UNITED STATES OF AMERICA

COMMODITY FUTURES TRADING COMMISSION

MARKET RISK ADVISORY COMMITTEE MEETING

Washington, D.C.

Tuesday, June 20, 2017

PARTICIPANTS:

Commissioners:

CHAIRMAN J. CHRISTOPHER GIANCARLO

COMMISSIONER PETAL WALKER

COMMISSIONER SHARON Y. BOWEN

Other Participants:

BISWARUP CHATTERJEE
Citigroup

TOM COYLE
Chicago & Illinois River Marketing

EILEEN A. DONOVAN
CFTC

CHRIS EDMONDS
ICE

ANDREW GRAY
DTCC

RICHARD HAYNES
CFTC

EILEEN KIELY
BlackRock

SEBASTIAN KOELING
Optiver

CLIFFORD LEWIS
Eurex Clearing

DENNIS MCLAUGHLIN
LCH Clearnet

PARTICIPANTS (CONT'D):

DALE MICHAELS
Options Clearing Corporation

JOSEPH MILLER
CFTC

RICHARD MILLER
American Council of Life Insurers

SUSAN O'FLYNN
Morgan Stanley

HUGH ROONEY
CFTC

MARNIE ROSENBERG
JP Morgan

VIKASH RUGHANI
TriOptima

GLENN SCHMELTZ
CFTC

SAYEE SRINIVASAN
CFTC

MARCUS STANLEY
Americans for Financial Reform

ROBERT STEIGERWALD
Federal Reserve Bank of Chicago

KIM TAYLOR
CME Group

LUKE ZUBROD
Chatham Financial

* * * * *

P R O C E E D I N G S

(10:00 a.m.)

MS. WALKER: Good morning. As the MRAC designated federal officer, it is my pleasure to call this meeting to order. Before we begin this morning's panels I would like to turn to Commissioner Sharon Bowen, the MRAC sponsor for her welcome.

COMMISSIONER BOWEN: Hi, good morning, everyone. Thanks so much for coming today. I'm going to turn it over to acting Chairman Giancarlo.

CHAIRMAN GIANCARLO: Thank you very much. I want to apologize in advance. I have to leave at 11:15 today for previously scheduled meetings on Capitol Hill, and therefore, I want to give just a brief opening statement to cover a couple of points since I won't be able to do it at the end. And, when I leave I've asked my chief of staff, Mike Gill, to take my seat. He'll give a few closing remarks on my behalf.

So, thank you Commissioner Bowen for

convening today's meeting. Thank you for your sponsorship of the Market Risk Advisory Committee. I know for our audience this is the seventh meeting of MRAC in the past two-and-a-half years. That is an enormous accomplishment, so kudos to you, Commissioner, and your staff, especially Committee moderator, Petal Walker, for really fine work.

I found these meetings to be well-organized, carefully prepared, and very candidly discussed. They are enormously valuable to the work of the Commission. So I thank all the members of the Committee for their very valuable time and expertise that they've brought to bear that have made this so valuable for all of us and I think for everyone else as well.

Today's meeting will address many aspects of the increased use of clearing for swaps transactions. As you may all know, the Commission is requesting additional resources that would strengthen our clearing house examinations capability. Those funds will enable the staff to keep pace with the explosive growth in the number and value of swaps cleared by designated clearing organizations.

There has been an enormous increase in the size and the scope of the major designated clearing organizations, so too as to the complexity of the counterparty risk management oversight programs and liquidity risk management procedures of the DCOs here and abroad. This growth in volume and risk management procedures has been mirrored by an increase in the complexity of the products themselves. For example, the risks posed by credit default swaps differ from those posed by interest rate swaps.

Accordingly, DCOs have developed a large number of individualized margin models and other risk management tools to address these different risks. This in turn generates a corresponding increase in the complexity of the Commission's oversight responsibilities.

While not on the agenda today, I expect that we may hear this morning some discussion of the supplementary leverage ratio. I've advocated for some relief from the misguided application of the SLR towards swaps clearing, and I propose two practical steps. First, exclude customer cash collateral held at the CCP from the banks' leverage calculation. And second, take customer collateral held at the CCP into account in computing potential future exposure, and do so in a manner consistent with the Basel Committee on Bank Supervision's standardized approach to counterparty credit risk.

I believe these suggested leverage rule changes will significantly reduce capital costs for clearing members. By CFTC estimates, this potential reduction in capital costs could be as high as 70 percent, but it will translate into only a small 1 percent capital reduction at the bank holding company level. Assuming these savings are passed on to customers, these reductions would translate into a three-fold increase in trading activity, especially hedge positions that are carried overnight.

I believe such a significant reduction in costs on this service, which is imperative to managing systemic risks in swaps, is entirely worth the tradeoff of a miniscule reduction in balance sheet protection. The financial system will be safer and more stable for it.

It's apparent that many DCOs are expanding their services in other jurisdictions around the world. Those jurisdictions look to the CFTC to provide insight regarding the effectiveness of the programs implemented by the DCOs. The Commission supports the expanding international footprint of market participants through information-sharing and compliance discussions with our counterparts overseas in the areas of cybersecurity, liquidity risk management, default management, and other high-profile risk management issues.

And in closing, let me briefly comment on an issue that is a subject of today's first panel, and that is the location of euro-denominated derivatives clearing in light of the circumstances of Brexit. Last week, the European Commission proposed an amendment of EMIR to regulate third party CCPs, including a process to introduce a CCP location policy. I look forward to following the path of this legislative amendment, as it is considered by European institutions.

I am respectful of the fact that this is an important regulatory policy development that needs to be made with great care by European officials. Nevertheless, I note that we are now upon the one year anniversary of the agreement between the CFTC and the European Commission regarding CCP equivalence. That agreement was only reached through difficult and protracted negotiations. Throughout, the United States approached those negotiations with the utmost good faith and good will.

Since then, we have demonstrated our unwavering commitment to that agreement. We view that agreement as an important signal to the markets and to the international regulatory community of the ability of the United States and the European Commission to work together successfully on critical cross-border issues. Therefore, whatever the outcomes of the Brexit negotiations and the EU's internal discussions about how to supervise CCPs, we do not contemplate any change to the CFTC-EC equivalence agreement in its current form.

I'd like to once again thank our speakers for sharing their time and expertise, and to everyone here for attending. And, once again to thank Commissioner Bowen and Petal Walker for their fine operation of this Committee. Thank you very much.

COMMISSIONER BOWEN: Thank you so much.

MS. WALKER: Thank you for your opening remarks. As noted in today's agenda, our first panel discussion will be on the risk surveillance activities of CFTC's Division of Clearing and Risk. I would like to introduce Mr. Luke Zubrod, Director of Strategic Initiatives at Chatham Financial who will facilitate and help shape the discussion during this first panel.

MR. ZUBROD: Thank you, Petal. Let's start out by introducing our panelists today from the Division of Clearing and Risk. With us we have Hugh Rooney, Joseph Miller, Glenn Schmeltz, and Eileen Donovan. And we're very pleased to welcome them.

Starting out with a presentation today, and then we'll leave time for Q&A amongst Committee members, so be thinking of your questions. Just as a reminder on logistical announcements here that these are touch microphones, so please keep the microphone a few inches away. When you wish to speak press the white button and when your indicator light appears red your microphone is on. When you finish talking please press the microphone again to turn it off. There are only a limited number of microphones that can be active at one time, so please turn off your microphone after speaking to allow others to jump in. And then, again, please refrain from putting any mobile cell devices on the table as they may cause audio interference.

So, with that I'll go ahead and turn it over to the team here.

MR. SCHMELTZ: Thanks, Luke. I'm going to begin with a quick overview of the Risk Surveillance Branch, which we'll be referring to as RSB throughout this presentation. Then Joe will describe RSB's Core Risk Monitoring Program. I'll then talk about some other programs and projects RSB is working on. And finally, Hugh will explain our 173 Review Program.

Ensuring the financial integrity of transactions and the avoidance of systemic risk, our objectives included in the Commodity Exchange Act, RSB was established a dozen years ago within what is now the Division of Clearing and Risk to help the Commission fulfill those objectives. We strive to conduct independent assessments of the risks posed by market participants primarily through stress-testing. In the June issue of FIA's Market Voice Magazine, my RSB colleagues refer to these independent assessments of the risks as the fourth level of financial regulation.

RSB currently has 28 employees, 20 in Chicago and 8 in D.C., with experience as auditors, investigators, and traders at exchanges, the NFA clearing members and hedge funds. Here's a laundry list of the areas of responsibility for these

people divided into three teams. Team has responsibility for futures and options

and uncleared commodity swaps risk surveillance, cleared and uncleared credit default swaps and uncleared equity swaps risk, data systems, and overseeing the 173 Review Program. Team 2 monitors cleared and uncleared interest rate swaps, cleared and uncleared foreign exchange swaps, clearing member risk profiles, swap large trader analysis, margin back- testing, and internal reporting which includes daily initial margin and variation margin analysis and longer-term industry analysis. Team 3 includes our quants and is in charge of margin model reviews and analysis. And finally, our Systemic

Stress Testing Program and our SIM Program development both draw on people from multiple teams.

As you know, more positions are being brought to clearing. Over the last three-and-a-half years initial margin requirements at these eight clearing services have risen from less than 200 billion to around 320 billion, which is a 60 percent increase. Futures have increased 28 percent, cleared CDS 37 percent, and cleared IRS has increased 160 percent. IRS actually counts for two-thirds of the growth in cleared initial margin requirements over this period.

The reason RSB is able to operate at the fourth level of financial regulation is the data that we receive, and the amount of that data received daily is increasing. At the end of 2012 we received just over 1 million records daily including large trader data firm reporting firms. In 2013 about 15 million records were added with part 39 data from derivatives clearing organizations, or DCOs, which includes position and cash flow data. By the fourth quarter of this year the totals are expected to be 60 million records daily with the addition of client level reporting in part 39.

CFTC receives these data from 19 DCOs across multiple market segments, and this is what makes us unique. We see trader positions across clearing members and across DCOs.

Next. This network graph shows initial margin requirements at all member firms at the parent level, clearing at five DCOs. You can see why the view across DCOs is so important. The large clearing members in the center clear at multiple DCOs. For this graph we've turned off the labels, but of course when we use this tool internally the firms in DCOs are labeled. We can filter to see only house or only customer accounts, and if we select any node on the graph all the connections are highlighted making it easy to see the number of connections and the relative magnitude of each. The data are always as of the close of business on the prior day. After we start receiving client level reporting in part 39, we can begin the work to enable us to use this tool to see connections for individual traders.

To set the stage for Joe, at the core of our risk surveillance RSB identifies significant positions, estimates the magnitude of the risks of those positions using stress tests, and compares the potential losses to available assets such as initial margin and excess net capital of the clearing firm. If this analysis uncovers accounts with the potential for concern, RSB investigates whether other assets are available such as equity in the account or lines of credit. RSB regularly contacts traders, clearing members, and DCOs, and will implement monitoring and escalation procedures if necessary.

Now, Joe.

MR. MILLER: As Glenn indicated with the various backgrounds and experience of the risk surveillance staff, this results in a number of different techniques and processes and reports. The risk surveillance branch process needs to be proactive in its approach. We look to identify traders and clearing members in the markets before they become volatile.

A number of characteristics may trigger more scrutiny; absolute size, short-option size, size relative to the market, initial margin on deposit. But to do this we have a number of different reports. The Position Risk Summary Report generated per trader with the capability to aggregate like risk across DCOs. Some examples of that would be crude oil, natural gas, equities. These are used to find risk. We, for example, would look for large positions at a small firm.

We also looked to futures equivalent delta position reports to identify the largest positions in each contact and commodity group. These reports are very customizable. We can view the net delta, net delta by product, we can re-margin, we can stress, we can sort for the greatest risk rating, for instance, short options to the top.

We have reports to identify notable

short option positions. We use various option analytics, metrics, and look for accounts that may need further scrutiny. An example of an option report would be our Vega Report, which looks for net option accounts, and which we would stress looking for hidden fat-tail risk. Another report would be the Inter and Intra Commodity Spread Position Reports. We would analyze them for correlation breakdowns.

We look at both these type of reports, both short- option traders and spread traders, because those type of traders usually have that

percent fat-tail that we look to uncover. And, of course, that would result in enhanced scrutiny if we should find something that we thought was something particular we would look at.

