there has been a few different sort of approaches suggested. Again, as a sort of derivatives trader by training, what I found with top-down regulation often is that when you write the rules too strictly, people find ways to get around them.

Broadly, though, this is the second observation as now someone responsible for the execution at a global asset manager. One of the things we struggle with as a firm in getting our arms around is actually how do you define ESG? We have had some pretty wide-ranging conversations. I wouldn't say this was a consensus view, but I will throw this out as an anecdote, which is we had a conversation with a European investor, who asked, “Well, if U.S. pulls out of the Paris Accords, I guess I can't invest in U.S. treasuries anymore,” which would be a pretty -- you know, would seem to be a pretty extreme interpretation from a markets perspective, but I don't know if I would take a step back and think about -- it depends on how you define ESG, right?

So, broadly, I wanted to pose this question to the panelists, which it seems to me like -- and this topic has come up in a number of the presentations already. We need to define the problem we are trying to solve in order to solve it. And how close are we to doing that?

I don't know if maybe that is too broad of a question, but at the back of my -- in my mind, I still struggle to know exactly what problem we are trying to solve. And, as a result, I am not as clear as to exactly how to think about tackling it.

MS. MEYER: I will go ahead and jump in. Just in a broad sense, I would say that we are still trying to define what ESG means, I think particularly in light of the TCFD recommendations. I think historically ESG was very well-understood in terms of what it meant, greenhouse gas management, what companies were doing internally to address their own emissions footprints and impact on the environment. But when you start thinking about strategy and longer-term strategy and how that gets translated into markets, I think that is what this whole conversation around what are we doing with the information the corporate folks are disclosing on their strategy around climate change? And how does that relate to their financial impacts? And, then, what is the market doing?

So I would say it is not well-defined, but there is a lot of work being done to try to define it a little bit better so that you can work towards something more concretely.

MS. WALTERS: I think from an asset management perspective -- so I think the science, although I am not a scientist, is kind of well-analyzed and known. But the link to financial markets and the broader economy actually is not. So we are trying to -- we do think it is much longer, much longer-term, as I mentioned before. So I think our focus is to try to find data to identify or measure that linkage. And I talked about some of the issues in my comments earlier, but, you know, kind of the granularity of risk is also an issue. So when you think about broad risk management, in my space, it is about asset allocation across stocks, bonds, cash products, alternatives, big macro risk, risk on, risk off, you know, relationships between EM and DM markets. And in the context of climate risk, it is a much more granular discussion that we haven't experienced before. So in this space, to the best we can tell, you need to think about the individual company, the location of that company in a very precise way, and the actual commodity.

And we started to do this. We did some work with the Rhodium Group that had to be published. And I provided the materials for this forum. You can do it for asset classes where location, you know, can be located, as I would say for U.S. munis and CMBS, but there are many other assets where just identifying the location is very difficult, so, for instance, the corporate markets.

So I think for us, it is a voyage of discovery, of identifying the data, and trying to develop a toolkit. And right now, it is early. It is early days.

DR. GIGLIO: Yes. I just wanted to link in.

You know, I agree with you that we are still in the very early stages of this. I also don't think there is a pressing need right now to define uniquely, for example, what ESG is. I think we are perfectly fine having a different measure of that. And, you know, different participants, we care about different types of exposures from different risks. And so I think markets are very good at integrating different -- a lot of different informations.

And so I think it is good that, you know, it is not the stage where I think we should be converging into one measure. I think this is the stage, we want to produce information. And then over time, we are going to figure out how to use it.

And this also connects to the discussion that Peter responded on the disclosures, right?

I don't think we should pin down forever right now what is the exacting the need to disclosure. I think we should try to disclose as much as we can, condition all these constraints are obviously there. They are always out there. And then we are going to let the market and their graders figure out what are the important parts.

CHAIRPERSON ZAKIR: I guess it is a related question on that topic. Obviously the TCFD has done a great deal of work around disclosure and developing standards and guidelines around disclosure. How should we be thinking about the consumption, right, by users of that disclosure? How important is it that users are interpreting those disclosures consistently? Can you talk a little bit about that?

MS. MEYER: I leave that to you experts to describe.

DR. GIGLIO: Okay. So I can try to take that.

So do you mean how, you know, end-users can use all the information? Well, so this kind of connects what I had been talking about before in my presentation, which is that I think that we need -- it is going to be extremely useful to have markets where people can express their views and basically express their interpretation of this, of the information. And, you know, we know from historical data that markets do a very good job at the information. And I think that this is going to be a crucial functions of markets that we can potentially create in the future. Yes.

MS. WALTERS: I guess for BlackRock, we do think disclosure is important. We have contributed to the initiatives such as, you know, FSB's task force and climate-related financial disclosures and the SASB. We certainly believe these standards are an appropriate starting point for any company assessing its potential sustainability, risks, and opportunities, including climate risk. And we started to think about, again, the first step to being able to disclose information to be able to kind of properly measure it. And for us, that is within our own company but all of the assets that we invest in. So we have been trying to embed as much data, research, ESG scores, risk ratings into our trading risk management systems, and to try to use that as a basis for thinking about ESG risks and funds and also doing scenario analysis.

We were definitely also on a voyage of discovery with regard to how we will use disclosure when making investment decisions on behalf of clients is what our own disclosure should look like.

DR. GIGLIO: Can I just add something? So if you think about how you construct -- you pick a target, right? You say, “I want to hedge this risk. I want to construct a portfolio of companies to hedge this risk, like we did in this case, right? How do you do it when you use all the information you had with companies? You use potentially hundreds of advice about the companies. And that allows you to really fine-tune, you know, the exact exposure to these risks. And so that is one example where, you know, market participants can use all this kind of very rich information that we have.

MR. GRAULICH: Perhaps to add with regards to the index composition, I mentioned this carbon index. I mean, what we simply do is we look at the carbon intensity score. And, of course, we need to have this data available and these firms. So your STOXX 50 companies make this data in the meantime available. So, then, I think we can take this into consideration when setting up the index and defining the index.

So I think it is really about -- I Mean, consuming the data in the right forum, but bringing it together and kind of laying the ground for an informed investment decision on these topics.

CHAIRPERSON ZAKIR: Thank you.

Mr. Banaei?

MR. BANAEI: Thank you, Nadia. I just want to make a comment and maybe front-run the discussion that may happen or when there is a discussion of the subcommittees, it may be some of the subcommittees' early work.

I think one of the areas where the CFTC could help buoyed at an initiative or that could contribute to the mitigation of climate risk given its oversight over commodities and derivatives markets is by looking at specific markets that has traditionally had an interest in particularly agriculture and other commodities. And helping, you know, firms come up with targeted risks and thinking about scenario analysis in a way that could help produce quantitative outcomes that can be measured, that can be aggregated, and then could contribute to, for example, indices and financial products that can, in turn, be marketed as derivatives on exchanges.

And here it is -- you know, we are in the business of, you know, creating and administering indices, fixed-income equities, as well as economic indices. And traditionally what happens is there are metrics out there, there are prices out there, and we aggregate them in some way that, you know, presents a value to our customers. Here, it is almost we have got to think about it in the reverse. We have got to think about, you know, what are the metrics and prices, you know, that are relevant to measuring climate risk and then, you know, that can, in turn, help create financial products, which can then, you know, have their traditional risk-pricing and risk-shifting functions.

CFTC CHAIRMAN GIANCARLO: Salman, a very good point. And I just wanted to come right back at you. I think an area that I think the committee could provide a service I particularly would find very interesting would be to know today which derivative products are part of a basket of climate change risk mitigation that firms are indeed using, whether it be AG commodities, whether it be weather-related futures or weather-related hedging, whether it be credit default protection against firms engaged in, whether it be extracted industries or energy production. I would be interested to know firms that are hedging today, not using specific ESG products traded on exchange but are using proxies and baskets of tools in order to hedge against. I think it would be very interesting, very informative if we had just a survey of what is currently being run using existing product sets. And then we can then think about how they might evolve ultimately to specific climate-related hedging instruments.

CHAIRPERSON ZAKIR: Mr. Stanley?

MR. STANLEY: Thank you. And thank you to you, Commissioner Behnam, for his leadership of this committee and to Chairman Giancarlo for your leadership of the Commission.

I thought that the point that Dr. Giglio made at the very end of his presentation about the policy concern was a very important one. And I would kind of like to ask him to expand on it because I think that one thing that happens when you move the climate issue into the financial markets context is that your focus can shift from what will harm the planet to what will cost investors money. And those two things are not actually the same question. And our goal should be to reduce actions that harm the environment, not just find ways of compensating investors when harm occurs. And we especially need to be aware of times where these could conflict.

So I just wanted to ask Dr. Giglio and maybe others, how should we think about what forms of hedging and trading will actually shift real investment to more environmentally beneficial practices? And which forms will not or might even be counterproductive to that?

DR. GIGLIO: All right. So, first, thanks for the really good question. It is a very hard question, too, because, you know, really, what is going to happen, you know, to the entire system is a very comprehensive equilibrium because it may force a place -- it is very hard to predict what the equilibrium will be. So I can just expand a little on what I said in my presentation.

So, you know, we know that these are markets with the biggest analysis. We also know that there are some players that come to realize at least part of what their effect is. You know, countries as a whole set policies, and countries as a whole pollute. And there are also many firms that do without, you know, for example, carbon toxin without, you know, requirements. And so they won't acknowledge any other pollution at all.

And so, you know, of course, you know, the problem is other markets, too, in the healthcare market, in the credit market, where, you know, people have set incentives with some skin in the game, but if there is an insurance market, they might just try to take the skin out the game. And so it is -- which I think is relevant.