One of our important jobs here in the Risk Surveillance Branch is stress-testing. We use a combination of proprietary and vendor risk management software systems. Our tools help with this analysis and many of our reports are configurable. We can sort for various ratios and metrics, we can highlight the riskiest traders and concentrations of those traders at clearing members.

Daily we have an automatic stress test that produces more that 5 million records. This is done using 23 stress tests on over 7,000 portfolios with over 1,000 products. But we do have the ability to go up to 100 stress tests.

Software has an ad hoc stress testing capability allowing the analysts to create customized worst-case scenarios for each account. We look to the product level, price moves, volatility moves, and we look at all clear swap data at the beneficial owner level.

Risk Surveillance Branch aggregates stress tests for loss across DCOs and clearing members, giving Risk Surveillance Brach the highest level of surveillance in in the industry.

Next slide is a chart with hypothetical data. So, the Program focuses on high-risk accounts identified by RSB. We look across various statistics. The Risk Surveillance Branch produces a number of internal reports to track traders and markets and the impact of various stress tests have on them.

Below is an example of a report showing some of the stress tests and the potential losses on those accounts. An example is the trader and the scenario that generates the greatest loss for that trader is shown in the report. And it's ranked by the greatest unsecured loss to X-net capital.

If you look in the chart variation it could be seen also as stress test loss, margin is what they have on account, and the unsecured risk would be loss that's greater than margin. What we can see there is in this report Trader 2, with an unsecured ENC of 55 percent has a margin to ENC over 250 percent. This account appears to have a large concentration at its clearing firm, whereas Trader 8 has an unsecured ENC of 20 percent, it has margin to ENC of 5 percent. So, it's not very concentrated.

A report like this gives us valuable insight for less well-capitalized firms with risky traders. It also should be noted that ENC can vary anywhere from as low as $1 million to upwards of $14 million, so it's also relative.

The next slide is all hypothetical data. And one of the tools we use that was mentioned earlier, stress-testing is one of our most important jobs. We use a combination of this proprietary vendor and risk system software. The result is a snapshot that we have right here. It's a quick look and a visual way to see risk. It is based on choosing a stress test loss from a suite of stress tests. The interactive tool then displays the affected traders, the heatmap of the traders is sized by margin-relative to others.

So, if we look at the boxes inside a heatmap, the largest box equals the largest margin. And then the color of the box indicates the profit, which will be in green and losses in red. And then we can also click inside the heatmap and see the positions of that trader, which would be displayed in the upper right. And we can see there that WTI Crude and Heating Oil are having larger losses while the Crack Spread and the Brent is profitable.

And then below that we get a little bit further detail where we can look at the positions along the curve. And we can see that this displayed by the net delta, the higher stacked bar, the more positions they have, and the profit would be indicated in green and anything other than that is either a smaller profit or a loss.

And also there's another aspect of this report that we can actually rank the greatest risk at the top of the report.

And if you refer to the next slide. So all this could result in possible actions of RSB if we have concerns about a trader's risk. We generally have three choices. We can contact the trader, its clearing firm, or even up to and including speaking with the DCO. We would discuss additional assets the account may need for their unique risk. RSB may require weekly reporting on the clearing member.

The Risk Surveillance Branch continues to express concerns regarding the account that clearing members have required the trader to deposit additional margin, as mentioned before. We've also found that they've asked the trader to liquidate or move some positions to a different clearing firm, and/or asked for additional capital or lines of credit.

Often and typically we would contract the trader first and find out their trading strategy, then present our results of our stress test. And in this conversation we could find out perhaps what type of trader they were. They could simply be one set of risk and be a hedger and it's perfectly fine. If it was something other than that we maybe find out about additional financial resources, lines of credit, parent guarantee, something like that. And, of course, we would work with other CFTC divisions as appropriate.

Another report that we like to send out is called a Quick Report or Firm Profile. This report is a structured and fairly quick poll of firm data. It is used to convey information on a firm to senior staff when prompted by market events or corporate events, and it would usually contain the types of information as the firm's number of accounts, the list of clearing relationships, looking at the interconnectedness of the accounts. We would look at variation margin to initial margin percentages, and over 30 days how many of the firm's accounts breached margin. We would look to see for the account where it has excess collateral at a clearing member or a DCO. And we would look at the firm's largest customers and aggregate that requirement, and we would look at the total requirement versus other firms.

And then we'd also want to know the large swap accounts and the type of swap trading (inaudible) IRS, CDS FX. And finally, we would add additional firm financial information that we may find out in interviews, conversations, or public information. Thank you.

MR. SCHMELTZ: Initial margin is the first line of defense and the default, so margin adequacy is a crucial component of risk management. The Act requires DCOs to conduct back-testing to test the adequacy of initial margin for futures products and spreads and swap portfolios. Major DCOs report back-testing results to RSB on a monthly basis, which RSB reviews to look for shortcomings.

RSB also performs independent back-testing analysis for benchmark products. When necessary, RSB will verify the DCOs are margining products according to their own policies and increasing margins as volatility levels dictate.

To enhance our surveillance of risk across DCOS, RSB conducted a supervisory stress test of clearing houses, or SST and published a report in November of last year. The analysis confirmed that each DCO had pre-funded resources to cover any two simultaneous clearing member defaults. We found clearing member risk to be diversified among the stress scenarios included and across DCOs. In other words, there was no scenario that hurt the same pair of clearing members at every DCO.

RSB is transitioning this work into a systemic stress-testing program and is currently focusing on automating it so that it can be run at any time with little or no manual effort. We'll switch from large trader data to part 39, so that we include all futures customer positions and all positions at ICE Euro. The futures component should be automated this year, swaps will be added into the same system as futures next year.

On a separate track, RSB is currently working to incorporate liquidity into an SST. In other words, in addition to assessing whether the default fund is sized appropriately to cover potential losses, we'll assess whether collateral is liquid enough to be available when necessary for variation payments, even if one of both of the defaulting members were a liquidity provider from multiple DCOs.

RSB staff was involved with 14 other authorities around the globe in the Joint Study Group on Central Clearing Interdependencies Analysis. Data were collected from 26 of the largest CCPs as of September 30th of last year, including data on clearing members, settlement banks, custodians, investment counterparties, credit and liquidity providers.

All the data were anonymized. The analysis of this first data collection is complete and a report is expected to be published by July 5th. The analysis generally confirms that some interconnections in central clearing are large and concentrated. A second data collection is being planned for later this year.

RSB staff was also involved in creating the CPMI- IOSCO framework for supervisory stress-testing of CCPs, a consultative report which is expected to be released very soon. The framework was developed to provide guidance to authorities on the design and execution of a multiple CCP SST. It is non-prescriptive, flexible, and voluntary. It should be particularly useful for authorities designing their first SSTs or for designing a multi-authority SST. These SSTs could help authorities better understand interdependencies between CCPs and service providers.

RSB is beginning work on a couple of fronts to help client porting go smoothly in a default. It is currently finalizing a survey which will be sent to clearing members. It will ask clearing members about their interest in accepting different types of customers, the number and size of customer they could accept, the types of information they would need in order to make a decision, their thoughts on customer file formats, potential regulatory impediments, et cetera.

RSB believes that when porting customers after default it will be important to have certain information about the customers ready in advance. RSB is beginning work to develop an internal database to link customers across clearing firms, asset classes, and DCOs, and will explore other means to accomplish the same objective of helping porting go smoothly in a default.

RSB staff has been working with the Bank of England, BaFin, and Bundesbank staff along with staff from CME, Eurex, and LCH on a multi-CCP default exercise. Each DCO began drills on April 24th of this year, but completed drills according to their own schedules. Regulators are nearly finished with post-drill interviews.

Preliminarily, the results support our confidence that if a large clearing member were defaulted by multiple CCPs non-defaulted clearing members have the resources and capacity to provide traders to CCPs, default management groups, bid on hedges, and successfully bid on portfolios.

One area where there seems to be potential for further improvement is auction file formats. Greater standardization of the auction file formats of different CCPs could improve the efficiency of clearing members adjusting and analyzing defaulted portfolios.

Very soon CME, Eurex, ICE, and LCH will begin a discussion with regulators and clearing members exploring the potential for further auction file format harmonization. Regulators have plans to focus on client porting in the next year's joint drill.

Next slide. The following are points that I'd most like for you to remember about the Risk Surveillance Branch. We have a lot of data to work with. We are enhancing our ability to analyzing these data using technology. We conduct our own stress tests and always strive to operate what we refer to as the fourth level of financial regulation. Our niche is that we see more of the whole picture in derivatives markets than anyone else. We see traders across clearing members and across DCOs, and we have access to most uncleared swaps positions.

MR. ROONEY: Good morning. I'm going to talk a little bit about the Regulation 173 Program. Regulation 173 is the CFTC's regulation for risk management that affects clearing members who are also registered as future commission merchants. The regulation requires that certain risk management procedures be done within certain timeframes. And our program goes out and evaluates their compliance with these.

The first thing is -- and the current slide up there shows the general requirements of the regulation without getting into the legalese and all of the different clauses. Each clearing member has to establish risk limits, risk base limits, for every customer in every house account. Simply, it can be something like this account cannot exceed 1,000 S&Ps long or short. That's a typical risk limit.

In addition, every order has to be screened electronically or automated fashion that shows compliance with the risk limits. Part of that order screen is also to prevent rogue traders, to ensure that there's a risk limit there, so someone can't go in, plug in a ridiculous number and have it go through.

Then each clearing member has to do stress-testing of every house and customer account on a weekly basis. Those tests have to comply with our extreme but plausible requirement. Most people know here that came out of the international regulators, we adopted it. It can be somewhat dicey understanding what the extreme but plausible is, but we've had great success in dealing with the clearing members. We haven't really had a dispute there on what extreme but plausible means.

Then after they conduct the stress test, they have to see that they have the ability to fund the variation payments, that they can manage those stresses. They have to do that again for the house and the customer. And for the customer side, they have to demonstrate they have the ability to fund those variation payments if the customers can't. So, they have to show that they can cover all their losses, but they also have to show that in the event that customers lose more than they have, they can come up with the money.

And, again, those are done on a weekly basis.

The next requirement, the evaluation, the ability to liquidate open positions. That has to be done on a quarterly basis. That requirement -- over the years the RSB noticed that we've run into a few traders over the years who have caused significant financial harm to their clearing members by having positions that became very large losses that they couldn't liquidate. And the reason they couldn't liquidate, it was often the complex option position with a lot of positions on deferred or illiquid months. Someone might be short puts in the 2026 crude oil option at a particular stripe, and as the position starts to fall apart on them they can't get out because no one is out there who wants to take the other side.

In a visit last year to one of the clearing members, we've had at least one instance in the last year where they discovered a customer where they said, yeah, if this market moves against him dramatically he won't be able to get out and we're going to be buried. So, they had that customer break up his position and move it to different clearing members. We thought that was a large success within our program.

And the last requirement is to test lines of credit, and that's done on an annual basis. The only lines of credit that would -- if they're using a line of credit to fulfill the funding variation payments. If they have other lines of credit, whether to pay their rent or their employees, we don't worry about those.

The way we generally conduct these, we call a clearing member, we tell him we'd like to come and visit you within four to six weeks, and we send them an engagement letter and a record request specifying what we want. One of the things we typically want is that we select two weeks in the recent past, usually in the last quarter, we want your weekly stress tests and your weekly analysis of how you're going to fund those stress tests.

And then we begin the analysis in the office. We go through the records making our evaluations and often phone calls back and forth between the clearing members asking them questions and trying to get it straight. Then it comes down to we have to go into the field. When there are certain things we can't do in the office, we go into the field.

One of the other records we look at -- I'm just trying to get back -- this is rejection logs. As we said, one of the requirements is that we have to have an automated system to ensure that trades don't go through without being in the risk limits. One of the common techniques to evaluate whether that's working is we get the rejection logs and we can see all the trades that their systems have rejected.

Onsite review. Although we go into the field, we generally are always one to two days, and that seems to work well. The firms are happy that we're only there one to two days and we're in and out very quickly

We bring typically two to three staff members per review. Joe mentioned earlier -- or

Glenn -- the diversity of our group, of the different backgrounds we have. Generally, we staff that with one supervisor, someone who has a trading background and someone who has an auditing background. We're all risk analysts, but by bringing together someone with an auditing background and trading background we get particularly good insight into how the program works. The auditor is there to help us ensure that our work papers are done properly and we're doing the proper amount of scoping and evaluation. And the trader has a unique insight into some of the risk principles that we're involved in.

We meet with the key personnel at the clearing firm and we compare the clearing member stress test to the CFTC values. As most of the presentation talked about, we conduct daily stress tests, we get our stress test for that firm for that week and compare them to what the firm is doing.

Generally, there are not material differences. The stress tests we run are consistent with the stress tests the clearing members run. If there are material differences, we sit down and try to hammer out why there are differences. It could be an error by either side, it could be that certain contracts were included or excluded, and sometimes it's the aggressiveness of the stress test. And we work through with the firm trying to figure those things out.

And it serves as a good check against our own internal issues here. Are we doing what people in the industry are doing? And as an aside, obviously the clearing members are the ones who are often very aggressive in their stress-testing because they're the ones who are going to lose the money, they're the ones who are going to have to fund the variation. If we mess up a stress test here no one asked us for the money for variation. So, the firms are obviously very good at it.

As we go through it's also a good time where we've been observing -- each firm has particular traders we are concerned about and that's the time where we will always discuss those traders. If we don't have an alarming situation we wait until we schedule -- when we go in the review. And we notify them up front: we'd like to talk to you about these three traders, we're concerned about their risk. And the firm is then prepared to talk to us about it.

At the end we have an exit interview, sort of typical audit procedure. We discuss with them what we've observed, what we've learned, and we make recommendations if appropriate. And in our report we note any issues of non- compliance. And we say it's a review, I actually tend to use that in the technical sense of an auditor in that a review is much narrower in scope, and in an audit we have much less testing and sampling involved.

When we note issues of non-compliance we issue generally one of two types of letters. We either say we did not detect any issues of non-compliance or we detected the following issues. We typically give a letter saying if we've had non-compliance. What do you expect to do? Please let us know in the next 30 to 60 days how you expect to rectify these.

So far we've been very successfulwith that. We've been to every firm subject to this regulation in the past three years. There are about 50 firms that are subject to this regulation. We've issued 15 to 20 compliance letters and they've all been resolved amicably between the division and the industry.

The typical findings early on in the program, the requirement that they demonstrate that they can fund customer losses, there was confusion in the industry in what we meant by that. And they would typically show us why they wouldn't have to do it because the customers are highly capitalized and had a lot of funding. And we felt it was implicit in our regulation that that's not what we're looking for. We're looking for when those customers can't. And we worked that out.

The other problem we've had in the

generally smaller firms is lapse coverage overnight. The regulation requires that you have a 24-hour program. Some of the smaller firms had some challenges there in that

(inaudible)monitoring overnight positions. Again, we worked through that, it's solved.

Our liquidation analysis requirement -- I won't go into details here. There was a lot of confusion on what we meant by that. They thought we -- a lot of people in the industry thought that we wanted them to demonstrate that they could liquidate every customer they had on a given day. Our intent was to identify customers that would be problematic if they had to liquidate. So, again, we worked through that. And occasionally firms are meeting the spirit of the regulation but they're not documenting the procedures or maintaining their records. And that's sort of a simple fix.

Some of the benefits of the program. Again, like all of what we do in RSB, we have a view of the designated clearing organizations over everyone. If someone is just long equity positions at the CME and short at the ICE, we get to see that. We get to see those net down to not a big problem. Vice versa, if they're long at both DCOs we get to see that and observe it and calculate a better risk profile.

It's also been successful that we've developed these relationships with the clearing members. We know who to call in the event of a problem, and we have a relationship where they'll actually pick up the phone and talk to us most of the time.

The field work enhances our industry now, and that's very important to me. I've been with the Commission a long time, and one of the criticisms you often hear are regulators, they don't understand the industry, they don't understand what's going on. And I think the best way to mitigate that is by having us in the field. Certainly no one wants us out there every day. But when we go visit the clearing members I've learned something on almost every review.

I've been in the derivatives industry a long time, things are constantly changing. And in the past five years with Dodd-Frank, things are constantly changing, firms are coming up with new procedures, they're bringing in new risk tools. And by going out there we can stay on top of that and understand it. And those times when they need to call us, I think we're in a better position to discuss it with them because we understand what they're talking about.

And it also affords the onsite analysts risk and procedure reviews. Again, we've been to all 50 firms that fall under this regulation. So, we've observed firsthand all of the risk systems and we know there are fundamental approaches to risk. Clearing members approach risk in different ways. Not everybody approaches it the same way. Everybody has a little different take on how they look at it. And we've got that knowledge now on how every firm looks at it.

And the last point here is clearing

members have voiced support for our review program. And that grows out of the mutualization of risk since in the event of default everyone's on the line. Now, when we call a clearing member I don't think they say, yay, these guys are coming here again, but what they like is the fact that we're going to other firms and they know we're creating a level playing field for all the clearing members. And I think they take comfort in the fact that there are firms they're concerned about, or they hear issues, and we go in there and take a look at them.

I guess we'll turn it over to Luke here now, at the end of our formal presentation.

COMMISSIONER BOWEN: Before -- I just want to thank you so much. I can tell you, when I first learned of all the work you're doing it gave me great comfort that we were at least addressing one of our core missions of oversight. So, I just want to thank you for presenting this because I think this is the first time publicly we've shown the audience the depth of the work that we do.

MR. ZUBROD: So, let's open the floor here to any questions. If you have them go ahead. As per our custom just signal your question with your name card.

Richard.

MR. MILLER: Just to echo on Commissioner Bowen's compliments, I'd like to also compliment the staff on providing transparency into your market surveillance activities with respect to CCPs. I've been in the industry a long time and I would note that this is probably the first time that we've seen this level of detail and description of your activities. And it's important because it provides comfort to market participants, particularly market participants like my clientele who are insurance companies that have no choice but to use the clearing system, and our need to feel it is safe and secure.

Beyond that comment I do have a couple of questions. What steps do you take, or do you take steps to share information or gain information from other regulators? Particularly

I'm thinking of bank regulators with respect to the large clearing members who are banks, and the SEC with respect to active hedge funds and the like. Do you have information sharing arrangements and protocols with your colleagues at these other agencies?

MR. ROONEY: I don't believe that we have extensive formalized procedures with them. As events take place, obviously we work with them. There was a broker-dealer a year ago who was having financial problems and we worked with the SEC. Our group worked with them coordinating what problems did they have and how that could bleed into the clearing side. We stand ready to work with everybody.

Now, on the other side, there is another part of RSB, the Examinations Group, that looks directly at clearing organizations that work extensively with the Federal Reserve and other regulators. We get more of that cooperation comes through the Examinations Group than through the Risk Surveillance Branch. It's all under the umbrella of the Division of Clearing and Risk, but the Examinations Group works more closely with the other regulators. We have more of an ad-hoc relationship with them.

MR. ZUBROD: Thank you, Hugh. In the interest of time, as we're nearing the end of it, Marcus?

MR. STANLEY: Thank you. And thanks for the presentation and for the work you do.

I'd just like to get -- this might be kind of an elementary question, but a better understanding of your oversight of the clearing house margin models. As I understand it, you set the scenarios using your own sort of internal analysis of the market, but then are you dependent on the clearing house internal models in order to translate those stress test scenarios into losses? And how do you check, for example, the correlation assumptions across risk classes in those models?

MR. SCHMETLZ: Our Team 3, as I called it, or Quants or the Margin Model Group, reviews any new margin models or changes to any margin models and loss to approve them before they go into effect. And there is ongoing monitoring of those margin models.

I guess I see stress-testing as somewhat different, and that's what we do which we compare a stress test loss with the margin -- calculate it from the margin models.

MR. ROONEY: Glenn earlier said within the Risk Surveillance Group there are three teams. Two of those are represented here today; the Margin Model Team folks are not on this panel. So, they would provide you much better questions, they're just not on the panel today, unfortunately.

MR. STANLEY: Okay. Maybe I can follow up with you on that to talk to them.

MR. ROONEY: Sure.

MR. ZUBROD: And the last question we'll take from Dale Michaels.

MR. MICHAELS: First of all, good presentation. I commend you on the work. Question for Hugh and likely Joe and or Glenn.

On the liquidation exercise that you guys look for the clearing members to perform, what is it that you're looking at particularly, especially with some of the exchange traded models that don't take in the types of liquidity risks that might exist in the market? What are you looking for the clearing firms to do in particular? I think that would be interesting.

And on the back-testing on a 99 percent level that all the CCPs must adhere to, how do you look at the 99 percent? A few different ways to look at it, you know, from LSOC accounts do you look at every single LSOC account? Do you look at an aggregate basis? I'd be interested in thoughts on that one as well. Thanks.

MR. ROONEY: With respect to the liquidation model, as we do the 173 review we make the requests and ask them to demonstrate how they comply with the regulation and then we see what they have. And there are a variety of ways to do it. It's typical that they will add some sort of loss with respect to liquidation. So, you take this portfolio, it has a net liquidating value of negative 50 million. Then then build in some sort of model to say because of liquidity problems we expect this to lose 70 million when we liquidate it.

We have no recommendations and we don't have an internal model for it. We accept what the clearing members provide. And to this date we haven't found any clearing member we thought was deficient in that area. They all do it some more sophisticated than others. Obviously, the firms that carry a lot of option traders and have a lot of those positions are more sophisticated at it.

The firm that I mentioned in my presentation that rejected a customer was one of the most sophisticated firms in the industry. So, at the smaller end of the industry, the less capitalized firms, they reject a lot of that business out of hand anyway. So, they have less of that anyways. With the firms with less excess net capital, they limit the amount of customers that can be sort of the more complex options. If that answers your question.

MR. SCHMELTZ: In terms of the back-testing I'm not 100 percent sure exactly where that stands today because I've been out of it for a little while, but I guess the way I would think of the 99 percent would be that the portfolio should have margin breaches fewer than

percent of the days in the long run. On average, I do not think that they

look at every single LSOC customer portfolio, certainly our oversight is focused on the larger portfolios in the core products.

MR. ZUBROD: Well, I think with that we've reached the end of our time. I'd just like to thank you. I'll echo a word that both Richard and Commissioner Bowen used: comfort. I think it's clear that through reform we've moved a lot of risk in the market into clearing houses. And I think speaking for smaller market participants, folks who are subject to the clearing requirements have limited capacity to evaluate the risks within these markets. And so I think there's comfort in being able to understand them to a more granular degree, which you've afforded us this morning. It's helpful to know that you're evaluating them, that you're mitigating against them, that you're doing so at multiple levels from customer to clearing member, to clearing house, and on a global scale. So, really appreciate your comments this morning.

MS. WALKER: Thank you, Luke. At this time we'll take a very short break, about three minutes, and reconvene at 10:55 for our next panel.

(Recess)

MS. WALKER: Thank you, and we'll start again. As noted in today's agenda, our second panel discussion will be on an economic perspective on the clearing regulatory framework. I would like to introduce Robert Steigerwald, Senior Policy Advisory, Financial Markets at the Federal Reserve Bank of Chicago, and Sayee Srinivasan, our chief economist, as well as Richard Haynes, also part of the Chief Economist's

Office, who will lead the discussion during the second panel.

MR. STEIGERWALD: Thank you, Petal. I hope to set a good example by speaking into the mic very clearly and loudly so that all can hear. I'll spare you the rest of the instructions and just rely on my example.

So, a lawyer, a mathematician, and an economist walk into a bar. No, that's for a different occasion, but it actually describes the diversity of experience represented on the panel here today. Sayee Srinivasan, of course, as Petal noted, is the chief economist for the CFTC, and Richard Haynes is supervisory research analyst in the Office of the Chief Economist.

I am at the Federal Reserve Bank of Chicago, which obliges me to make a disclaimer which I will make broadly on behalf of all of us. The views and opinions expressed today are solely our own and not those of our respective employers or any other official body that may come to hear of what we have to say today.

Our remarks today concern a program for thinking critically about policy issues. Sayee will share with you the inspiration for his thinking. I want to especially reference my mentor in economic thinking formerly at the Federal Reserve Bank of Chicago, Dr. Edward Green who wrote a seminal article some time ago titled We Need to Think Straight About Electronic Payments. Our topic today is not electronic payments, it's central clearing, but thinking straight, thinking clearly, and understanding the importance of policy tradeoffs is a necessary condition to good policy-making.

We're going to open with remarks by Sayee, and then Richard and I will interact over some particular issues that we hope will illustrate some of the broader concepts that Sayee will share with us. Sayee?

MR. SRINIVASAN: Thank you, Robert. Thanks, Petal, for letting us loose out here. And thanks Commissioner Bowen for also chairing this.