It is hard to predict what is going to happen, of course, because in an equilibrium, the price of insurance will also reflect the actual risk. If I have insurance, I can take some risk off, but by doing that, I can end up not mitigating the risk. And the price of insurance will rise. Well, I may not buy the insurance in the first place. And so it is a very complex -- you know, I have no idea what is going to happen.

But I do think it is good to keep in mind, especially because we do have players which are pretty big. You know, there are some very big corporations, particularly, for example, the energy sector. They do have clearly an incentive in pollution mitigation, governance, too. So I think that that is kind of what I had in mind with that.

And then your question was more, how did this affect the innovation? So, you know, they will transfer the risks, can have negative effects like this, can also have positive effects, right, because, you know, we cannot remove complete exposure to these risks. So the question is, can we find an efficient way to manage those risks? Part is going to be mitigation, part of it is going to be transferring to, you know, market participants that can actually bear the risk so overall it still can be very positive.

CHAIRPERSON ZAKIR: Thank you. I think we have time for one more question. Mr. Slocum?

MR. SLOCUM: Thank you very much.

Excellent presentations. Thank you to the panel.

Building on Marcus' question of Professor, I really like thinking big about how to, you know, deal with hedging climate risk broadly. We sort of tried it in the United States back in 2009, when the House of Representatives passed economy-wide cap-and-trade legislation. That wasn't just about emissions mitigation but also was opportunities for financing adaptation for companies and other entities. And at the time, I remember Goldman Sachs predicting that if that were enacted into law when combined with other global emission derivatives markets, it would have far exceeded crude oil markets. And so this was an opportunity to use financial derivatives to address the issue.

The challenge in the United States since then has been that efforts to address Federal acts on climate change have become weaponized by very well-funded opponents. And it makes having a coherent dialogue on this extremely frustrating and very difficult. Public interest advocates have been continuing leading the efforts on this, but we need to have more types of entitles talking about not only the need but the benefits that financial products can play in hedging climate risk. But it all is going to stem from some sort of Federal policy, I believe. And so I thank all of you for your efforts. And just if you have got any insights on how we can move this very difficult ball forward in the U.S. political system, I would welcome that feedback.

MS. MEYER: If I could just provide a comment? From C2ES' perspective, we are actually very active, engaged with folks on the Hill, as well as stakeholders at the state and local level. And one of the things that we do really well is bring together the corporate community in conversation with those policymakers to try to find practical solutions. And I would say that I think the tides are turning, but in the last year alone, we have seen a lot more interest and engagement from both sides of the aisle on climate-related issues and that it is gaining traction, partially because a lot of folks are hearing from their own constituencies, that this is important to them, I think largely driven by severe weather events that we have seen over the past few years, among other things.

So I think there is hope, needless to say. And I also think there is this whole issue about finance. This is a very important one and one that we in our research at C2ES are actually working to include in some recommendations that we are putting forward in a big policy paper to be relapsed hopefully late this year or early next year.

CHAIRPERSON ZAKIR: Thank you.

We are going to go ahead and conclude our second panel here. Thank you to our panelists for a very informative discussion.

At this time, we are going to turn to MRAC new business and the establishment of subcommittees. In March 2018, Commissioner Behnam invited members of the public to propose potential topics for the MRAC to prioritize and making recommendations to the CFTC on how to improve market structure and mitigate risk. The committee has held meetings on some of the issues identified, such as LIBOR transition, CCP risk, and oversight of third party service providers.

Today, we discussed climate-related financial market risks. During these discussions, various MRAC members and industry experts identified or recommended several areas for further work. Accordingly, as Commissioner Behnam noted in his opening statement, the MRAC will be creating four subcommittees to further the goals of the MRAC in the following subject areas: CCP risk and governance, operational risk, market structure, and climate-related financial risks.

If the MRAC members believe it is important to further examine these four topics and provide recommendations to the Commission, as appropriate, a motion from the membership is necessary to establish the subcommittees. We will take each subcommittee individually. Is there a motion from the membership to establish a central counterparty risk and governance subcommittee?

MS. ROSENBERG: Yes, I would motion to establish the CCP risk and governance subcommittee.

CHAIRPERSON ZAKIR: Thank you. Recognizing Marnie Rosenberg.

Is there a second?

MS. WALTERS: Yes, from BlackRock.

CHAIRPERSON ZAKIR: From BlackRock. Thank you. It has been moved and properly seconded that the MRAC establish a central counterparty risk and governance subcommittee. Any discussion?

(No response.)

CHAIRPERSON ZAKIR: If there is no discussion, all those in favor of establishing a central counterparty risk and governance subcommittee say aye.

(Chorus of ayes.)

CHAIRPERSON ZAKIR: All those opposed?

(No response.)

CHAIRPERSON ZAKIR: Any abstentions?

(No response.)

CHAIRPERSON ZAKIR: The ayes have it, and the motion is passed.

Is there a motion from the membership to establish an operational risk subcommittee?

MS. NORLAND: There is a motion to establish the operational risk committee. Thank you.

CHAIRPERSON ZAKIR: Thank you.

Is there a second?

MEMBER: Second.

CHAIRPERSON ZAKIR: It has been moved and properly seconded that the MRAC establish an operational risk committee. Is there any discussion?

(No response.)

CHAIRPERSON ZAKIR: If there is no discussion, all those in favor of establishing an operational risk subcommittee say aye.

(Chorus of ayes.)

CHAIRPERSON ZAKIR: All those opposed?

(No response.)

CHAIRPERSON ZAKIR: Any abstentions?

(No response.)

CHAIRPERSON ZAKIR: The ayes have it. The motion is passed.

Is there a motion from the membership to form a market structure subcommittee?

MS. SHEMIE: I move to create a market structure committee.

CHAIRPERSON ZAKIR: Thank you.

Is there a second?

MR. PRIYADARSHI: Second.

CHAIRPERSON ZAKIR: Mr. Priyadarshi, thank you.

It has been moved and properly seconded that the MRAC establish a market structure subcommittee. Is there any discussion?

MR. McCLEAR: I just have a quick question. What do we mean by “market structure”?

COMMISSIONER BEHNAM: We are going to let the subcommittees with our involvement to an extent really shape the conversation. And there were a number of questions and proposals raised during the initial formation of this revised committee to discuss any number of market structure-related questions.

So, like I pointed out at the beginning of my statement, these will feel more like workstreams. They will be inclusive. And we would certainly welcome any thoughts above and beyond what the committee has already submitted as market structure-related risks.

All those in favor of establishing a market structure subcommittee say aye.

(Chorus of ayes.)

CHAIRPERSON ZAKIR: All those opposed?

(No response.)

CHAIRPERSON ZAKIR: Any abstentions?

(No response.)

CHAIRPERSON ZAKIR: The ayes have it, and the motion is passed.

Is there a motion from the membership to establish a climate-related financial risk subcommittee?

MEMBER: I move to establish it.

CHAIRPERSON ZAKIR: Thank you.

Is there a second?

MEMBER: Yes.

CHAIRPERSON ZAKIR: It has been moved and properly seconded that the MRAC establish a climate-related financial risk subcommittee. Is there any discussion?

(No response.)

CHAIRPERSON ZAKIR: If there is no discussion, all those in favor of establishing a climate-related financial risk subcommittee say aye.

(Chorus of ayes.)

CHAIRPERSON ZAKIR: All those opposed?

(No response.)

CHAIRPERSON ZAKIR: Any abstentions?

(No response.)

CHAIRPERSON ZAKIR: The ayes have it, and the motion is passed. We will submit the necessary paperwork to the Commission to establish the subcommittees and will be seeking MRAC and non-MRAC members to serve on them, as Commissioner Behnam laid out at the outset of his presentation.

Now we will have a report from the MRAC's Interest Rate Benchmark Reform Subcommittee on its work to date. The subcommittee, under the leadership of Tom Wipf, vice chairman, institutional securities at Morgan Stanley and chair of the Alternative Reference Rates Committee, has been working diligently since it was established last fall. I ask that Thomas Wipf and his working group leaders, Bis Chatterjee, Marnie Rosenberg, and Ann Battle, please come forward and provide the subcommittee's report.

COMMISSIONER BEHNAM: Before we move to Tom's panel, I just do want to say I appreciate the formation of the subcommittees, but any work product deliverables that any of the subcommittees produce, which is standard for this agency, will be products of the subcommittee. They will be brought before the advisory committee to be voted on. And, then, they will essentially act as recommendations to the Commission. And that is all they are, is recommendations to the Commission.

Thanks.

MR. WIPF: Thank you, Nadia. Good afternoon. It is an honor to be presenting back in front of the Market Risk Advisory Committee on behalf of the Subcommittee on Interest Rate Benchmark Reform. My name is Tom Wipf, vice chairman of institutional securities at Morgan Stanley; on this topic as well, represent the firm as chair of the ARRC as well as a board member of ISDA.

Before we begin, I would note that my comments will not be on behalf of Morgan Stanley, the ARRC, or any other organizations today, and any views I represent on my own and those of our Subcommittee on interest rate reform, as I previously established by the MRAC.

I want to take a moment to thank Commissioner Behnam and Alicia Lewis for their key support in this work as well as the MRAC, the other commissioners of the CFTC here today, and my colleagues who join me on the panel.

I want us to take a moment initially to begin by recapping key developments in the LIBOR transition that have occurred since we last spoke in December 2018 and then provide an update on the progress to date of the MRAC subcommittee on interest rate benchmark reform.

So, first, we are going to categorize these things into two buckets. So we will talk a lot about what is happening from the official sector as well as in an industry and a private sector perspective. These are obviously intersecting workstreams, and we want to touch on those before we move into our initial recommendations.