So, I think what you're going to be

hearing from us is how do the economists and others go about thinking about CCP issues. One of the challenges that we have, at least from our perspective, is that there really isn't a conceptual framework yet in the research community to systematically study CCP issues. It's still a work in progress. So are market structure issues. People have been working on it for a long, long time. But if you ask me how many academicians are actually actively doing good quality research on CCP issues, I have a hard time using both my hats. This is the state of the world, but it's still a work in progress. So, we were debating on how to sort of motivate the discussion and in a standard academic conference they put out a model and most of us would fall asleep. So, I thought why don't we sort of boil it down to some very basic principles, I guess.

So, when we start thinking about this issue in a systematic manner, as economists we try to write a model. And what the model does is it's trying to do in a very simplistic manner describe the world we live in. And we all are sort of familiar with the standard demand and supply curves. It's sort of a two-dimensional representation of the world. And we also know that the real world doesn't work that way.

A few years ago, this was sort of illustrated very well to the Laffer Curve, which basically said that -- Laffer was an economist from the University of Chicago -- if you sort of draw the curve definitively it's clear that you can have the (inaudible) same tax revenue coming from two different tax rates. And your choice on where you want to be depends on what are the tradeoffs that are involved in making the choices.

And the other point which is increasingly sort of relevant as we think about CCP issues, especially given that we have a regulatory structure in place, is where you want to go depends on where you are. And many times it's not clear to us that we have a good understanding and even consensus on where are we today. So, that's the point which I think Richard and Robert will also get into as we go forward.

So, I try to extend it to an issue which comes up regularly, and we heard it discussed even in this Committee here, and also the academic community is getting involved in it, is skin-in-the-game. CCPs skin-in-the-game. And we see some representations where the argument is made that more capital is better. And the question that I ask when I see some of the research is what's the object of function? What are we trying to improve? What are we trying to maximize? Or, as a later (inaudible), what's the object of measure of resilience? You want to improve resilience in the system, do we have a consensus on what's the objective measure of resilience? We really don't have it here.

And when I look at some of the research of skin-in- the-game, they tend to ignore these aspects. So, what person to what in capital measure. We know the CCP capital that's in the enumerator, what should be the denominator?

There are ideas being thrown about just

having skin- in-the-game at one step, the waterfall is insufficient, you need to have a senior mezzanine and junior. And then where do you place it in the waterfall?

And then there's this larger issue, and once again, these guys are (inaudible) and the CCP and clearing member incentives, and all this condition on regulations. So, I'm still waiting to see a research paper which lays out these things in a systemic manner and assists in the skin-in-the-game issue. I've seen a lot of papers, maybe half-a-dozen plus papers, looking at skin-in-the-game, but I haven't seen any that sort of looks at these things in a sort of systematic manner.

So, once again, the issue is, to answer this question, I need to know where am I today and what are the tradeoffs. And at this point I'll hand it over to Richard and Robert.

MR. HAYNES: I'm going to jump off from that last point. I think very much the discussion that we're going to have in this panel is based on the idea of tradeoffs. And as Sayee mentioned, often academic literature is in some sense one-sided. There is a focus on kind of an increase in safety and soundness is good and you can achieve an increase in safety and soundness by doing the following thing. An increase in, say, market access is good; you can increase market access by doing something different.

Of course, we know that in many cases, and I think we brought up in public forum a number of those cases, what is actually true is that these are balanced off, right? An increase in one means a decrease in the other. And so we, as regulators, you as market participants, policymakers, very much need to take that into consideration and really get a sense of how academic literature can inform that, realizing that a lot of academic literature may be only looking at one quarter of the issue.

We have a list here on the slide of a number of these areas of tradeoffs that we think are interesting. Risk management, of course, incentives, there are of course a number of different types of actors, there's a clearing house, the clearing members and the customers of clearing members, I think we have representatives of all three groups in the room right now. And it is often very difficult to determine the appropriate balance between the incentives of those actors and what it will mean for the system as a whole, and that's in some sense where the regulator comes in.

So, what Rob and I -- he mentioned this right at the very beginning, we'll go kind of back and forth on a couple of these issues and then open it up for dialogue because, of course, we're just presenting, opening up the tradeoffs that we are certainly interested in but need to continue to get feedback. Everybody is very much aware that clearing has increased over the last, say, decade in part due to the clearing mandate and other regulatory changes, so I'm not going to stop on that slide.

I'll move to here. The G-20 mandate

came up because there are clear benefits of central clearing. Listed here are a handful of them. Higher risk standardization, higher transparency for the market, for regulators such as us. A potential increase, not always. academics have spoken to this. Potential increase in the amount of netting that you can do because, of course, everything is centralized in one place rather than diversified across a number of counterparties.

But, and again, maybe I'm feeling like a broken record, the movement into clearing is clearly not just a question of, okay, we get all these benefits as we push there. It is a question of a risk transformation. And with that general theme we have to be very cognizant of that risk transformation. And I'll pass that theme over to Robert.

MR. STEIGERWALD: Thank you, Richard. I want to make the conversation a bit more concreteat this point. And at the risk of touting some work that I and my colleagues have done at the Federal Reserve Bank of Chicago, we talk about a concept that we internally call the Conservation of Risk Principle. We're modeling this concept on laws of physics. We're not quite sure whether that's the right juristic for what we see happening in risk tradeoffs, but clearly there's a relationship between credit risk mitigation and the reliance on time-critical liquidity and the importance, by the way, of the supporting infrastructure, the operational integrity of the mechanisms we use to control credit risk.

Let me take us on a very short historical tour. I promise you I won't go into all the nitty-gritty detail that I really love to share with you but Petal wouldn't agree to allow me to speak for four hours about this. There was in 1974 a very important incident, the failure of Bankhaus Herstatt. Widely noted in the policy literature, and not so well understood in terms of its implications for the modern payments infrastructure.

We focus an awful lot of Herstatt and

what it told us about the need for international regulatory coordination, and of course that's an important part of the story. Less well known is that CHIPS payment system, which was the critical mechanism for settling the U.S. dollar leg of foreign currency transactions at the time, was operating on a deferred end of day net settlement system. And without getting into the thorny details, let's just note that when Herstatt was taken over by the German banking regulators at the end of the banking day in Frankfurt it was still in the morning, early in the morning New York time, and the participants in the CHIPS system took quite rational steps to protect themselves from the credit risk exposure implied by the failure of one of their participants.

That led central banks globally to focus on the vulnerability of deferred end of day net settlement systems and to promote in its place real-time growth settlement systems, which since then have moved on to much more sophisticated hybrid systems.

Following that in quick succession was the adoption for security settlement systems of the delivery versus payment arrangement. After long years of effort, the payment versus payment system that we now have in the CLS system and in Hong Kong and other places for the simultaneous exchange of foreign currency obligations to eliminate the kind of temporal risk that was evident in the Herstatt incident, as well as more broadly collateralization and ultimately the adoption of a mandate to centrally clear swaps.

For me, this represents a consistent and rational decision by policymakers to implement mechanisms to mitigate credit risk. But risk, like energy perhaps, doesn't disappear, isn't destroyed, it gets transformed. And what I would say is that that credit risk that we properly seek to manage through clearing and other mechanisms gets transformed into liquidity risk as well as operational risk.

Is that a sensible and reasonable tradeoff? My coauthor and I think so. In a world where there are mechanisms to provide with immediacy the liquidity needed by the markets to allow clearing operations to continue to operate in a safe and sound fashion, we think that the substitution of liquidity exposure for credit risk exposure is sensible. But it changes the system. It changes the system in ways that are quite unpredictable. It makes the system more interconnected. It creates what we call time-critical liquidity needs, the ability to satisfy obligations with a high degree of time sensitivity.

And here there are other implications. We now recognize in this new environment the importance of liquidity alongside our proper concerns for solvency. The two are distinct and need to be addressed distinctly but in relation to each other by policymakers.

Here I have a few remarks about the way that the legal structure, and more importantly the market structure for central clearing operates. Will you move to the next slide? Just show the image. You will all have seen the illustration showing the opaque bilateral markets compared with the beautiful simplicity of centrally cleared markets. That illustration is true but inadequate. There is hidden complexity in clearing arrangements. There's also hidden vulnerability as we saw in bilateral uncleared markets. Here again, we experience in concrete terms the kinds of tradeoffs that Sayee was calling to our attention.

I think I will stop there, Richard, and turn back to you for the discussion of collateral demands.

MR. HAYNES: Okay. Given that we're on this liquidity discussion, and I think liquidity is very much the critical risk or the critical component of CCP risk management, I want to kind of skip over to what we've called default preparation, or of course the funds that are there available for the liquidity demands of the CCP especially during stress conditions.

And we know that these funds come in a

number of different types. We have mutualized resources, the default fund, we have the assessments, the potential assessments on members which are in addition to the default fund. We have unmutualized resources, which is primarily the initial margins associated to individual member positions. And then of course we have skin-in-the-game, which is what comes from the CCP.

And the relative size of these three things, of these three liquidity pools, dictate in some sense the relative incentives of all the members, as everybody knows. And it is in some sense a difficult question to really understand, first, what the appropriate distribution is across those three pools, and two whether there is one right answer, which I doubt, or whether there are a number of right answers and perhaps which one is most relevant to, say, swaps, which one is most relevant to futures.

A couple of things that academics have discussed is a few forces which may not be entirely obvious -- maybe they are entirely obvious -- which can affect the levels of these things beyond, hey, I'm a clearing member and I don't want to shoulder the burdens of somebody else so let's push it over here, or things similar to that. Of course, we are in a low interest rate environment so the high-quality collateral that's associated to initial margins is quite cheap now not surprisingly.

So, it is on a relative basis pretty easy to post things like cash, things like treasuries, to the clearing house to satisfy the initial margin demands. And the variation to margin demands, of course, as a few academics have pointed out, becomes much more difficult as rates rise, which is the environment we find ourselves in. And also when there's heterogeneity across members and across customers. Not surprisingly, once the heterogeneity comes in then there is a little bit of concern from the high credit quality members mutualizing their default preparation with others.

So, these are, of course, things that we need to take consideration of, not only as regulators but as participants, especially as the world moves into a kind of new equilibrium. So, I'll pass that back to you.

MR. STEIGERWALD: Thanks, Richard. So, Sayee mentioned the difficulty of specifying what the objection function of clearing is. This is critical to the construction of a well-thought out economic approach, to say nothing of an economic model for clearing. And yet we don't seem to have consensus about what the objective function is.

I'd like to propose that it's pretty simple. CCPs are commitment mechanisms. They are part of the fabric that establishes trust and confidence in market structures so that parties that do not know each other may trade with each other anonymously and cannot know each other but have value to add to the marketplace, liquidity to supply to the marketplace, can do so with a high degree of confidence, that the obligations of both parties will be carried out as they struck them in the trade.

This makes CCPs quite different from most other kinds of financial institutions and intermediaries. It means in particular that CCPs are not banks. If you're familiar with the work that I and my colleagues at the Chicago Fed have been doing, that's a theme that we've been trying to communicate to warn policymakers against the fallacy of thinking that we can take a policy structure that is designed for banks and simply impose it on things that are not banks.

Because CCPs are commitment mechanisms the objective function of clearing is to maintain in an orderly fashion, and when necessary reestablish a matchbook so that clearing members can maximize the benefits of those open positions that they entered into voluntarily, that were priced at market prices, for as long as those open positions have value to the community of clearing members. It's a very difficult balance to strike exactly what that value means. It depends on the coordination and cooperation among all the participants in the clearing universe. And that's precisely what the rules of the clearing house, the default management program, the default waterfall, is intended to do. It's intended to create an incentive structure that supports the continuity of open positions at the clearing house.

This is very difficult to accomplish. The rules of the clearing house can specify how the clearing house will go about its business and who will bear what obligations up to what point, but what cannot be specified in the rulebook, or in public regulation for that matter, is the continuing value of the matched book to the community of participants that benefit from clearing, and that's the clearing members and their customers.

I want to emphasize one thing at this point. Combined with the necessity of restoring a matchbook under those situations where a clearing member may have defaulted is the need to absorb money losses. That's quite clear. But money, the allocation of money losses, does not in and of itself return the clearing house to a matchbook. We have to clearly distinguish that part of our regulatory and resilience framework that focuses on money from the part that focuses on the continuing value of the open positions carried by clearing members.

Richard, do you want to go on and talk about the waterfall issues?