So from the major developments in the market from the ARRC has been the publication in the cash markets of fallback language for those that continue to use LIBOR and cash products. The ARRC completed four sets of fallback language for floating rate notes, syndicated loans, bilateral loans, and securitization. And the goal of that was to create some degree of uniformity between optimized fallback language across cash market asset classes going forward while also addressing the idiosyncrasies of each market.

ISDA has also been hard at work to improve fallback language in derivative contracts via new fallback terms, which should be released by the end of the year. These new terms will apply to all new LIBOR swaps, incorporating the standard ISDA interest rate definitions and to legacy LIBOR swaps via a voluntary protocol.

Following their initial consultation completed last year, ISDA is currently in the market with two additional consultations. One is on spread methodology to be applied to additional currencies not covered in the 2018 version, and one is on the potential inclusion of a pre-cessation trigger in the ISDA protocol. I would note that this second consultation also was recommended by the OSSG, the official sector committee, encouraging such a market survey.

ISDA will also seek feedback later this year on the market's views on the conventions to be applied around implementation of the eventual fallback spread. And by the end of the year, we should hope to see final fallback terms for LIBOR swaps.

SOFR-based products in the United States continue to grow, gain traction among both cash and derivatives. SOFR futures are, as CME has mentioned, the third best start in their history of a product. At quarter end, we saw significant activity in swap volumes that we looked to build upon.

Issuance in floating rate notes referencing SOFR has reached 100 billion since last summer, and we continue to see this market evolve. We also see a difference in conventions. So the initial issuances on floating rate notes utilizing SOFR were done with a money market calculation or an average. We have since seen from other issuers a compounded in arrears, which mimics a swap market a lot more closely. So we will see that depending on the investor base and the issuer, there are several conventions available now in the market. And we are assuming that that will develop over time as well.

The ARRC's outreach efforts have also been meaningful, both with public and with regulators. A few weeks ago, the ARRC published a user's guide to SOFR, which demystified in many ways how market participants can begin using SOFR in contracts today. The ARRC hosted its fourth annual ARRC roundtable, where we heard from Vice Chair Quarles as well as many other ARRC members.

In May, ARRC followed up with our July 2018 Title VII letter, which requested certain regulatory clarification from the CFTC and other regulators with an additional letter that provided an update regarding conversion approaches and an additional request for regulatory relief in order to facilitate the pace and effectiveness of the risk-free rate transition. I will discuss these views in greater depth along with our initial recommendations today.

From the official sector, regulators have played a significant role in the progress that has been made in 2019 thus far. In April, the FSB in this room convened a roundtable with global regulators and many market participants in order to share views on the transition to date as well as to solicit feedback on transition. And the message at that roundtable was crystal clear that certainly the official sector regulators, particularly here at the CFTC, are willing to entertain relief within reason. And the view has informed our subcommittee, the MRAC subcommittee, the key updates, which we will elaborate on momentarily.

Further, the Bank of England hosted their annual event last week, where it was clear that they were also amenable to thoughtful relief as well.

This backdrop of potential regulatory relief has been communicated to the MRAC subcommittee for interest rate benchmark reform and has helped inform our updates for this group today.

When we addressed the group back in December, I noted that our primary goal is to provide input and recommendations to the MRAC as it relates to potential policy changes that could impact the course of LIBOR reform. Our key principles in this regard were and are the following. Our goal was to remove hurdles to the transition to SOFR and other risk-free rates, to provide incentives via relief for market participants to transition to SOFR and the other RFRs. And we aim to avoid the inadvertent creation of safe harbor in policy changes that we were to recommend.

Putting further detail around our objectives, I included in my speech at the FSB roundtable in early April that our subcommittee had narrowed our areas of focus to three key topics and nominated a subcommittee member to serve as a working group leader specializing in these three areas to go along with all of the subject matter expertise that we have on the subcommittee. All three of these working group leaders have joined me today on the panel in case the group would like to ask any further detailed questions about the three key workstreams that we were addressing today.

The three workstreams are -- additionally, I would also like to thank everyone who participated in this work. Every member of the subcommittee committed a lot of time and a lot of subject matter expertise on what we want to present to you today. So we will take it forward.

The topics are uncleared margin, clearing, and disclosures. An uncleared margin -- this is the subcommittee. It is reviewing ways in which the CFTC's uncleared margin rule could cause potential impediments to the adoption of alternative rates and how these rules could be amended to improve the pace of adoption without creating a safe harbor. Bis Chatterjee has taken a lead role on this working group, and I thank him for his leadership.

Clearing. The clearing working group was reviewing ways in which current regulation regarding derivative clearing mandates may cause impediments to the adoption of alternative rates, including examining the appropriateness of mandatory clearing for derivatives linked to these alternative rates, with an eye also on avoiding safe harbor. Marnie Rosenberg chaired that group, and I thank her for her leadership.

Disclosures. The subcommittee is reviewing existing risk disclosure documents used by market participants in order to understand if additional risk disclosures are appropriate. Ann Battle from ISDA has taken a lead role on that work, and we thank her for her leadership.

So, starting with uncleared margin, our subcommittee noted that certain legacy IBOR derivatives that are exempted from margin requirements may lose legacy status if they are amended to include fallback provisions or transitioned to risk-free reference rates. The potential for losing legacy status on trades may dissuade market participants from taking the necessary steps to voluntarily convert their positions to new benchmark rates. As outlined in its May letter to regulators, the ARRC also identified a handful of specific conversion methodologies, but there may be other ways to convert outstanding LIBOR swaps. And so we aren't certain this is a completely exhaustive list of ways in which market participants may effect a conversion from LIBOR to SOFR in derivatives markets.

At any rate, these nine methodologies presented by ARRC are fairly complex and certainly would be somewhat operationally challenging to capture and record. In light of this, we believe that the CFTC and the MRAC can consider broad relief to preserve a derivative's legacy status under the uncleared margin rules if it is amended to include fallback provisions or converted on a voluntary basis via one of the ARRC-identified methods or other newly developed methods.

Further, to better achieve the goal of promoting liquidity in risk-free rates, the CFTC and MRAC can also consider permitting all new uncleared risk-free reference rate trades executed before January 1st, 2022 to receive blanket relief from initial margin requirements.

As a broad group of market practitioners, we felt that this would provide a significant boon to SOFR and other RFR liquidity and could massively benefit the transition and the policy objective of financial stability that both we as market participants and the regulators and the central banks seek to promote.

I would like to note that these three ideas are reflected also in the ARRC letter to U.S. regulators, including Chairman Giancarlo of the CFTC, dated May 16th, 2019.

The MRAC subcommittee on interest rate

benchmark reform benefits from cross-pollination with the ARRC, keeping us updated on the progress of the ARRC's work. And the regulatory working group has been making good progress over the past several months. Our work is consistent with that.

Importantly, our group also gives voices to market participants that do not participate in the ARRC. These other participants also concluded that the ARRC's proposals on broad uncleared margin relief were merited and would be beneficial to the market at large.

Lastly, and separately from the ARRC's requests, it was pointed out that since SOFR and certain other risk-free rates are new rates, some firms may not have approved SIMM models to calculate required initial margin on bilateral trades. As such, they may be forced to use other margin calculation methodologies that result in punitively high costs for clients interested in putting on SOFR or other risk-free rate trades. We felt this could in some ways serve as a barrier to entry for many market participants.

Our view is that the CFTC could recommend SIMM model enhancements that are necessary to include

SOFR or other risk-free rate-based swaps in SIMM should be approved centrally, and firms should not be required to provide notice of or receive individual approvals with respect to those SIMM enhancements. Cutting down on the operational difficulty associated with SOFR transactions should be a net benefit to liquidity.

Clearing. Moving on to our discussion of the CFTC clearing mandate, as was also reflected in the ARRC's July letter to regulators, it was noted that legacy derivatives linked to LIBOR and certain other interest rate benchmarks, which are referred to collectively as the IBORs, that are exempt from clearing requirements may lose legacy status if amended to include fallback provisions. This is an additional bit of market uncertainty that may serve as a barrier to widespread adoption of the ISDA protocol and would benefit from greater clarity and specificity.

Additionally, the subcommittee recognized a clearing mandate does not currently exist for SOFR-based products, and both cleared and uncleared trades have occurred. We noted, however, that if our various forms of relief were to be granted, particularly the point about uncleared margin requirements, it would improve liquidity in SOFR products with much activity potentially remaining uncleared. As such, we feel it is prudent that the CFTC and MRAC consider a framework by which to identify when it is appropriate to mandate clearing of risk-free rate transactions. However, it was agreed that it may be yet too premature to determine exactly when such a mandate would be appropriate, give the nascence of the SOFR market.

Separately, it was also felt that the CFTC could consider decreasing the minimum margin period of risk on cleared SOFR trades, which may also incentivize new activity via reduced initial margin requirements for cleared trades.

On disclosure, moving into the disclosures, the subcommittee felt that disclosures for IBOR derivatives regarding implications of benchmark reform exist in the market but, while accurate and compliant with applicable regulations, may be too complex for average market participants to understand. As such, there was strong interest for the CFTC to endorse plain English disclosure language for use in the new IBOR derivatives to be drafted by the MRAC subcommittee.

We felt ideally there would be two separate disclosures drafted: one effective before the ISDA definitions are amended to include fallbacks and one effective after the definitions are amended to include fallbacks.

Along with this disclosure statement, the MRAC could also consider requesting the CFTC and MRAC to establish an appendix webpage including additional information alluded to in the plain English statement. The subcommittee is in the process of iterating this statement and aggregating materials for a potential backup webpage and expect to have finalized proposals later this year.

It was also agreed that the current ISDA disclosure statements, which were updated in March 2018, may need to be refreshed to capture more recent developments in the IBOR transition. However, the group felt that this update should occur closer to yearend 2019, when ISDA's definitions have been amended to include fallbacks.