MR. HAYNES: Sure. In preparation for this slide, and I think this is where I'll leave it myself, I also want to emphasize and kind of go back to some of the original things that we said. Of course, in 40 minutes or however long, we're clearly not going to solve any of these issues. We're merely here to lay them out. And we're also attempting to lay out some of the questions that we ask internally within an economic framework but also within kind of a policy framework. And to ask all interested parties, not just academics but market participants, about how quantitatively we should really be thinking about these issues, and how within an analytic framework we should calculate some of these tradeoffs and find what we would hope to be at least close to one of the optimums, if not -- let's say a local optimum, even if not a global optimum.

So, with that, I will kind of go to the end of the waterfall as we move, hopefully, closer to a matchbook. And one element of this is of course -- the fundamental question is in some sense the loss allocation rules, how are we going to allocate the losses that go beyond the standard methods in the default waterfalls. So, after we've made it through the default fund.

And I've listed two here on the slide, as I move over to it. The first one being the most popular variation margin gains haircutting. The one at least I see the most discussion about. In some sense, I think one of the reasons we see a lot of discussion here is because it's very similar to what we see in banks.

I think Robert has noted that CCPs are often considered banks, and the solutions for CCPs look a lot like the solutions for banks. Various margin gains haircutting is an echo of haircuts to bondholders, haircuts to those who have liabilities to the CCP. But unlike in that case, it's impossible ex ante to figure out who in fact is going to take those losses. So, I think that can be very difficult, especially when we're talking about systemic institutions having to bear the losses associated with a haircutting.

And the last question -- and I will leave it here -- is how are we to determine. Of course, there is a subset of people who are on the gains side of the variation margin payouts and there is a subset of people who are on the losses side. So, there are, of course, conflicting incentives of pricing the contracts as we do the haircutting.

So, I'll leave it at that and move on to the conclusion and questions.

MR. SRINIVASAN: I'm closing? Okay. I want to sort of strike away for a minute from the

CCP issue. Many of you would be aware

of the fact that there is considered afoot underway to us is the impact of the reforms. There is strong interest in doing it. And looking forward to the next few years, I can see us sort of trying to pull together these issues just in the context of CCPs. There is the market structure angle. So, you want it to be sort of a matchbook and growing entity. And there is a debate that's happening between -- when you think of the reforms and the regulatory structure, balancing the solvency needs of the system with the liquidity in these other systems, macroprudential and microprudential and when you look at CCPs actually gets together. That's a debate which will continue to happen.

And also the fact that we have a lot of data that's coming in that my colleagues from the Risk Surveillance Branch we're talking about. As the rules have been implemented we see a lot of voluntary clearing happening, and one of the factors driving it.

And there's one chart which we wanted to put out here and we decided not to at the last minute was on the vertical axis will be the whole sort of regulatory structure for CCPs, recovery, resolution, and what have you. And on the horizontal axis is what's the probability of a CCP blowup. And then we have a big question mark in there because I don't know where I am today. It's like the steps have been taken to make the system more resilient at sort of a broad level and where are we today. So, I think just answering that question is going to keep us busy. But this is one of the things where if we can't figure these things out on our own, as Richard was saying, open it to this Committee and the academic world to come reach out to us and talk to us about how to model these things and how to study these things.

MR. STEIGERWALD: One of my former bosses at the Chicago Fed used to say that what you see depends on where you sit, and you sit today in the offices of the CFTC at this meeting of the Market Risk Advisory Committee, and so this is your opportunity to share your thoughts about the points we have raised. As both Richard and Sayee have pointed out, our effort today was not to try to solve these thorny problems involving irreducible tradeoffs, but rather to think more clearly about them. We'd be delighted to have your input at this point. Please, in keeping with the tradition of the Committee, just raise your name tent and we'll call upon you.

Eileen.

MS. KIELY: Thank you very much. My name is Eileen Kiely, and I'm here representing BlackRock. I'm here on behalf of BlackRock's clients. We are an end user of the infrastructure, we do not actually belong to a CCP or have a direct relationship with a CCP, we access them through the third-party intermediaries.

So with that caveat, Sayee, I was very pleased to hear you acknowledge that there's a lack of comprehensive research out there that addresses the issue of CCP capital. And that is something that BlackRock is actually looking to the regulatory community and the academic community to please provide because I don't think many of us think more capital is necessarily better. There needs to be the analysis done that shows what the optimal level is that doesn't introduce moral hazard on behalf of members, but still incent the CCP management to practice solid risk management.

And to that end, one of the key things that I thought was missing from the discussion was the fact that CCPs are for-profit entities for the large part, and I think that is a critical element in how you need to think about this analysis, particularly when, Robert, you say that there are commitment mechanisms. I would characterize it slightly differently. We think of CCPs as providing a service, and that service to our clients is credit risk mitigation. And that service has a price that we've paid for, and we hope that we get what we've paid for.

So, when you liken variation margin gains haircutting to haircutting bondholders I would respectfully say the actual analogy is the haircutting depositors because depositors pay fees for their bank deposits, we are paying fees for the credit risk mitigation. And I think the bondholders analysis is a little bit too far. I'll leave it there.

MR. STEIGERWALD: Luke.

MR. ZUBROD: Chatham worked with end users both financial and non-financial and bumps up against the tradeoff that you have elevated here between credit risk and liquidity risk, in so much as some of them are subject to the clearing mandate and that places time-critical liquidity demands on them which for varying market participants are more or less tolerable.

Are there ways in your view of retaining the resilience benefits that attend clearing to the system while lowering the liquidity burdens that are placed on market participants?

MR. STEIGERWALD: Well, so I think the answer is yes. I think having some respect for market selection of the means for mitigating credit risk can be beneficial, right? We had a relatively stable environment for a long period of time that allowed both the flexible credit risk management in the bilateral space and the more rigorous, rigid credit risk management with the attendant liquidity consequences in the clearing space.

We decided for policy reasons to change that balance. I think it's incumbent upon us if the liquidity demands that you are mentioning are important drivers, and I assume they are. It's incumbent upon us to continuously examine the policy balance that we've struck. There's no reason why the tradeoff we decided in the immediate aftermath of the crisis has to be the right balance forever.

MR. ZUBROD: Kim.

MS. TAYLOR: I'm Kim Taylor from CME Group. I represent a CCP view. I was interested in your comments about the importance of continuity of the matched book, or of the clearing mechanism. We have always looked at what a CCP needs to provide as the continuity of the funding, the money, the client's money, the hedge or position that they have on, and their access to the market to manage that. We've always looked at the continuity of those three things as being the goals that we strive to achieve in a default. I think they line up with your idea of the continuity of the matched book.

Where I see an interesting tension, an actually somewhat worrisome tension, emerging in the market these days is in the way that resolution regimes are being put forward. They're being put forward in ways that in many instances provide an opportunity to undermined the continuity of the clearing mechanism while actually purporting to support a good resolution outcome.

But the focus on pre-planning the end result and jumping the gun potentially on the end result in the interest of kind of governmental preparedness is perhaps undermining the ability to keep continuity of the book. And I just wondered what your thoughts are on that.

MR. STEIGERWALD: Working in the Economic Research Department gives me a certain flexibility when combined with the disclaimer to say things that some of my colleagues on the panel may not be at liberty to say.

Yes, I share some of your concerns, Kim. I talk about a thing that it's akin to jump to default risk, it's a jump to resolution risk. We surely don't want that, frankly, under conditions we must accept as binding, such as the absence of public funding for solvency to restore a troubled market infrastructure. I think we are stuck with recovery.

I don't know, frankly, what any of the current proposals about resolution add to what the clearing houses have already embedded in their rules together with the coordination and cooperation and natural incentives of the clearing members to preserve the value that's reflected in the book in order to draw a conclusion about whether to undertake the additional steps necessary to restore the matchbook or surrender the value embedded in those positions and tear up the whole bencher completely. That seems to me a decision that is necessarily taken by the primary stakeholders in clearing, and policy should not interfere with the ability of the clearing community to make that decision as it seems best under all of the terrible circumstances we would be facing if such an event were to be necessary.

COMMISSIONER BOWEN: So, Robert, you're basically saying resolution authority and bankruptcy don't work as effective tools?

MR. STEIGERWALD: I can only think of a handful of ways that the bankruptcy model, the intervention by a resolution authority, improve what will necessarily be a terrible situation. It could be that the stakeholders in the clearing venture are not able to collaborate in an effective way. There may be some animus that develops out of the situation that leads up to the crisis or through the efforts of the clearing community to resolve the crisis. The intervention by the sovereign to come in and explain clearly and directly that there is a broader social value to clearing could be extremely beneficial.

In the absence of public funding for solvency, I'm not quite sure what more there is to do by the resolution authority that hasn't been done or can't be done by the primary stakeholders in clearing.

Kim.

MS. TAYLOR: Commissioner, just to add a little bit as an example of one of the ways in which I think it creates risk, some of the proposals -- and none of this is finalized yet -- some of the proposals that are out on the market would suggest that the resolution authorities would not enforce various elements of the loss-sharing models that are in place in the clearing houses' rules, for example. Some of the early jump-to resolution risk elements include undermining the mechanisms and the incentives that already exist or giving the marketplace an incentive actually to ask the resolution authority to come in so that the current loss-sharing models will be avoided, and then you jump to resolution as opposed to establishing continuity. So, they undermined some of the incentives if they go in the way that some of them have been brought forward.

MR. STEIGERWALD: Dale.

MR. MICHAELS: Dale Michaels from OCC, a non-for- profit CCP. Like Eileen's comment, we're looking forward to more research in this area. And to expand a bit on Kim's comments as far as jump to resolution, I notice that there was some talk about skin-in-the-game and there should be more research on that.

One of the other things I'd like to see is when we look at assessment powers to make sure that those are robust as well. We talk about the tools of variation margin haircutting, talk about partial tear-ups, initial margin haircutting. These are all tools that we never want to see in this market. I don't know if they're going to actually work, an no matter how much planning that we do ex ante when the actual time comes when we had to use these tools, these will be disastrous types of events. So, I would look forward to making sure that we have the ability, as Kim mentioned, as far as ensuring that CCPs are able to go through their default procedures, and ensuring that we also have some research done on making sure we have expansive and credible assessment powers. Thanks.

MR. STEIGERWALD: Certainly a rich agenda for additional work to be done. Marcus.

MR. STANLEY: I want to take a different angle on resolution, and this is the intersection on bank resolution and planning and clearing house sustainability and security. As most people would know, part of the process of bank resolution planning is that the bank under receivership is supposed to be able to maintain its membership and fulfill its responsibilities in market utilities including clearing houses. And that's connected to the resolution liquidity execution needs that are planned for the bank so the liquidity that it has to reserve in preparation for a potential resolution or in Title I conventional bankruptcy. It does seem that from the Treasury report last week that there is pressure to sort of weaken the liquidity planning elements of the living will process.

I was wondering, first of all, what you thought about the connection between that kind of liquidity planning for bankruptcy or resolution for a major entity, the living will process, and what impact that might have on clearing houses if that liquidity planning process was weakened or made less stringent.

MR. SRINIVASAN: Economists have very little to say about this. It's interesting. I'm sure Robert is happy to sort of respond to your question. (Laughter) But my bedtime reading is this latest book by Rick Bookstaber, and I can't remember the name. It's on Kindle so I can sort of see the cover every time I open it. Rick Bookstaber used to be at the Office of Financial Research, he used to be at Morgan Stanley, and now he's at Berkeley. Fascinating book.

The case he's making is that traditional conventional economic analysis and the approach to modeling that we're talking about here is not of much help when you're talking about crisis situations. And economic training, I have to agree with him. Most of these models and the analytical methods work during normal market conditions but during a crisis situation we're talking about resolution, economists don't have much to say.

And it gets back into this issue between -- we're looking at solvency and the tension that we return to is the market structure versus the institutional solvency. You want the thing going and running and have the market running or do we want to sort of figure out -- because if you get into resolution the question is the CCP is stopped, my understanding is that when you're triggering resolution that's the end of the CCP as a marketplace because without the CCP the marketplace is not there. You're maybe in the bilateral space, and even that is bound to shrink.

So, economic analysis doesn't have much to say yet about these issues, which actually as an economist gives me a pause when people want to propose more rules in terms of how to skip the requirements for managing resolution of a CCP.

MR. STEIGERWALD: We are over time, but if you would allow just a few minutes just for one further question? Marnie.

MS. ROSENBERG: Thank you, Robert. There are two separate topics I just want to make some comments on. It's not about resolution.

The first one is, Richard, you made a comment about the most popular tools being variation margins, gains haircutting and initial margin haircutting. I would say those are not popular tools. (Laughter) So, if you've actually -- just hear me out. If you read any of the industry comment letters to the CPMI-IOSCO consultation from last summer it's very clear that they're not popular. In fact, there's been a lot of discussion with the European Commission and others in Europe to explicitly prohibit the use of haircutting of initial margin.

On initial margin first -- and I should say, I'm Marnie Rosenberg from JP Morgan and the views I am expressing are our firm-wide views at JP Morgan. We are both a clearing member as well as a dealer and provide liquidity settlement bank and custodial services.

The first thing on this IM haircutting, our view is that all initial margin should be bankruptcy remote, as a first matter, and there should be no assumption that participants' initial margin should be used to cover remaining losses. On variation gains margin haircutting I think even among many of the CCPs it's not viewed as sort of a popular tool. From our perspective, we view it as something that is akin to a payment default, and we should be provided a senior claim just like we would if a clearing house went into bankruptcy.

In terms of academic research, I would first reiterate what Eileen Kiely said from BlackRock, that I think where more work could be done. And we made the recommendation as well as BlackRock in our recent paper that there should be more quantitative impact studies done by regulators, policymakers, academic to really look at and evaluate capital across the system from a CCP perspective and what the impact on incentives could be.

You guys talked about skin-in-the-game and sort of at what tranche, but there's also the whole non-default loss framework and I think that needs further work and discussion because, Robert, as you mentioned, we're transforming from credit risk to operational risk and that's something that I think could use a lot more work. So, thank you for your comments.

MR. STEIGERWALD: Thank you very much. Petal.

MS. WALKER: Thank you very much, Robert, Richard, and Sayee for that, and thank you Eileen for being on hand for questions. We will now take a ten-minute break and reconvene at noon for our last panel.

(Recess)

MS. WALKER: It is my pleasure to call this meeting back to order. As noted in today's agenda, our third panel will be on Market Input - Brexit's Effects on Markets. I would like to introduce Mr. Ed Pla of the Futures Industry Association who will facilitate and help shape the discussions during this third panel.

MR. PLA: Thank you, Petal. So, for this panel we've broken the discussion into four separate broadly defined discussion topics. I think what we're trying to achieve is sort of an evaluation of the pre-Brexit state of play, what the effects of Brexit could be, and what the effects of Brexit might be after 2019.

So, I think on the first point where we look at maybe the reaction to the Brexit decision and the industry's preparations for eventual Brexit, I guess the opening statement is aside from maybe the initial market surprises and some extreme market moves a couple days after the announcements the market seems to have taken the

Brexit decision in stride. And I think the first set of questions is around understanding whether or not that's valid or is there a latent reaction that we should all be trying to understand.

So, the first question is do you believe that markets have accurately accounted for the risks posed by Brexit as it unfolds, or do you think there could be shocks coming in the future? And Eileen, if you could open up that could be useful.

MS. KIELY: Yes, happy to, thank you. Belatedly, thank you to the Committee for inviting BlackRock to present the end-investor perspective today. Before I make comments on the market I just need to say that although many portfolio managers share these views, we have over 100 independent investment teams so they're not necessarily reflective of everybody's views at the company.

So, we are in a market of significantly low volatility, both implied and realized across asset classes and globally. While one might be tempted to conclude that the markets might be underestimating risk, the implied volatilities have consistently been in line with the realized volatilities. This suggests that markets may actually be pricing risk appropriately. We don't expect the details around Brexit to disrupt this low volatility trend.

We do see evidence of efficient market pricing with regard to Brexit, particularly in the pound/U.S. dollar exchange rate, which declined close to 30 percent since the Brexit vote. And then we noted a further 40 plus basis point decline on the heels of the latest Parliamentary vote. And that's consistent with expectations for a more severe Brexit. This equilibrium was further supported by a lack of any observed crowded short position in the value of the pound.

Nevertheless, notwithstanding the market's successful operation during recent and surprising geopolitical events and the persistent low levels of volatility, the market does continue to be susceptible to market shocks. We do not think that market participants should be particularly complacent in this environment. Absent a catalyst, low volatility could in fact persist for a long time, but the risk of an economic policy or a geopolitical catalyst is not insignificant. The impact of such an event would likely be large.

We would expect to see volatilities to move well into the tails, and for those who don't operate in the land of statistics what that means is we would expect markets to react a lot more severely than our statistical models can easily predict. So, while Brexit appears to be priced into the markets and the potential impacts of the hard Brexit seem to be largely constrained to the UK, there are numerous event risks that still linger in the market that could result in significant market disruption.

MR. PLA: Across various markets, currencies, fixed income, equities.

MS. KIELY: Correct.

MR. PLA: Bis, anything to add?

MR. CHATTERJEE: Yes. I'll probably echo Eileen's point. I think the initial Brexit vote set the stage that it introduced some kind of volatility that people kind of baked in regarding tail events. However, as we see it, market has basically realized it's a long, drawn-out process. There's various uncertainties that may play out of the next couple of years. We already saw a mini reaction with the election.

So, I think with regard to specific market instruments we think the effective monetary policy will continue to drive a lot of the macro instruments, whether it's interest rates or effects. Whereas you probably see as details become clearer with relocation strategies and the specific economic impacts, you probably see more specific impacts to sectors or certain -- whether it's financial sectors or carpet sectors. And that's all going to result out we think over the next two or three years as people get more details.

So, I think what Brexit has placed right now is a stake in the ground that most stakeholders in the markets are factoring in some kind of future tail event, volatility, expectations.

MR. PLA: Thanks for that. Luke?

MR. ZUBROD: I would broadly agree with those comments. I think our clients as end-users generally look to the derivatives markets as not sort of the source of fear as it relates to an event like Brexit, but really a source of comfort in so much as the various indices, currency exchange rates for those investing into Britain or those investing out from it, interest rates that change as a result of monetary policy in response to an event like Brexit. Derivatives are the tools that our clients rely on to mitigate against the uncertainties that come from those sorts of events.

So, I think on the one hand it's reasonable to assert that the markets are efficient in factoring in information that is presently known. And I think that the challenge with an event like Brexit is not a lot of information is presently known. So, I think what is certain is that there will probably be shocks to one degree or another in the future as this process unfolds, as the political process helps clarify market participants views about the impact of Brexit on the macroeconomic situation with the exchange rates and interest rates.

But again, derivatives become the buffer that allows clients to handle that uncertainty. So, I think that buffer served our clients well for those who had hedged risks in anticipation of Brexit, and I think that we expect it will continue to serve well to buffer against those risks.

MR. PLA: Thank you. Dennis, it would be useful to hear maybe an infrastructure provider's point of view on that.

MR. MCGLAUGHLIN: Sure. At the time the UK referendum was held there was a big market correction, and it stated that levels so to speak, there hasn't been that much volatility since. So, it does seem like the Brexit risk has been priced in.

I should say also that the currencies in question that are affected, the UK and the euros, the euros are only 30 percent of the swaps market, they're not 100 percent or 70 percent. So, it's relatively tight. And the other thing to say is that two-thirds of euro swaps are done between counterparties who have nothing to do with the eurozone, neither them nor their parents are not in the eurozone. So, it's quite contained, and I think the derivatives market in the swaps market is certainly priced in the risk so far. But, of course, who knows, but that's where I think it is.

MR. PLA: I think that gives us an overview of at least the state of the market and market reactions to the event, which leads to the next question which is what are the planning challenges that are taking place. I thought, Susan, maybe you could comment from a sell side perspective what some of those challenges might be.

MS. O'FLYNN: Sure. Susan O'Flynn from Morgan Stanley. For the purposes, my response is going to focus on cleared activity only.

From a Morgan Stanley perspective, there are two key challenges for our European business, i.e., a UK broker-dealer which currently faces off with the European clients. Number one, trading and access to European clients may no longer be available both from a house execution and client clearing perspective if we no longer benefit from passporting rights under (inaudible). Number two, access to European CCPs may be subject to additional requirements, both from a CCP membership perspective for non-EU institutions, otherwise known as third country institutions, as well as domestic regulation in those jurisdictions where those CCPs are located, which impose additional requirements in order to be a member.

Now, what is the planning we're doing as a result of this? As Luke said, we're dealing with a series of unknowns, but we think it prudent to prepare for a hard Brexit. Banks will have to establish a new European entity or relocate certain activity to existing European entities in order to continue to transact with European clients both from a house execution and client-clearing perspective. This entity may require new exchange in clearing memberships in order to ensure continuity of activity. Key dependency here is exchange and CCP onboarding capacity in a shortened timeframe due to the large expected influx of dealers looking to be ready to trade well in advance of the March 2019 date. Significant resources will also be required internally to build out to our market structure partners in addition.

Post-Brexit what will we see? A new paradigm for derivatives trading in Europe and the UK. Dealers will have split trading and client coverage across two entities. From a house execution perspective, split risk and trading across entities will lead to increased costs for dealers, both from a margin and SLR capital perspective at the outset. This will be optimized over the longer term. Execution pricing may be adjusted to absorb those costs which may impact all market participants.

This planning becomes much more complex if equivalence of UK CCPs is not retained or if a relocation of euro clearing were to occur, most notably for IRS. And I'm going to stop there.

MR. PLA: Thank you. Eileen, I'm wondering if you could maybe share a perspective from the buy side that either echoes or maybe contrasts some of what Susan articulated.

MS. KIELY: I will echo that we are trying to manage through the uncertainty, and I think one of our biggest challenges is just keeping our structure nimble enough to adapt to whatever requirements as they solidify.

But with respect to the clearing infrastructure in particular, given that we are an end-user we actually are looking to our clearing members to determine how they are going to need to structure and we will adapt accordingly. I think what that means is the only thing we can know for certain is that there will be a large repapering exercise across our funds, but other than that I think there's very limited clarity into what we might need to do.

MR. PLA: Dennis, how might CCPs be able to help and what are some of your preparation challenges?

MR. MCLAUGHLIN: Well, I think in light of the European Commission Paper which was released last week, which is the subject of the next question, but it's really laid it out for what we have to do because we would like to be in a situation -- we welcome joint supervision from the eurozone, we have it with the CFTC as well. So, it's just another thing that we're well used to. And we just need to manage through the details of how that joint supervision would work. Namely, there will be specific liquidity requirements, things like that which are slightly different which we'll need to adapt to.

So, I would say that our Brexit planning challenges are really trying to put in place the necessary, if you like, things we need to qualify to make sure that it doesn't trigger the relocation clause.

MR. PLA: That's probably a great segue into our second topic. Dennis alluded to the recent ESMA proposal. So, in ESMA's recent proposal there's a provision that can deny third-party country recognition to CCPs of quote substantial systemic importance unless they relocate to the EU 27.

I know Cliff Lewis from Eurex Clearing I believe is dialed into the line. Cliff, I wonder if you could open up on some thoughts on what that type of fragmentation could mean for the markets.

MR. LEWIS: Well, Eurex is completely objective and don't have any interest in this particular change in policy perhaps, obviously it's very early days to know how it plays out. And playing off of a point that Susan made, if the exchanges didn't take place it's incumbent on the various CCPs affected to work with their members and the end-user community they think as inexpensive as possible.

So, the question that really comes down is cost versus benefits of a position which might affect the ability of a systemically important clearing house to operate for euro outside the eurozone. Now, the possible costs would be on operational and legal, which would obviously be considerable, is going to come in the form of how much more initial margin would be required if this were to take place.

The Eurex analysis is that the incremental margin -- and this is different than what others have said -- would probably not be a huge problem. And that reflects the fact that the European market, the euro market, is a very large market and is a relatively balanced market with equivalent receiving pay fix end-users. And in a way I'm really focused on the end-user community which drives this.

Obviously, the question of whether individual market participants might have to have additional amounts of initial margin that obviously would be the case. But particularly if you introduced the ability to cross-margin on a portfolio basis listed in OTC rates products overall, I think our view is very defensible that incremental initial margin would not necessarily likely be material, moreover, the numbers I've seen in fact would be smaller than the current amount of excess margin at clearing houses, which would suggest that it perhaps is not a big deal.

This is after the transition. Obviously, transition issues could be serious. The question is whether the market would be more liquid or, I think, really more of a question of how tier two affects the markets. If there's not additional initial margin these capital rules are not greatly affected, or indeed, if as the Chairman is pushing for, the capital rules globally might become a little bit more sensible, then I don't think there's any inherent reason to see that the market in euro would become less efficient after the transition period.