In conclusion, these three buckets have been the subcommittee's area of focus over the past several months. By the time of the next MRAC meeting towards the end of the year, we intend to conclude our work in the form of final recommendations to MRAC, but they will be along the lines that we are laying out here today.

We strive to be additive to other sources of market progress and remain focused on the scope of our mandate. Based on the feedback we receive here today, we intend to provide a letter to MRAC detailing our recommendations in greater detail, and our group stands ready to work with all stakeholders in order to progress the stated objectives.

Once again, I want to thank Commissioner Behnam, Alicia Lewis, the MRAC, the commissioners, the CFTC, the group leaders, and everyone who participated in this work for the opportunity to provide this service.

With this, again, I will thank Bis, Marnie, and everyone who participated in each of these workstreams, as well as my colleague Matt Oakes, who provided very important secretariat administrative support to this work.

With that, we and my colleagues here are open for questions. And thank you again for the opportunity.

CHAIRPERSON ZAKIR: Thank you, Tom.

At this time, I would like to open the floor for any questions from the members. Mr. Berger?

MR. BERGER: Thank you. I would like to start by thanking the subcommittee for all of their work. A smooth and successful transition is obviously of paramount importance for the market.

I find many of the recommendations here quite sensible. There are two that give me pause. So I would like to comment on those, but please do not take my comments as an indictment of the much needed and constructive work that the subcommittee has done overall.

So the first issue I wanted to comment on was the proposal to provide blanket relief from IM requirements for uncleared SOFR swaps. I think this, you know, potentially can have some unintended consequences. So I wanted to highlight those and make sure they were considered as part of the further deliberations.

So the first is that providing relief from UMR for uncleared SOFR swaps I think creates a disincentive to clear and potentially bifurcates liquidity in the short-term between cleared and uncleared iterations of SOFR swaps. And I think it would be more constructive to try to create as much of the liquidity pool as possible going forward in the cleared iteration of these contracts.

The second is that providing UMR relief for uncleared SOFR swaps also creates issues when trying to margin those under the SIMM regime with other products in terms of like a portfolio margining regime. And we have seen this play out already with respect to other products like FX options and deliverable FX forwards, where the inclusion of one and not the other creates problems with respect to portfolio margining. And so I think it could potentially be unconstructive if SOFR swaps weren't able to be portfolio margined under UMR rules with correlated products.

The third concern I have is that the next recommendation, which is very sensible, which is that we should make sure we can in a streamlined fashion make modifications to the SIMM framework to account for SOFR swaps. I think the motivation to do that on a timely basis will be undermined if SOFR swaps aren't included in the UMR regime.

The fourth concern I have is that there have been a lot of concerns with respect to UMR implementation with respect to cliff-edge effects. And I think if we just grant this blanket relief until 2022 with respect to applying UMR to SOFR swaps, we just introduce yet another cliff-edge effect with respect to UMR implementation.

Fifth, I have concerns that while it is sensible to think about ways to try to foster liquidity in these products, I don't think that doing so on the back of under-collateralization of risk is the right way to do it. And we should, you know, be building this new market on as solid of a foundation as possible.

Sixth, I think if I look at a corollary product, SOFR futures, we have been building liquidity in that product successfully with an initial margin framework in place already and not on the back of a relief from initial margin requirements. And I guess I will stop there since people are probably getting hungry for lunch and my list was quite long already.

But the second topic I wanted to comment on quickly was the clearing recommendation. So definitely understand that there is not a clearing mandate in place today for SOFR swaps, and it is probably premature to announce one today. But I would think it would be helpful for the market to be a little more forward-looking with respect to that and not too cautious. I think the market will benefit from a more predictable plan for when there is going to be a bulk transition to a mandatory clearing regime.

And on that note, I think it would also be constructive to think about how we ensure that when we do transition to having a clearing mandate for SOFR swaps, we would do that and a mandate for swaps referencing other risk-free reference rates, we do that in coordination with, at a minimum, the Europeans as well since I think we have all benefitted from having a consistent scope with a clearing obligation in both the U.S. and Europe.

So, with that, I will stop. Thank you.

MR. WIPF: Bis, do you want to take the first three on his second three?

MR. CHATTERJEE: Again, as Tom mentioned, I would like to thank the rest of the members of the IR subcommittee on the MRAC. Thank you, Commissioner Behnam, for sponsoring the IR's subcommittee and I think, including Chairman Giancarlo and the other commissioners, for supporting this work.

To respond to your question, I think these are very valid issues. And these are issues the group debated with. I think we want to go back to I think the principles that Tom outlined, is asking for relief or modifications that are with reason. And there is the trade-off, as you pointed out, to removing impediments versus removing impediments far enough that they create a risk issue.

So I think, you know, these are some of the issues the group did discuss. And, hence, you know, the recommendations are kind of looking at relief for particularly short-term. The market is considering obviously the various impacts to SOFR versus LIBOR and, you know, the impact it will have on a lot of participants who are yet to come under the margin under phase 5, the mandatory margin regime.

So, hence, the timeframe proposed was thought to be near, not, you know, blanket relief forever, or waiving it. So there is certainly a trade-off between the amount of time needed.

Also, as we transition into SOFR, I think the market and the market for dispense, we are trying to look at ways to encourage catalysts for faster adoption because, you know, if SOFR swaps stay only in the small corner of the market, you know, we will get to the early 2021 deadline with, you know, not a large and deep marketplace, you know. And so whatever can be done in the short-term to accelerate while, as you rightly point out, keeping the trade-off to risk minimal, was considered, but, you know, happy to take it up and see if there are alternate recommendations to address some of the issues.

With regards to the SIMM, there is work going on in the industry. The various participants that have used SIMM administrative stream are looking at ways. And I think the recommendation is more to kind of, you know, make sure that any SIMM approvals are done once centrally and don't have to be redone. It is more an administrative process. And certainly there is no ask to say, you know, SIMM work be stopped or be delayed. So SIMM work is ongoing. I think all of the parties are interested in making sure that the SIMM model be updated. It is more an administrative aspect.

Marnie?

MS. ROSENBERG: I mean, I don't have any additional comments. I think we are pretty much in alignment on the clearing mandate, that it is something that we need to continue to watch. And definitely we need to coordinate with other jurisdictions to ensure it is a level playing field.

CHAIRPERSON ZAKIR: Okay. Since there are no further questions -- oh, sorry. One more question.

MR. STANLEY: Yes. We all want to go to lunch. I am going to make this real quick.

I just wanted to associate myself with what was said about the dangers of creating incentives through under-collateralization of risk. And I think in assessing that risk, it would be very helpful if in the future you guys came with estimates of volume of transactions that were going to get these exemptions and how long that the exemptions would last. That would help us frame everything.

MR. CHATTERJEE: If I can respond to that? You know, what we tried as part of the subcommittee was to make sure that any of the recommendations we put forward were not without, you know, some kind of analysis.

And I am glad you brought that point up because a large part of the discussion was focused around the fact, can we provide data. And, you know, this is kind of I think some of the work the industry has done very effectively. It has helped the regulators with fact-based things.

So if you haven't done so, I would really like to endorse the work done by the CFTC's chief economist's office. They have put out an interesting report called the legacy swaps under CFTC on clear margin on May 22. It has some extremely good data about how much legacy swaps exist under the various, you know, asset classes. They have taken a very good stand to say how much of these swaps would roll off based on maturities. So if you see that as the tables that show how much of these swaps would actually roll up before you even brief phase 5, when mandatory margin posting came into effect. So that would address a lot of the, you know, issues that, you know, Steven rightly faced.

There is also another category that would roll off, let's say, in the interim short term by 2025 and then what would stay beyond that. So there is fact-based data. And we have been talking to the CFTC economist's office to make sure that, you know, they continue to release this data that would actually help support the committee's recommendations.

And so there is ongoing dialogue. And we have been trying to convert our recommendations along with the data published by their office into more tangible, meaningful analysis.

CHAIRPERSON ZAKIR: Thank you.

Mr. Shanahan?

MR. SHANAHAN: One thing is these temporary relief to encourage the activity I think will really help encourage the adoption. As an issuer of SOFR and talking to a lot of my customers, the development of a mature term structure and that aspect I think has retarded the adoption quickly. So what we can do to temporarily drive volume into that market and develop that I think will help the overall adoptions quite significantly.

MR. WIPF: Yes. Really, and I think what we have really attempted to do here at the highest level is, you know, we understand that we are 30 months away from a very big event. We believe, as we have said here and my last time down here, that 2019 is a mission-critical year in the take-up. And we need to understand what are the things that can be done, both by the official sector and, of course, by the private sector in terms of getting these things off the ground.

The one thing we would say is that to the degree of what we put out here today, anything that provides clarity, specificity, dates, as you mentioned, and put things in a position where people in the market have some clarity about what it means to convert a trade, what it means to close out a trade, and reach any conclusions and to the extent that there is an ability to do that without penalty certainly was our first step. The ability to create further incentives through relief to actually encourage greater participation is there.

And I think if we are talking about the degrees of -- you know, as we go across that spectrum, as Bis highlights, right, certainly there are trade-offs along the way. The question is, what are we trading off to get as much done as possible in the safest way possible because the outcome on certainly December 31st, 2021 presents a very significant risk. And absent people doing the work today or absent -- you know, we talked a lot about the need for clarity, and we talked about a lot of things which, you know, seem like impediments but potentially might just be excused designed as impediments.

So I think what we are really trying to figure out here is, you know, what are the high-level things that can take place knowing that this, you know, has to be in strong collaboration between the official sector and the private sector to get this done and what trade-offs need to be made to actually begin to get the volume moving because, you know, the way forward on this is to have as much activity in the new reference rate to have the smallest legacy book possible, to have the least amount of waterfalls going over this 2021 cliff.

And I think, though, what you see here today I think is a fairly comprehensive list of things that are on the table. And if we are going to discuss degrees, I think that is an appropriate way to think about it, but at the end of it, I think what we really want to do is what can we get done in the near future to begin to incent market participants to begin using these new risk-free rates in earnest to reduce the size of the legacy exposure, to reduce the amount of activity that we would have to take over the cliff with what are, you know, old fallbacks, which are, you know, somewhere between frightening and really terrifying and the new fallbacks, which, although they present much better outcomes for market participants, by no means completely take us to zero in terms of value transfer.

So I think the question is and the way forward -- we talk about this a lot -- is, how do we stop digging, right? How do we get out of this hole by stopping digging using the new rates when and where we can? And these are ways that we think that will move those off the sideline, remove some of the inertia to not transitioning, which I think is definitely an important first step. And in some ways, are there degrees of freedom here that we get people to move a little bit more quickly with the goal of making sure that we are really managing to the big risk, which is December 31st, 2021?

MR. CHATTERJEE: The one thing I will add is, you know, we intentionally placed constraints on the scope of the working group because we wanted to make sure any recommendations we make through MRAC to the Commission is within action that the Commission can take. So topics like, you know, the term rate and the need for, you know, a good, robust term rate or a, you know, spread base rate did come up, but we deliberately said, “Look, is that within the scope of what the Commission in terms of regulation or relief can actually act upon or if it had to, do we need to give it more time?” So we deliberately placed some training wheels or boxes on the group's work, but we did highlight that because there is such a strong connection between members of this working group and Tom with the ARRC that we would continue to feed, you know, comments that came up, including the ones raised by you through this working group into the ARRC, where they might be actually more appropriately discussed.

CHAIRPERSON ZAKIR: Thank you.

Chairman Giancarlo?

CFTC CHAIRMAN GIANCARLO: I thank you for that. I really want to commend the subcommittee for this very, very good work. I mean, when Commissioner Behnam worked with the committee to set up this two years ago, I knew it would make a substantial contribution, but it truly is making a really substantive -- bringing substantive issues out. And so well done on all of you for doing that.

And I also want to commend the formation of the different subgroups of expertise in these three areas. I think that is going to help us take some of the discussion from -- still a degree of generality to specificity, two words I can't say, but you know what I am trying to say. And we need to do that. And so my thanks to Bis and to Marty and Ann for stepping up to do that.

I can assure you that the staff of the CFTC is fully engaged. And now with this ability to get more granular, we can really work through what is needed.

I do want to assure Steven and others that we take very seriously the range of issues here and, Marcus, your concern. You know, it's substantial amount of inertia in the status quo and moving that into a new category, a new direction with, you know, a fair amount of basis concerns and others is no easy task. And I think at the end of the day, it is going to take a combination of carrots and sticks to make that transition over.

And we have a framework that we normally don't like to deviate from. We may have to have some short-term relief but with some certainly that things are going to snap into place at some point in time. So you want to create a dynamic of people wanting to get over before the time runs out, sort of a game of Musical Chairs before the music stops and then they are left out. And so what we are trying to do is work with the subgroups to find that balance.

And I can assure you of one other thing, and that is that all members of this Commission are committed to benchmark reform and getting there. We naturally have degrees of difference of emphasis and concern. And we are trying to find that balance.

And I know our staff is endeavoring very, very hard to give us good advice. I think Tom Miller was -- maybe Bis mentioned the very fine research that has been done by our Office of Chief Economist. We are trying to do this on true data and not just guesswork and use and draw on real data. And so we really look to the work of the subcommittee and opportunities like this to flush out the issues. Thank you for doing that, Steven. Your points are well-taken.

I am confident that we in good faith will find the right balance and ultimately get to where we need to go, which is to move away from a benchmark that is just simply no longer viable to one that is truly a market-based benchmark. But this is no small task. And so my hat's off to everybody that is engaged in this really momentous one that will be for many people -- they will look back someday and say, “Wow. We did that, and that was no easy task.”

So my compliments to all of you. Let's keep going at it. Thank you.

CHAIRPERSON ZAKIR: Thank you, Chairman. And many thanks to you, Tom, and the subcommittee for your hard work. We look forward to hearing more about the subcommittee's efforts at our next meeting.

MS. LEWIS: Committee members, as you digest what has been reported by the subcommittee, if you have any additional questions or comments or ideas for further work, please forward them to me so that I can distribute that to Tom and the working groups.

At this time, in keeping with the meeting -- well, not really in keeping with the meeting agenda, we will break for lunch. Please note there is a list of area restaurants on the agenda table. Should you wish to bring your lunch back, please note that you may eat in the employee lounge around the corner from this room.

We will start again promptly at 1:52 I will say. 1:45? The commissioner has overruled. 1:45, we will start. And if you can be in place by 1:40, that would be helpful. Okay?

And RAC members who are joining us for lunch on the ninth floor, please let's meet outside. And then we can all go up.

Thank you.

(Whereupon, at 12:57 p.m., a luncheon recess was taken.)

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

MS. LEWIS: It is my pleasure to call this meeting back to order. And I will turn it over to Chair Zakir.

CHAIRPERSON ZAKIR: At this time, we will have remarks from Steven Maijoor, European Securities and Markets Authority and ESMA chair on EMIR 2.2, CPC stress testing, and Brexit. Thank you for joining us today, Chair Maijoor.

MR. MAIJOOR: Thank you very much, Chair Zakir, for that introduction. And thank you very much also to Commissioner Behnam for inviting me here to speak today. It is very important to have this opportunity to contribute to the discussions of the Market Risk Advisory Committee, also look forward to talking in an exchange of views with Chairman Giancarlo; Commissioner Stump; Commissioner Quintenz; and Commissioner Berkovitz; and, of course, with the members of the stakeholders being represented here around the table. Of course, it is important to emphasize that this is not the first time that I have discussions in an exchange of views with the CFTC.

There is already a longstanding tradition of exchanges between ESMA and the CFTC. I would like to continue that here today.

What I would like to talk about in my contribution and which was already introduced by the chairwoman is, first of all, international cooperation in financial regulation and supervision, EMIR 2.2, stress testing, and Brexit preparations. But let me make first a few remarks on sustainability because I understand that sustainability was an important topic earlier here today.

If you are looking at the EU regulatory and supervisory framework, more and more sustainability issues are inserted into the system and becoming part of the system. I think there are two important reasons to take sustainability risks into account in the financial system. First of all, we know the sustainability risks can affect the risks, returns, and valuations of investments and issuers. And, secondly, we know that the investment communities, investors are changing their preferences and want to take sustainability into account when they select their investments and their issuers. And, therefore, it is important indeed to take sustainability into account. And I would frame it in that sense as classic arguments for introducing sustainability issues into the financial system.

I will very briefly point to three points that are currently where ESMA is working. The points are the result of an EU Commission action plan which has driven the sustainability issues becoming part of the regulatory and supervisory framework, but let me first mention these three.

First of all, there has been a request to ESMA to provide advice to the European Commission on the integration of sustainability risks and sustainability factors into the relevant asset management and investment firm legislation. Now, for example, this is around integrating into the investment firm legislation that when a client would request that sustainability factors are taken into account when selecting their investment is that the adviser appropriately takes that into account.

Secondly, I should mention that there has been recently an agreement, a political agreement, on a sustainable finance disclosure regulation, which will request disclosures from a wide range of market participants, financial advisers, and also in terms of financial products is that there is disclosures on the sustainability issues.

And, finally, the third issue that I would like to mention is the integration of sustainability into the benchmark regulation, making sure that for the carbon benchmarks, there are common standards and common methodologies.

But let me now go back to the earlier topic that I announced, which is around cross-border regulation and supervision. Financial markets are by their nature global while regulation and supervision are national or regional. And, of course, that results is a continuous challenge, both for market participants and also for the regulators. Market participants would like to reduce those differences, would like to take away the possible barriers as a result of the differences across the globe in national supervisory and regulatory systems. On the other hand, regulators are pointing to the limits of their regulatory framework and their supervisory mandates. In my view, regulators need to respond to this continuous challenge and should do their utmost to find and use tools to adequately address cross-border issues and support the functioning of global financial markets.

Now let me mention very briefly in that respect the report that was published last week on market fragmentation and cross-border regulation, which was produced under the capable co-chairmanship of Jun Mizuguchi from the Japanese FSA and Chairman Chris Giancarlo.

The report was successfully discussed a few days ago in Japan in the context of the G-20 Japanese presidency. When you look at the report, it gives an account of the use of these tools to address cross-border challenges. And the findings of the report are quite positive in the sense that across the globe in the past five years, there has been an increasing use of cross-border tools like equivalence, mutual recognition, substituted compliance, passporting, and they all have increased significantly to the benefit of the functioning of financial markets.

The EU with its extensive equivalence and recognition framework in a range of areas has been in the forefront of these developments and effectively provided the most far-reaching market access for third country firms by fully relying on the rules and supervision in the home country. This full reliance on home country regulation and supervision is exceptional from a global perspective and has been very important in reducing and avoiding market fragmentation.

As of October 2018, the EU had granted equivalence to 35 jurisdictions across 8 securities files and accounting files. And, for example, the 34 CCPs that are now recognized with ESMA which are coming from 16 different jurisdictions that were declared equivalents, they can participate fully in the EU derivatives markets.

However, looking to the future, the EU approach towards cross-border regulation and supervision is changing and the fact that the largest capital market will leave the EU has accelerated our thinking on cross-border regulation and supervision because the consequence of the current equivalence mechanism is that it will result in full reliance on third country regulation, full reliance on third country supervision without any specific safeguards from an EU perspective.