Now, question of the benefit. The major

benefit is that this proposed move would remove any questions as to the ability of the European Central Bank to provide liquidity in the extremely unlikely event that a systemically important clearing house found itself in a position where that was necessary. Now, to the extent that much of the risk architecture around clearing houses assumes the ability of clearing houses to access central bank liquidity -- and I'm talking really very extreme circumstances -- then risk managers could considerably perceive there being a benefit from this change. And with that, I will keep quiet.

MR. PLA: Thanks very much, Cliff. Dennis, as a risk manager do you have any follow-up thoughts on that?

MR. MCLAUGHLIN: Sure. I think the proposal or the potential to fragment liquidity is not good from a systemic risk point of view because if you artificially fragment a smaller number of members into a smaller CCP and say, okay, you guys have to play together away from the larger global liquidity pool, then that means you have less members to absorb the default or a default situation. So, you have less members to bid on a portfolio, to auction off the portfolio to, less members to which you could port a portfolio, less surviving members. And since you have less members overall, if you do the math and work out -- even though you have less members and work out the size of the default fund structure, et cetera, you'll see that the assessments on surviving members in that smaller CCP would actually be orders of magnitude times what is in the global CCP.

So, you end up by concluding that physically fragmenting a piece of a global liquidity cool-off into one place leaves you with the systemic risk being higher than it is. That's the first comment.

The second comment is that the cost would inevitably go up because you have portfolio margining today between many, many currencies, 17 currencies in my CCP, and if you break out one currency and try to treat that in a local way then you lose the portfolio margin benefits between that currency and the other 16. And that can be quite substantial. We can argue about the order of magnitude, but it can be quite substantial.

The other thing I would just say is that swaps are cash settled, they're not physically settled. So, there is no role really for the Central Bank as the provider of liquidity of last resort for the cash markets, swaps market, although there is for a physically settled market with a component such as repos where part of it is physically settled. That's a different story.

So, many of us have CCPs in very different countries, so we have a CCP in Europe where we can deal with that problem. But for what we're talking about here which is the DCO market, which is the interest rate swaps market, that's a cash settled market, and the need for a central bank liquidity is a little different.

The other thing I would say is just to echo my first comment, is that two-thirds of

European swaps are cleared between members who have nothing to do with the eurozone, either they're not legal entities inside the eurozone or they're not subsidiaries of parents who are in the eurozone. They're just not anything to do with it.

So, what you would do by having this fragmentation is you would institutionalize an offshore market for euros. And I don't think that's in the interests of the European Central Bank to do that.

MR. PLA: Thank you. Certainly, you're opening point about the potential negative consequences of market fragmentation I think echoes a point that actually was on an FIA letter to the European Commission on June 6th. So, your point is well made.

Dale, I wonder if you could offer your perspective from OCC on those same questions.

MR. MICHAELS: Yes, certainly. I think a little worried about the unintended consequences of this possible solution, because we mention in the first questions what do we perceive as a possible risk. I don't think we could know the possible risk of this political situation, of trying to come up with a -- rather than a market solution.

The other thing, as far as we break up portfolios. And it's not even the explicit margin offsets that Dennis rightfully mentioned, but you start breaking up the diversification. I've not done it for this particular European swaps, but we have done it for portfolios within OCC or in prior jobs that other CCPs where you start breaking things apart. And the margin does go up, and the clearing fund goes up dramatically because what was looked at as stress tests and uncorrelated positions, when you bring those together you don't need as large of a clearing fund as compared to when you look at everything singularly the requirements that are needed actually substantially increase.

And in a world where we're looking at the Basil requirements and coming up with all sorts of different ways to try to resolve some of the capital limitations that we all have and trying to pace with a regulatory standpoint this seems to just add to the problem.

MR. PLA: Marnie, how about from a clearing member's perspective?

MS. ROSENBERG: Sure, thanks. Marine Rosenberg from JP Morgan. I think Dennis and Dale have spoken a lot about the impact, but I'll just kind of give an overall perspective.

First, we support a proportionate approach to oversight of non-EU CCPs in principle but we're still evaluating the Commission's proposal which just came out last week. But we do remain concerned about the potential negative impact of denying third country recognition to CCPs judged to be of substantial systemic significance. While the Commission's proposed regulation is not an explicit location policy per say, denying third country recognition would effectively force the CCP to relocate in order to continue to provide services to EU counterparties.

This could cause market disruption, liquidity fragmentation, loss of netting efficiencies which have been discussed.

We do believe that the challenges associated with a growing system, a comportance of CCPs, and impact of Brexit can be effectively addressed through enhancements to oversight and recognition without requiring CCPs to relocate.

I would say at this point it's not clear to us as to which if any tier two CCPs would be denied recognition and what the timing would be of this decision. It's clear from the Commission's proposal this is going to take quite a bit of time, and this in itself could impact market stability, leading market participants having to take early action based on analysis of the worst-case scenario.

In terms of impact, as already mentioned and has been noted in many industry letters to the Commission, fragmentation through splitting of the portfolios would impact the market. One of the key benefits of central clearing has been risk, exposure reduction, credit reduction, credit exposure reduction through multilateral netting and portfolio margining. Loss of netting and trade compression could lead to larger aggregate exposures to CCPs across the market and less efficient risk management. It could lead to additional margin requirements as portfolios as split, and reasonable margin reduction through valid correlation offsets that are no longer available.

This means initial margin default fund posted at multiple CCPs, potential assessment calls, as well as liquidity demands all go up, and not by choice of participants. Any denial of third country recognition forcing a CCP's activity relocation could also lead to significant challenges in default management during a crisis, which Dennis spoke about.

Depending on the outcome, it is possible that we could be left with one EU-based CCP available to clear OTC mandatorily clearable products and increase in concentration risk.

There could be fewer market participants at the CCP which would impact the ability of the CCP to liquidate trades and raise concerns over having effective recovery and resolution plans, specifically, as there may not be a feasible backup CCP in the EU. Potential fragmentation could harm a CCP's ability to successfully port client positions while the increase in the number of CCPs would lead to more CCPs requesting hedges and auction quotes from dealers and requiring traders to come at requirements, all of which, as we know, create a resource challenge in stress markets. This could exacerbate the already known collective action concerns of operational risks that we all talk about form a default management perspective.

The other thing I would just point out is at the time of any transition there could be obvious challenges in identifying the CCP that clears the same exact contracts, ensuring new memberships have been taken, redocumenting agreements, selecting appropriate segregation models, moving contracts in a coordinated fashion, funding IM default fund at both CCPs. All of these will entail significant challenges from an operational governance and legal perspective. And our view is sufficient time needs to be provided to plan, communicate, and implement these moves. Thank you.

MR. PLA: Thank you. Chris, I think you also had some thoughts on this one.

MR. EDMONDS: Chris Edmonds from International Continental Exchange. We took a quick look at the proposal that came out last week and in one respect we could say it could have been much worse. It could have been dictated when the policy came out that we all have to do the things that Marnie and Dennis articulated could be problematic if we have to do any of those.

I think the bigger issue, and what sheds a little bit of light on the recent Parliamentary election and the risk proposed there of the changes in part of the leadership that's going on, is who is going to interpret that on both sides?

And that we don't know yet. And there's still a great deal of uncertainty as to what individuals because the words on the page are sufficient enough, we can sit there. But there are a number of what-if scenarios in there. And to Marnie's point about who may be deemed at tier two, who may be deemed as systemically important or not, that is going to be a human interpretation that goes to that. And there is a lot to be learned left on what those metrics or how that interpretation may take place that causes us some concern as we move forward and add that, which is why we have to, like others, are making plans to support a market post those interpretations becoming more clear.

MR. PLA: Maybe just a quick round-robin on some of the specific impacts that we could observe, including the propensity to engage in swap or a list of derivative hedging and trading, access to clearing, costs of clearing, collateral efficiency. Eileen, I wonder if you could offer again a buy side perspective on what that sort of potential fragmentation could result in in terms of BlackRock's propensity to hedge or trade.

MS. KIELY: Absolutely, and I'll try to keep this brief. So, I think very simply our propensity to engage in swaps or a list of derivatives is entirely a function of our clients' investment goals, as well as our portfolio managers' market views. So, we don't expect fragmentation in and of itself to have an impact on our willingness and ability to trade. Never the less, fragmentation is expected to impact pricing and our clients' returns accordingly.

But we will adapt and adjust as necessary to get the best outcomes for our clients, executing clear client trades where we can achieve the best outcomes with the due consideration for liquidity cost and governing law.

MR. PLA: And, Richard, your perspective on maybe both access to clearing and the potential costs of hedging and clearing?

MR. MILLER: Richard Miller for the American Council of Life Insurers. For financial

end-users like ourselves, we're concerned obviously about the market fragmentation and the potential increase costs and all the uncertainty that now surrounds this. It's interesting -- just to quickly reference an article in The Economist this past week discussing the ESMA proposal and observing that the complexity of the negotiations that are likely occur conjures up images of House of Cards. For me that conjured up images of poor Zoe Barnes being thrown under the train, and I don't want to see end-users like ourselves in that position. So, we'll do what we can not to be.
(Laughter)

MR. PLA: Moving on from that image.
(Laughter) Bis, I wonder if you can comment on potential collateral efficiencies or maybe inefficiencies that could result.

MR. CHATTERJEE: Sure. I think Dale kicked it off, Marnie has mentioned it, Eileen referenced it in her costs. I think we've seen people trying to speculate on what the cost and the breaking of the netting sets. And the only answer that everyone seems to be agreeing on is up. The need for collateral is going to go up.

I saw an industry survey, I think it was from ISDA, that said it could be anywhere from 5 percent to 20,

percent. Obviously not knowing the assumptions, who will it going to apply to, whether it applies only to EU members or EU clients will obviously impact. But for businesses like ours that either offer client clearing or offer liquidity and we manage our risk off the trades that exist, the absence of cleared netting sets.

So, it's given. And I think everyone's assuming that the requirements for collateral goes (inaudible). I think a couple of other questions come up, and what I think Chris alluded to is we don't know what the decision is going to be. How many new clearing houses will be forced to set up in the UK when that decision is going to be taken. But that creates questions around the legal

Dennis raised the point about the complexities of porting. It's a topic that this Committee has touched on in previous meetings. I think we still have Cliff on the line. Cliff, I'm wondering if you can maybe augment some of what Dennis said about the risks or complexities associated with porting in a potentially fragmented regime?

MR. LEWIS: Well, if in the event we get to an extreme case post-Brexit, I'm not so sure that it's a question of the euro market being fragmented, I think the euro market will move lock, stock, and barrel. Now, that may or may not be a good thing, but I'm not so sure that the fragmentation case applies.

Now, the challenge of migrating the existing stock of open interest is from a legal perspective, other than being a bonanza for high-priced legal talent, obviously doesn't have add value and that fragmentation could be a very serious problem. A general point about making sure that the level of prudent risk management practices, particularly by end-users in the EU 27 framework of collateral, how it will be treated, what will be considered (inaudible) collateral. And for a market-maker that is sitting between two clients, maybe on the same kind of a risk-trader interested swap where one product is going to be outside the EU and the other one in there, I'm in a back-to-back position but the collateral requirement being different, both in terms of amount or in terms of probably quality of collateral, now creates collateral optimization resources. So, obviously that's going to be a challenge.

We've also seen recently with central banks getting opened up to deposit margin, and we've seen a good uptake in client interest in that. How will that impact the new CCPs that are set up in the European regime, how will their central banks be opened to allow deposits. So, I think away from the amount of collateral there are other collateral issues that are kind of yet to be decided.

MR. PLA: On the topic of porting,

that it continues is a problem. And as we've all seen, the amount of capacity to deal with regulatory changes is limited and there are other hugely expensive and time-consuming market structure changes contemplated by the European Commission today as well as any possible change in clearing. I think you'd have to become worried that you just overload the system in terms of what it can handle.

I think from the standpoint of Eurex, administratively we certainly believe that we can accommodate in the event it was necessary incremental customers and believe we've set up a structure both from a risk management standpoint and from an operating standpoint that can accommodate that. But that's not to understate the challenge that this would impose on our clearing members and the end-users. And the fact that it's in everybody's interest, particularly given the macro scene that we may be seeing during this period, that people continue to manage their risks prudently. That's not a very good answer, I guess, as hypothetical, but it's the best I can do.

MR. PLA: Thanks, Cliff. Any other comments that people would like to raise or questions? Yes, Kim.