As I just said, Brexit has accelerated our thinking on this issue, but I think it is also fair to say that ESMA already pointed out to this issue before Brexit was there and a referendum was there in the U.K. The improved EU approach towards cross-border regulation and supervision is already reflected in EMIR 2.2 as well as EU legislation, which will come into force later this year, following the review of the ASSAs.

ESMA will receive a range of new supervisory tools regarding third country CCPs that may be systematically relevant to the EU. And monitoring our reviews of equivalence decisions will be conducted more frequently to detect differences between EU and non-EU legislation and supervision on time.

The EU's approach to cross-border regulation and supervision will become more proportionate than it is today. So there will be still the possibility to fully rely on third country regulation and supervision when there is not the possible impact of systemic risks. However, in cases where there may be systemic risk to the EU, the relevant toolbox available to EU regulators will become stronger, monitoring and reviews of equivalence decisions more regular, and EU legislation will apply directly.

As you are very much aware, not only will the EU third country framework become more proportionate but also plans here in the U.S. to make the approach towards foreign CCPs more proportionate. However, the starting positions are different. While the EU now has nearly full reliance on third country regulation and supervision, the departure point of the current CFTC's arrangements for foreign CCPs, referred to DCOs under the applicable U.S. rules, are full registration and supervision with subsequent relief when U.S. clients are not involved. I see it as a very positive development that our respective approaches are converging.

In the context of the implementation of EMIR

2.2, we have recently published our technical consultation papers in the context of the technical device that we need to provide to the European Commission towards the end of this year.

The consultation papers address three topics. This is around determining how do you classify whether a CCP is a tier 1 CCP or a tier 2 CCP; the so-called comparable compliance; and, finally, fees for third country CCPs. It is very important to have the feedback of the stakeholders on those consultation papers. So I invite all of you and all stakeholders to react to these consultation papers.

In terms of the further process, as I just said, we expect to deliver our advice to the Commission towards the end of this year. Then subsequently for the European Commission to make that into delegated acts, the commission needs to decide on these delegated acts within the year of the publication of EMIR 2.2 in the official journal, which we would expect towards the end of the year. And, finally, I should mention that the -- and so after the delegated acts as brought into force by the European Commission, subsequently ESMA can start its work regarding tier 1 and tier 2 CCPs.

Looking back at the many equivalents decisions taken in financial markets, it is fair to say that they have been overwhelmingly outcome-based, resulting in reliance on home country regulation and supervision. The changing EU approach towards cross-border regulation and supervision will in some cases result in more granular assessments. For example, while EMIR 2.2 will have limited impact on tier 1 CCPs, CCPs falling into the tier 2 category will in principle need to comply with the detailed EMIR requirements. However, as you will see in the previously mentioned consultation paper on comparable compliance, there will also be the opportunity to rely on the requirements of the home country of the tier 2 CCP. The assessment of this opportunity for home country reliance will be done at CCP level, and all our requirements by requirement basis. However, as the term also makes very clear, comparability of requirements should be sufficient. It will not be necessary to have identical requirements.

Let me finally close the topic of international cooperation on supervision and regulation. We know how important it is for stakeholders to be transparent and consistent regarding equivalence processes in general. In our view, we have been transparent on our equivalence assessments. We have committed to continue that transparency regarding our equivalence processes and also to be consistent.

In addition to that, I should mention that good cooperation with foreign regulators is essential to make the system work. And so we are committed to continuously work with foreign regulators, regulators here with the CFTC, but also regulators across the globe and also in the relevant standard-setting bodies, being IOSCO and the FSB.

Let me, finally, move on to stress testing of CCPs and Brexit. So, first, very briefly on the stress testing of CCPs, we completed our first stress testing of CCPs in 2016. We were discussing this this morning with Chairman Giancarlo and the team here at the CFTC. And I think they admitted that we were slightly earlier with our stress testing. And we saw it as very innovative to do stress testing of CCPs. And, indeed, there was not a long experience that we have in banking and insurance. So this is an area where we need to develop, incrementally develop, stress testing. And we also need to learn from each other. And this is also an area where we are in close contact with our CFTC colleagues.

We greatly improved our stress testing this year. We started the first, the third exercise stress testing, exercise last year. The first one focused on credit risk. The second one, in addition, in addition to credit risk, also looked into liquidity risks. And this year, we also will take concentration risks into account.

In terms of the coverage of the exercise that concerns all cleared products and also all 16 authorized EU CCPs, including the 3 U.K. CCPs, assuming that there is a situation that there is no deal in the course of this year.

The institutional arrangement for stress testing of CCPs in the EU is that the stress testing scenarios are provided by the European systemic risk court. And so that is the stability supervisor in the EU that is developing the stress test scenarios and handing them over to ESMA. And we subsequently used them in our stress testing exercise. Also, the exercise is quite transparent. And so we published the shocks that we stress test for. They are public information. And also the stress-testing framework itself is available to the public. And for the third stress-testing exercise, it was published in April.

Probably a final thing that I should mention on the stress-testing exercise is that interconnectedness is a very important part of this. And so we specifically test for the fact that there can be and are common memberships, clearing members, common custodians, and common liquidity providers. And we try to and we do take the effects into account across CCPs, taking into account that typically clearing members will be members in various CCPs. And we look at the interactive effects when, for example, clearing members fill.

Let me, finally, make a few remarks on Brexit and Brexit preparations. So I think it is clear that Brexit will have a negative impact for both the U.K. and the EU 27 securities markets in the sense that one of the main objectives of the EU securities markets has been to increase the scope, size, depth of the EU capital markets. And, obviously, Brexit will not be beneficial from that perspective. Our preparations for Brexit have especially focused on the risks of a no deal because of principle, when there is a no deal and passporting arrangements will not apply anymore. And the EU/U.K. will not be part of the EU regulatory framework anymore and will not be recognized from that perspective.

The general line and the general approach has been that it is for the private sector preparing for the risks of a no-deal Brexit. We have seen that reflected in relocations from the U.K. to the EU 27. So we have seen trading venues, the investment firms, asset managers relocating to the EU 27, but we also recognize that in some cases, it would not be possible for the private sector to properly take the risks and take the risks into account of a no-deal situation. And so that has been the reason that we have ensured and will ensure continued access to the U.K. CCPs in the case of a no-deal situation. And so for that, we have taken conditional equivalent decisions, equivalence decisions, that will come into place and will become developed in the case of a no-deal situation. And so in the case of a no deal, the three U.K. CCPs will continue to be able to provide services to EU 27 clients. And EU 27 clearing members can continue to be part of the U.K. CCPs.

And also for the specific area of the CSDs, there is one CSD in the U.K. which is essential, especially for Ireland, where there also will be the possibility of continued access.

We have also supported some changes in the legislation to support the repapering of contracts from the U.K. to the EU 27. And, finally, I probably should mention that we have also concluded the MOUs with the U.K. regulators to make sure that in case of a no-deal situation, there will be MOUs in place which can allow the continuation of the cooperation between the relevant regulators. Its cooperation is needed, for example, for the equivalence decisions vis-a-vis the U.K. CCPs and the U.K. CSD, but the MOUs are also needed, for example, in the context of delegation models, which are very important, both for the asset management industry and for the investment firms.

Let me stop here. Thank you very much for your attention. And I am looking forward to your questions.

CHAIRPERSON ZAKIR: Thank you, Chair Maijoor.

At this time, I would like to open the floor to MRAC members for questions. Mr. Betsill?

MR. BETSILL: Thank you very much. And thank you for your comments, Mr. Maijoor. I have a comment and then a question.

My comment would relate to the breadth and the subjectivity of the tiering criteria. So I represent a CCP which has been name-checked by Europeans, lately by Patrick Pearson last week at an FIA panel, as potentially being a systemically important CCP.

I would note that on the product dimension of seeing these products, less than 1 percent of our products are denominated in euro or other European currencies. I would also note that of our total exposure in terms of outstanding margin requirements, that only 12 percent of that comes from companies which have a direct or a parent located in the EU.

Notwithstanding that, given, as I said, the breadth and the subjectivity of the tiering criteria, CME or other third country CCPs could be determined to have systemic importance and, therefore, fall into the tier 2 category. So my question is, though, about the comparable compliance. And I wonder what your comments are on how ESMA would work with local regulators, the CFTC, for example, in this application of the granular requirements on those CCPs. There could be instances of direct conflict in the regulations, but, nonetheless, I would expect some form of coordination would have to be in place. And I just wonder what your comments are on how that could actually work in practicality.

MR. MAIJOOR: So I think your question is mainly on the second one and not so much on the issue of the tiering. And, you know, I think on that, I think we should do -- so, you know, some suggestions, though, about which CCPs can or cannot be. And I think we need to do this in an orderly way. The political masters have given us a legal text, which gives us a direction for how to determine what is tier 1 and tier 2.

We are currently involved in the consultation. It is important to have the feedback. So it is not for us now to, you know, make any speculation around which ones should be in or which ones should be out. I think that is not an orderly way to do it. I think, as I said in my remarks, clearly Brexit has accelerated our thinking on EMIR 2.2, but it is also fair -- and you can go back to history in that sense -- that we made the point around the inappropriateness of full reliance, also before Brexit.

But let me stop there I think on the tiering except to say I fully understand it is a broad range of criteria. I can see it. I think it goes back to the point that risks are and stability risks are complex to capture. And ultimately, of course, we need to base our tiering on the legal text.

On the issue of comparable compliance, of course, when you want to understand foreign regulatory systems, you need to talk to the experts, you know, in that relevant country. And so for those regulators that have been involved in our equivalence assessments, they know that you talk to the local regulator in terms of understanding the regulatory environment, understanding how the rule works.

I think the text regarding comparable compliance clearly makes clear that it is not about identical requirements. And also there is some wording on the interaction there with the local regulator and the CCP. And so I think I would like to make very clear there will not be a situation where there will be, you know, a surprise in the sense that suddenly there is a decision by ESMA. They will be talking to the CCP. They will be talking to the regulator.

And I think it is also important to realize this is around an orderly process also internally at ESMA. It is not ESMA first that is deciding this, but it is the ESMA board ultimately after a proposal by the CCP supervisory committee that needs to take a decision on the issue of comparable compliance.

CHAIRPERSON ZAKIR: Thank you. I guess just another question on that topic. Can you also describe some of the work that ESMA is doing with local regulators in hoping to sort of interpret the legal text here and what the role and interaction will be there?

MR. MAIJOOR: So maybe to add one more point. So the consultations that we have just published are much more about the criteria for comparable compliance, the criteria for and how we would apply it, but it is not so much on the process. Obviously further down the process, we will move into the cooperation with the regulators themselves. Also, there will be the need to look again at the MOUs. And so there were obviously issues around how do you interact on these types of decisions will be on the table in that moment.

In terms of how do the current legal text and the current consultations need to be viewed at, that is precisely the reason for being here. So we also had a discussion on the consultation papers earlier this morning. And so we are happy to talk to any regulator that wants to further and better understand the proposals that we have made.

CHAIRPERSON ZAKIR: Mr. Raiff?

MR. RAIFF: Thank you. Thank you. And I would like to thank Chair Maijoor for sharing his thoughts with us today and also would like to thank Commissioner Behnam for inviting the chair to discuss a number of very important topics. My question pertains to the trading obligations under MiFID. I mean, under Brexit, there will be both an EU MiFID and a U.K. MiFID. I believe just last week, ESMA acted to clarify the share-trading obligation. How can ESMA act to facilitate the trading of interest rate swaps cross-border or is the only common ground to be found between the U.K. and the EU or is the only common ground to be found in SEFs, where we are going to have to onboard clients to SEFs, which obviously presents its own complications.

MR. MAIJOOR: So I am not sure I fully understand your question. So you may need to come back to that issue.

So, first of all, on the share-trading obligation, as it says, it is around the trading of shares. And I don't think your question is around shares if I understand it correctly. On that one, what we have done regarding the share-trading obligation is that, although, you know, we would have preferred to some extent to have equivalence in place -- and equivalence will be in place in case of the withdrawal agreement. And so if you go back to the withdrawal agreement as being agreed between the EU 27 and the U.K. government, in the withdrawal agreement, it is ambitious that during the withdrawal time period, there would be -- equivalence would be ambitious, both for the U.K. and the EU, because, as you rightly say, the MiFID is unsure by the U.K. And so the share-trading obligation but also the derivatives-trading obligation is both relevant from an EU 27 perspective and also from a U.K. perspective.

On the derivatives-trading obligation, I think that is the one where you were referring to, there we know and we have closely followed to what extent there have been movements by trading venues from the U.K. to the EU 27 to allow the continuous trading in derivatives from an EU 27 perspective.

MR. RAIFF: But do you think that there is any common ground other than SEFs that will likely --

do you think equivalence will be granted between U.K. and EU venues before the derivates-trading obligation?

MR. MAIJOOR: Okay. Now I understand precisely. Sorry for being slow in recognizing this issue. No. The general line -- so, first of all, it is important to realize equivalence is ambitious in the case of a withdrawal, in the case of an orderly withdrawal, and in the case of the withdrawal agreement being agreed.

For the case that there is a no-deal Brexit and the decision has been taken, it is that only for those issues where there are stability risks is that for those issues, equivalence would be determined and would be decided upon. That is the reason for having equivalence regarding the CCP clearing in the U.K. It is not, therefore, not considered for trading, neither for shares, nor for derivatives, not because it is not negatively in terms of impacting markets. I think I would -- you know, it is negatively impacting markets, but it goes back in my view to the fact that the U.K. is leaving, the EU capital markets is leaving the commitment to the EU 27 rules. And, therefore, I would not expect because ultimately this is not for ESMA, but it is for the commission. But the commission has been very clear that only in the case of stability risk, there should be equivalence in the case of a no-deal. But let me repeat again that if the withdrawal agreement is agreed, that equivalence is ambitious.

MR. RAIFF: Thank you.

CHAIRPERSON ZAKIR: Mr. Michaels?

MR. MICHAELS: Hello. I was wondering if you could give us an update on the progress of discussions with the Securities and Exchange Commission on equivalence, first question. And the second question is with the tiering, it was mentioned is very broad. It is subjective in many areas. Should we expect more quantifiable metrics forthcoming?

MR. MAIJOOR: So the first one is the clearing for the equivalence for clearing, I suppose, for the SEC. I think for that one, I am not in the best position to answer that one because an equivalence decision is determined by the commission. And I think they would be better able to decide, you know, where they are in the process in terms of the actual case of the clearing, which is within the mandate of the SEC.

On the tiering and the making it more explicit in terms of quantitative measures, I think what is -- it goes back to one of the earlier comments, that the way it is reflected in the legal text is that there is a wide range of risks. It is identified as being relevant for the determination whether a CCP from outside the EU should be in the category, in the tier 2 category, should be -- you know, the relevant criterion is that it is systemically irrelevant or likely to be systemically relevant, either for the EU as a whole or for an individual member state or multiple member states, different from I understand the plans here in the U.S. There is not a quantitative threshold. That has been the decision from a legal perspective. We have no possibilities or powers or to change that. So I think we need to work with the regulatory requirements around tiering as they are reflected in the legal text. Of course, we will try to become more specific in our advice.

The current consultation paper, understandably, is very open. But I think we precisely did that because we want a true consultation and get feedback from the stakeholders. Subsequently, we will try to be more narrow in our final advice of clearly the legal text does not allow, you know, one measure or a quantitative measure to be used as deciding on whether there should be tier 1 or tier 2.

CHAIRPERSON ZAKIR: Ms. Rosenberg?

MS. ROSENBERG: Thank you, Chairman Maijoor, for joining us today and then speaking on these important topics.

The question that I had was with the member default, the clearing member default, that NASDAQ clearing may be, now nine months behind us. I would be interested in you providing us some color on the work that has been done or is still ongoing with ESMA to review existing EMIR standards or determine whether any additional guidance or interpretation of EMIR is needed.

MR. MAIJOOR: So, obviously, we are -- you know, first of all, this should be primarily for the Swedish regulator to look into this issue but, obviously, also through the college and the involvement of ESMA, we are looking into this matter.

One of the specific issues that we have looked into is the fact that there is here -- that there was here a natural person that was a clearing member. This has raised questions and thinking, further development of our thinking, first of all, having natural persons as a clearing member but also more generally having nonfinancials as a clearing member. And so there has been further reflection on that issue.

And, as I mentioned earlier, you know, it should not come as a surprise that we are looking into concentration risks in our stress testing. And so at this stage, the evaluation is still ongoing. So I think it is too early to say whether this should result in any change of the specific requirements. But I said we are looking into clearing member characteristics, natural persons versus nonfinancial. And also we are stress testing for concentration risks.

CHAIRPERSON ZAKIR: Mr. Berger?

MR. BERGER: Thank you, Chairman Maijoor, for joining us here today. Brexit threatens to fracture the unified pan-European data set that the MiFID II and EMIR frameworks currently rely on for determining the scope of the trading and clearing obligations, conducting liquidity assessments, calibrating waivers and deferrals from transparency requirements. What steps is ESMA taking to address that potential outcome? And even independent of Brexit, is ESMA considering ways to use broader datasets to better gauge the liquidity and trading activity of instruments that trade globally, as opposed to regionally?

MR. MAIJOOR: So, as you rightly point out, currently, the collective data collection across the EU, across all of the 28, is very important for some of the parameters that we set for capital markets in the EU. And so things like the pick size, to what extent dark pool trading is possible, bombs which should be declared being liquid and should be subject to more strict transparency requirements, all of these issues are now determined at a European level, taking all 28 member states into account.

And, obviously, in the case of a no-deal Brexit, there will be no legal basis anymore to collect the data from the U.K. And so for part of the no-deal preparations, we had to clarify to stakeholders how we would transition the calculations because you will understand that until, let's say, the Brexit date, all of the data from the U.K. are still determining these parameters that I just mentioned. The question, then, is, how should, then, let's say, the historical U.K. data be used in future calibration? Because typically these calibrations are done backward-looking, taking into account, for example, trading behavior in the past quarter or the past quarters?

What we have done is that we have clarified to market participants how we would use and how we would phase out the U.K. data from our calculations. I think you need to see it from, you know, case-by-case because it is really quite a granular system, but the general approach has been there to try to avoid any cliff-edge effects, trying to smooth the exit of the U.K. in terms of the implications for the various parameters that we need to calculate.

Separately from that, of course, it points to the issue that we have very integrated capital markets.

So also in the case of, you know, after Brexit, these markets will continue to be very integrated. What I have said recently, for example, is that we should try to find a solution for the fact that for market abuse investigations, currently the exchange of data between our market regulators across all 28 is extremely important.

And equivalence doesn't foresee an arrangement for this. This is going beyond the type of data exchange you can do on the basis of an MOU. This is around legal obligations, how you report data, you know, like what kind of fields need to be reported for a derivative or for a share. And I think one of the issues that we need to think about and need to consider is how we can at least ensure that this data exchange can continue. That is something to be thought about once we are in the withdrawal period, but, obviously, there is an issue around making sure that the capital markets continue to work well, but also is that regulators have access to the relevant data. Any place where there is a global trade, it is important ultimately that the regulators have the possibility to access the data related to, you know, the global capital markets, is that if there is cross-border capital markets, is that there is the possibility for regulators to also access the related data.