MS. TAYLOR: This is Kim Taylor from CME Group. I just wanted to add a little bit of thought here. I agree with the assessment of different kind of risks and impacts and disruptions that could occur from various ways that this policy could be potentially implemented. But I think it's important to remember that global policymakers do have market stability as one of their goals. And I have to hope, and I have to believe, actually, that they will take that responsibility seriously and understand that disrupting market access is not good for market stability and uncertainty about the outcomes is not good for market stability, and that the policies that have existed in the past for collaborative systems of mutual recognition, an outcomes-based approach to the regulation and the mutual recognition of entities across jurisdictions has been good for market stability. I was actually very encouraged by the Acting Chairman's confidence that he expressed that this paper, this policy, will not disrupt the U.S. Equivalence Agreement.

So, I think we need to remember that the policymakers will hopefully approach this in a way that supports market stability.

MR. PLA: Any other questions or comments before we move on? Dennis, please.

MR. MCLAUGHLIN: Just one comment. I think the document issued last week placed the relocation in light of -- essentially because of Dombrovskis' comments, it's a last resort. In other words, if the UK, the U.S. and European regulators can sort this out between them, how this goes, what they have to do to make this work, then I don't think we face this relocation. So, it's a question of exactly what the details are that we need to work through to make the status quo hold.

MR. PLA: The next question relates to the potential for businesses to actually move in response to an eventual Brexit outcome. And if so, if there are businesses that are anticipating moving, what challenges they're facing, feasibility of addressing those challenges in the given timelines which are tight.

Bis or Susan, I wonder if you could maybe start by maybe describing some of the planning that you're making and some of the challenges that you're finding with those plans.

MR. CHATTERJEE: Sure. I think Susan mentioned it when she spoke about it earlier. I think there are a number of different areas where people are exploring opportunities. Everyone realizes that moving either physical infrastructure, people, or other associated issues will take a multi-month, multiyear planning and execution exercise.

I think from our front the things that we are considering is the legal entities we have. We conduct various financial end-markets activities out of bank and broker dealer entities in Europe and UK. So, what is viable where, what kind of license and registration needs will be undertaken.

The other issue we are thinking about is the effect on our clients. I think, Eileen, you mentioned repapering. We've all gone through what the variation margin repapering exercise is taking, so we don't consider those issues very lightly. The other aspect, as we look at different jurisdictions and moving, is the issue regarding capital regimes that will start impacting. And obviously the last thing we're focused on is risk. If we are forced to undertake a location-based entity in trading strategies how we will centralize and manage our risk that's arising from execution in these various things.

So, these are kind of some of the things that I think planning is probably underway in very large magnitudes, at least at our institution and I would assume for most of our peers.

MS. O'FLYNN: I feel like I've got the

same answer for this question, too. I think most banks and broker dealers are probably close to executing on a strategy given the timeframe we're working on. And if we think about predominantly derivatives trading, any amount of clearing houses and exchanges we execute, that it's not just limited to Europe, it's also limited to the U.S. where we may effectively have to set up this new entity to be a member to be able to transact with our clients.

So, it is a very large task, and I think given where we expect or it seems the direction of travel is going around, loss of passporting rights, this will in theory become a reality unless something materially changes with the tone of the Brexit negotiations.

MR. PLA: Thanks, Susan. Chris, from a clearing house perspective, what challenges do you observe?

MR. EDMONDS: Well, I think most of those challenges are going to be member-related. I mean, we obviously have a facility in the

Netherlands and if it turns out to be that way, that we have to move certain products into that clearing house, we would move those products out of London to go to that direction. And then it will be the conversation that Bis and Susan have articulated well, and the message that Eileen brought up early, we'll have to adapt to that. It will be a very rapid pace of adoption that we have to get through, and that will be additional stress on the market and on the end clients to understand what those rules are, what the capital is, all of the other things that have already been articulated.

MR. PLA: Any other questions or comments during this? Susan.

MS. O'FLYNN: Just one thing, and it kind of ties into what Chris said, but also the previous discussion around potential risk of euro clearing.

I think the industry has started to get kind of numbers into the public domain around what the potential economic impacts are. And I think numbers have been socialized through obviously ISDA. I think as this proposal continues I think it's incumbent on market participants to actually look at the other costs. And I think one that has kind of missed in a lot of the submissions we've seen is actually the impact on SLR capital. Loss of compression I think is really kind of probably a bigger-ticket item that margin, and I think the industry groups together with the market participants have to get those numbers into the public domain to ensure that the commission is aware that it is not just a margin story, nor just an execution cost story. So, that's just one thing I wanted to raise.

MR. PLA: Thank you. In the short time remaining it seems fitting to end with maybe a set of forward-looking thoughts about what the state of markets could look like post- Brexit, post-implementation.

Cliff, do you have any general thoughts on how you expect derivative markets to look, feel, behave subsequent to the outcome?

MR. LEWIS: Well, I think just two points on this. One is that I think that, thank god, the Chairman is making progress on some of these bank capital rules, some of the other major policy things, which I suspect in the end are probably at least as important as what we've been talking about today.

The other general point is that frankly I think you see a potential serious divergence in pretty fundamental approach towards regulation in the U.S. versus the European Commission. And that the consequences of that could be very, very serious and it could be far more important, I think, than Brexit, for example in terms of -- I know people have speculated on this -- it may be beneficial to the U.S. derivatives industry overall.

On the other hand, probably more likely, is that it will have the effect of undermining some tools that will become much more important when we get back to an environment with real interest rates, which will happen at some point.

And I think there has been a tremendous amount of kind of complacency with the kind of market environment we've had where it's been very boring except punctuated every once in a while by moments of pure terror like the SND move. And I think that under any scenario that we're talking about it is likely that we'll have to face more periodic incidents like SND but in an environment where maybe the risk management infrastructure has been weakened. That's what I think we should be worried about.

MR. PLA: Thank you. Eileen, any potential impact that you or BlackRock foresees in terms of market liquidity?

MS. KIELY: Yes. I think despite my assertion that we will adapt and continue to trade for our clients, any forced relocation of market activity will negatively impact market liquidity. We certainly believe that.

And we see that independently for two reasons. First, we would expect the capital requirements at our dealers will rise materially, both from the SLR perspective but now they're going to have to independently capitalize across several jurisdictions that will impact our cost and would reduce liquidity. And also, due to some of what we've heard already, which is the splitting up of books across clearing members, across CCPs, we expect that would have a trickle-down effect on their ability to take trades as well as unwind trades for us. So, we certainly see a negative impact from this move.

MR. PLA: Dennis, a few moments ago Kim mentioned the equivalence regime recognition. What potential impact do you see on registration recognition equivalence regimes as they currently exist today, depending on how things could turn out?

MR. MCLAUGHLIN: I have one question after that proposal that was sent out last week. In a way I welcome the proposal; it at least clarifies the situation a bit in terms of what needs to happen. There are all sorts of unanswered questions that have to be figured out now. For example, the CFTC regulates a DCO by service not by CCP, whereas is this proposal really regulating CCPs and not the service? So, if you have many services inside a CCP, one of which is systemically important to Europe, does that mean the whole CCP gets regulated?

So, there's questions like that that have to be ironed out I think. And it's really down in the weeds in those kinds of details I think we need to get to.

MR. PLA: I think we're nearly out of time. Any other final questions, comments, thoughts to share? Thank you all for your participation. Petal, back to you.

MS. WALKER: Thank you, Ed, for leading that panel. I will now turn to Commissioner Bowen for her closing remarks.

COMMISSIONER BOWEN: Thank you to the Market Risk Advisory Committee members for another excellent meeting today and for your continued service. A special thank you to today's presenters and facilitators for bringing important substantive discussions to today's market. I want to thank Acting Chairman Giancarlo and the staff for their support of our work.

This has been our eighth meeting of the MRAC in a little over two years, and I'm so proud of the work that this Committee has accomplished. The MRAC has tackled significant market risk and market structure issues, including cybersecurity, market liquidity, portfolio compression, and inter-regulatory cooperation and central counterparty resolution. And, of course, the Committee spent a lot of time considering multiple aspects of CCP risk management as typified by the outstanding set of recommendations at our November 2016 meeting. There is no doubt that the MRAC has left an indelible impression on our markets.

Being the sponsor of the MRAC has been one of the many joys I have had as a commissioner. As a main cop on the beat for the complex and ubiquitous derivatives markets, the work of this Agency is essential to supporting the safety and soundness of our economy. It is because of the high value that I place in the work that we do here that today I'm announcing my intention that I will leave the Commission within the next few months, or perhaps sooner if another nominee is confirmed. Thus, unfortunately, this is my last MRAC meeting as a sponsor.

So, why am I doing this? The answer is quite simple. Since the departure of Chairman Massad the work of this Agency has been hampered by only having a two-person Commission when we should be a five-person Commission. In fact, we have not been a five-person Commission since the departure of Commissioner O'Malia in August 2014.

Having just two commissioners makes routine business difficult, but makes important policy decisions almost impossible. Without a full complement of commissioners to consider the far-reaching implications of our decisions we're frozen in place while the markets we regulate are moving faster every day. This fact is intolerable to me.

I came here to protect investors by

supporting prudent collateralization, by promoting robust transparency, and ensuring vigorous enforcement in derivatives markets. I intend to continue to do all of my part to reach that goal. My hope is that by leaving early, I can inspire key policy decision-makers to confirm four nominees as soon as possible.

There will be other opportunities to express my admiration of this wonderful Agency, including its dedicated staff and its superbly Acting Chairman Giancarlo. So, we'll save that for a later date.

I do want to acknowledge today my current and former staff members who have not only been dedicated public servants but who have also been very supportive to me and a true pleasure to work with these last two years. (Inaudible) Mark Phifer, Eric Juzenas(inaudible), Justin Slaughter, Jason Gizzarelli, and most recently Corey Claussen and Steve Adamske. Petal Walker, who so ably took on the extra work as Designated Federal Officer of MRAC, and my executive assistance Vontrice Wilson who superbly navigated the demanding task of keeping me and my staff organized and responsive to the various demands of my position.

But I will say that this is definitely a bittersweet decision. As much as I relish my role as a commissioner, I believe that my leaving in the next few months is the best for this Agency. I've truly enjoyed working with all of you. I thank you for your contributions and wish you the best. Thank you. (Applause)

MS. WALKER: I'll turn it to Mike Gill for some closing thoughts.

MR. GILL: So, my role is to provide some closing remarks on behalf of the Acting Chairman. Were he here, he would thank the members of the MRAC for your work and diligence in leading up to this meeting, and to the panelists for taking the time and sharing their presentations. In particular, I think he would want to note the first panel and the folks from the Division of Clearing and Risk who went through kind of the nuts and bolts of what this Agency does in CCP oversight. And I think that's often an overlooked component to this debate. So, Commissioner Bowen, thank you for providing the forum for the staff to share their expertise in that regard.

Now, as you mentioned, there will be a time in the fall, hopefully a while longer, to recognize your contributions to this Agency over your tenure. But as this is the last MRAC that you will be leading, we thought it appropriate to recognize your leadership of this Committee. You have now set a new standard for our advisory committees. I think the timeliness of today's debate and the discussion are reflective of how this MRAC has really set the tone for quality discussions at the Agency and kept us engaged in a lot of important topics.

So, it is a tradition to present a departing chairman with an honorary gavel, but we thought as clearly the chairman emeritus of the MRAC, on behalf of the Acting Chairman and the entire staff of the CFTC, we wanted to recognize your leadership of the MRAC with this token of our affection.

COMMISSIONER BOWEN: This is absolutely gorgeous.

MR. GILL: And at the risk of breaking the fourth wall, I would want to once again invite people to honor Commissioner Bowen. (Applause)

COMMISSIONER BOWEN: Thank you.

MS. WALKER: So, at this point as the Designated Federal Officer of this Committee, I am for the last time adjourning this meeting. Thank you all for attending.

(Whereupon, at 12:55 p.m., the PROCEEDINGS were adjourned.)

* * * * *

CERTIFICATE OF NOTARY PUBLIC

DISTRICT OF COLUMBIA

I, Carleton J. Anderson, III, notary public in and for the District of Columbia, do hereby certify that the forgoing PROCEEDING was duly recorded and thereafter reduced to print under my direction; that the witnesses were sworn to tell the truth under penalty of perjury; that said transcript is a true record of the testimony given by witnesses; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this proceeding was called; and, furthermore, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

(Signature and Seal on File)

Notary Public, in and for the District of Columbia

My Commission Expires: March 31, 2021