CHAIRPERSON ZAKIR: Chairman Maijoor, you mentioned in your remarks that many members of the market are already relocating or have relocated to the EU 27 in preparedness for Brexit. Can you speak a little bit about the preparedness of local regulatory authorities to be able to manage the additional financial risk and any specific challenges that have been raised as a result?

MR. MAIJOOR: So quite quickly after the U.K. referendum, there were the first relocations or, you know, plans to relocate from the U.K. to the EU 27. What we can see is that the model is a different model than the current, let's say, financial model, where it is centralized in London, is that you see it is going to various financial centers. And so we can see that -- you know, Dublin and Luxembourg, especially we see the asset management firms. We see investment firms being interested in Frankfurt. In Paris, we can see trading venues and benchmark administrators being interested in Amsterdam. And this raises the issue around supervisory consistency and making sure that these relocations are the appropriate response in my view to the risk of a no deal and also for the long-return preparations by the relevant market participants. But what is important is that these relocations are done in an appropriate way. And that means that there is going to be sufficient substance at these newly relocated entities.

You can see the risk of trying to get an authorization in an EU 27 member state but then subsequently not moving sufficiently, staff, senior capacity, to these EU 27 entities. The guiding principle for us has been there, is that the entity in the EU 27 should be a supervisable entity, is that it should be an entity where there is senior management that can access and that can take responsibility for the services that are provided in the EU 27. And precisely because we have this model where this is under the responsibility of national regulators, what we have done is, first of all, we have expressed our expectations regarding what should be there in substance in these relocated entities to these financial centers.

But also, in addition, we have established a network where, nearly on a monthly basis, all regulators or the relevant regulators get together at ESMA. And they share on an anonymous basis in these cases with them and say this is a relocating investment firm, trading venue, asset manager. This is the way they want to structure the business in the EU 27 and get the feedback from their peers on whether that is an appropriate arrangement to ensure that it meets the regulatory requirement and also, again, going back to the point that was sufficient substance. Of course, it goes back to an issue which is very generic and very general. For every regulator, we know that global companies frequently have outsourced entities, are using central departments that are relevant for different regulators across the world. And so that touches upon a very fundamental issue we are confronted with in the regulation and supervision world. And, as I said, specifically here, it is focusing and making sure that the entities are sufficiently prepared for the fact or the risk that the U.K. entity will not be recognized anymore under EU 27 or under EU law in the case of a no-deal Brexit.

CHAIRPERSON ZAKIR: Thank you.

At this point, I wanted to just open it up to see if there were any questions from members on the phone.

(No response.)

CHAIRPERSON ZAKIR: Mr. Chatterjee?

MR. CHATTERJEE: Chairman Maijoor, thank you for your comments and your views. I just wanted to ask you about your opinion or where, you know, your agency stands on the issue regarding unclear margin and the phase 5 implementation date. Obviously, there has been a lot of concern and requests from the industry to take a more risk-based practical approach in terms of the implementation date, you know, of asking for exemption for these that, you know, don't require to post the minimum and exempting them from documentation or other requirements. Any views on, you know, how that thinking is progressing or, you know, alternate ways of looking at that?

MR. MAIJOOR: So, to be very precise, this is around the issue around changing the timing of the phase 5 and the -- well, first of all, two things. There is the timing of the phase 5, but there is also the interpretation. You know, how does it precisely work with the 8 billion versus the 50 million and the burden for a lot of the counterparties that would make a billion but subsequently would never get to the 50 million. I think that has been -- the last issue that has been clarified in my view that has resulted in a significant relief, the fact that that has been clarified and making sure that the ones that are crossing the 8 billion threshold but, in all likelihood, will not ever need to exchange 50 million in a margin is that they don't need to, you know, go through the costly preparations. And I think that clarification has been useful and valuable.

On the changing of the phase 5, ESMA has been -- and I should be fair here that, although there are some different voices, it is not necessarily unanimous, there is broad support for maintaining the current phasing. One of the reasons for that also relates to the fact that making changes to these timetables is extremely difficult.

And I can remember very well when we made this agreement on this phasing. I think it must have been five -- you probably better know it than I, but it must have been six, seven years ago when the timetable was agreed. Precisely at that time, we said it is important to get to a common timetable, but once we have it, then to stick to it because once you start to move it and considering the complexities of the different regulatory systems, you might get to different timing of the phasing. And so that is a reason we are very -- we stick to the current timing. We are very reluctant to change that because we see the risk that it might result in different -- that some will make some changes, other ones not. I think it is important that we stick to the predictability.

And then, in addition to that, we get very -- so I understand that parts of the industry are concerned about preparedness. At the same time, we are also getting a lot of evidence, a lot of information that they should not be postponed, that they are prepared. And, therefore, we should go ahead with the existing phasing.

CHAIRPERSON ZAKIR: Okay. If there are no further questions, I would like to thank Chair Maijoor again for addressing the MRAC today. And many thanks to today's speakers and members for attending. I also wanted to take a minute again and thank the chairman; commissioners; and, in particular, Commissioner Behnam, for your sponsorship and leadership of the MRAC; and definitely last but not least, Alicia Lewis for all of her tireless work and efforts in coordinating and managing this meeting.

This concludes the business part of the agenda.

MS. LEWIS: So it is now time for closing remarks. We will start with Commissioner Berkovitz.

COMMISSIONER BERKOVITZ: I would like to thank the Chair Zakir -- congratulations on your first chair -- and Alicia and Commissioner Behnam for sponsoring this meeting. I appreciate those of you who have traveled here and Chairman Maijoor for traveling all the way over here and presenting an informative presentation to the committee. And I would also like to thank all of the panelists today. It has been very informative. I look forward to further exploration of all of the issues we have discussed today.

Thank you.

MS. LEWIS: Commissioner Stump?

COMMISSIONER STUMP: I echo everything Commissioner Berkovitz said. Thanks to everyone. It is always fantastic to have these meetings. And, truly, in this case, I think that it highlights the fact that our task here is to ensure that our market participants can hedge their risk and ensure that they can mitigate the risk that they face. And the risk is constantly changing.

So whether we are talking about geopolitical risk, environmental risk, or in some cases regulatory risk, which we covered all of those today, we have to be nimble enough to respond.

So thank you all, to Commissioner Behnam and Alicia and to Nadia for presenting these issues in such a way that our panelists and our participants could weigh in before the Commission. Thanks.

MS. LEWIS: Thank you, Commissioner Stump.

Commissioner Quintenz?

COMMISSIONER QUINTENZ: Thank you. That was very well said. I completely agree with Commissioner Stump.

And thank you, Nadia, Alicia, Commissioner Behnam, for arranging this very interesting and important meeting. And, again, I would like to express my personal thanks to Chair Maijoor for being willing to participate. And I found your comments very, very encouraging. And I am looking forward to continuing those discussions.

Thank you.

MS. LEWIS: Thank you, Commissioner Quintenz.

Chairman Giancarlo?

CFTC CHAIRMAN GIANCARLO: Thank you, Alicia.

In my opening remarks, I talked about the long tradition of our CFTC advisory committees, of thoughtfulness, of candor, of cordiality, and bipartisanship. And all of those characteristics are very much on display today. So my great thanks to all of the members and to some of -- the future members of some of the new subcommittees have been formed -- and volunteers for all of the work that is to be done. But we will very much benefit from all of your work.

And as part of that cordiality and bipartisanship, I want to thank our distinguished guests, Chair Maijoor, for coming and speaking so openly and candidly about some of the issues and answering everybody's questions very patiently. It is rare that we have such a distinguished guest with us. So I am really grateful. And you honor us with being here today. So thank you for that very much and to my colleagues on the panel, my fellow commissioners for your thoughtful questions, to Alicia for your fine work, for Nadia for your good chairmanship, and to my colleague Ros Behnam for putting together a great meeting today and with some nimble work, probably one of the most well-attended, both in person and on the telephone, that we have had in a long time.

So with help from some major national press, it has been a great day, I think, to explore some very, very important issues. And so well done, and thank you.

MS. LEWIS: Thank you, Chairman Giancarlo.

Commissioner Behnam?

COMMISSIONER BEHNAM: We should just end on that I think.

(Laughter.)

COMMISSIONER BEHNAM: Thanks to the members. Again, great to see everyone. I know we are getting accustomed to our biannual meetings. This was an important one. Thanks to all of my fellow colleagues. Nadia, well done. And thank you for your participation, Alicia. Chair Maijoor, really appreciate you attending. I can't repeat any better what the chairman said. It is rare that we have these opportunities to have leaders like yourself here and share your viewpoint and in a candid way.

I think, among other things, there is never a shortage of issues to discuss. There is never a shortage of issues which will challenge each of us, but I think if we all commit to transparency, honesty, and communication, we can resolve these issues, really, for the people around the room.

We have to serve our constituents. We have to serve the market. And I think we all care about transparent, fair, you know, foreign markets. And I think we can strive to achieve that goal together for many years in the future.

So, with that, thanks again to the committee members. And we will be in touch. We had a lot today. Obviously, the morning was extremely important for me personally. And I hope we can use this as a sort of starting point for a larger conversation about financial market risk and changing climate and as we sort of unpack those issues and, as I said earlier, with the workstream subcommittees, which will, again, be a little bit more informal and would welcome your input certainly, past and present, and just remaining flexible with those because I think those are going to be more off-the-cuff opportunities for us to really discuss issues that are relevant to each of your firms.

So, with that, thanks for your patience. And we will look forward to seeing you soon. Enjoy the summer. And we are available if there is anything that we can do for you. Thank you.

MS. LEWIS: Thank you, Commissioner Behnam.

I want to thank everyone for attending this meeting. And we will probably see you in November for our next meeting.

And, really, in keeping with the agenda, this meeting is adjourned.

(Applause.)

(Whereupon, at 2:43 p.m., the meeting was adjourned.)