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**Opening Remarks:**

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Washington University in St. Louis

**Recent Developments in the Muni Bond Market:**

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**Mutual Fund Flows and Capital Supply in Municipal Financing:**

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**The Cross-Section of Municipal Bond Returns:**

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**Taxable Advance Refundings: A Critical Examination:**

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**Puerto Rico's Bankruptcy: Lessons Learned for the Island and for the Muni Market:**

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PROCEEDINGS

MR. RYFFEL: Good morning. Welcome to day 2 of the Municipal Finance Conference. I'm Rich Ryffel, a professor of practice here at the Olin Business School and one of the chairs of the conference. On behalf of Brookings, Wash U, Brandeis, and U Chicago I want to thank all the researchers, discussants, and moderators for their contributions to a great Conference.

A special thank you to the Brookings staff for their months of effort organizing the conference. There's a lot of work that goes on behind the scenes leading to the conference and indeed over these next two days to make sure this conference goes well, and I'm grateful for their contributions.

Yesterday we had some really provocative policy topics discussed, and today we'll dive into some more mechanical muni market topics. We'll have four papers, researchers presenting papers and then a discussant will discuss the research and we'll take questions from the audience.

After the four papers are presented we'll have a panel discussion on Puerto Rico. I'm pleased to see that we have a lot of new presenters this year. We also have several that have been with us since the conference was founded 11 years ago. It's exciting to see how the conference has built over the years.

If you'd like to submit a question for our speakers, please use our sli.do or Twitter hashtags MuniFinance, to submit a question. We'll be monitoring those and passing those along to the moderator, researchers, and discussants. Instructions as to how to enter a question were included in the confirming email you should have received this morning. We encourage you to submit as many questions as you'd like. We'll have time to get to several of them after each session.

One of the objectives of the conference is to match researchers with practitioners to conduct joint research. We got a lot of feedback yesterday by email that people found the research was quite interesting and wanted to know how they can engage with the researcher. So, if you have a particular interest in a topic that you see presented over the three days of the conference, or just in general, I would encourage you to reach out to one of the conference chairs and we can help make connections for that purpose.

So today moderating our session will be Pepe Finn, CEO of St. Louis based, womanowned investment bank, Stern Brothers. Thank you, Pepe, for your contributions to the conference, we're looking forward to the discussions you'll be leading today, and the floor is yours.

MS. FINN: Thank you, Rich. Good morning, everyone. The first paper that we will be discussing this morning is entitled "Mutual Fund Flows and Capital Supply in Municipal Finance." The researcher and paper giver on this will be Jimmy Oh. The respondent and discussant will be Peter Block.

Jimmy Oh is an associate professor of finance at Hanyang University Business School, who's currently on sabbatical leave visiting the University of Illinois, Champaign-Urbana. Prior to joining Hanyang, Mr. Oh completed military service as an army officer at Korean Military Academy. His main research interests are mutual funds, institutional investors, corporate governance, and ESG. He holds a Ph.D. in economics from the University of Cambridge.

Peter Block, our discussant, is a managing director at Ramirez and Company in the firm's head Credit and Market Strategies. Prior to his time at Ramirez, Mr. Block had a career at Morgan Stanley where he was the head of the trading desk. He was the head trading desk strategist, and prior to that had a 14-year career at Standard & Poor's. While at Standard & Poor's Mr. Block invented debt derivative profiles, DDPs, a risk scoring system for municipal interest rate swap, where he won the highest-level corporate achievement award for innovation.

So, we're pleased to have both of them this morning. And, Mr. Oh, if you would like to go ahead and begin the discussion on your paper.

MR. OH: Thank you very much. Let me just quickly share the screen. Okay. So, I hope everyone can see the slides.

Thank you, Pepe, for the very thorough introduction. This is joint work with Manuel Adelino, Sophia Chiyoung Cheong, and Jaewon Choi. Without further ado, let's begin.

So, we are all here at the Conference because we understand and appreciate the importance of municipal financing. That's the backbone of loan for income structure investment and day-to-day government operation of state and local governments. And the municipal bond market is a big part of that, it's a $4 trillion market.

Now one thing that sets this market apart from other markets is that investor composition is quite different. So, if you look at this 2020 breakdown, households have a very large share of municipal bond holdings, around a half of all municipal bonds are held by households. And the multi-institution investors what we noticed as compared to corporate bonds where banks and insurance have been traditionally the bigger players, mutual funds hold a large share. And they are important because they have this open-end structure that makes them different from banks and insurance to have a long-term, stable investor base.

So how capital supply, in other words money flowing into these investors, affect municipal financing is an important question. Yet it has not been addressed, which is an interesting thing because we have a ton of literature on equity and corporate bonds and how it flows into mutual funds through insurance companies, etcetera, affect these financings.

Now another thing that sets municipal financing apart from say corporate financing, is that it's done mainly through the bond market. Bank lending is there certainly, but it only accounts for a small fraction of the total lending, less than 10 percent.

So, first of all the capital supplied to mutual funds should A matter, and B it should affect the issuances decisions. But the relationship might not be straightforward because of various demand site frictions. Unlike corporate bonds, municipal bonds are subject to various political constraints. So, for example general obligation bonds have to be often approved by the electorate in large, and in some states, you have to have not just 50 percent approval, but a simple majority, 60 percent, etcetera. And also, these decisions regarding new issuance and refinancing, etcetera that really to look at. So that glaring gap in the literature ought to be really addressed.

Another thing that sets apart municipal markets from say other markets is that though it is supposed to be technically head links, arms-links lending, relationships matter a lot. Municipal bond markets and their bond markets are known for they end up with a very high degree of fragmentation along geographic, state, and along borders and everything. So there the relationship between issuer and the underwriter, as, you know, many of you already know, is likely to matter a lot. And mutual funds likely also relate, maintain these ongoing relationships with underwriters. Not only they participate in the primary markets through these underwriters, they are also the broker/dealers that deal with the secondary market trading.  So, relationships are likely to matter a lot, exacerbating the impact of fund flows and potential issuance decisions of the issuers.

One thing that I want to emphasize here is that this channel is likely unique to the mutual fund, the municipal bond market right now.  Now in the literature that we know then regarding corporate equities and bonds, it's the price and drives these decisions.  Managers see stock prices going up or corporate bond prices doing better, and then that effects their decision over whether to issue or less.

In municipal bonds on the other hand, prices are pretty much non-existent.  Yields to exist but most of the bonds trade very smartly in let's say no more than a few times a year.  So that's what distinguishes this mechanism apart from what we see in corporate side of the market.

So, what do we do?  We examine the extent to which money flowing into mutual funds drive municipal bond issuance.  Here we examine both the likelihood and the size of issuance.  And what we talked about earlier regarding relationships we explore that more deeply to the relationships between issuer and underwriter, and underwriter and funds matter in municipal bond financing.

The second half of the paper is then dedicated to where does this money end up.  In other words, does that finance new projects or does that fund refunding of existing projects?  What sort of bond issues, general obligation, revenue bonds.  Diverting requirements matter.  So, we look at the finer details of the municipal bond market.

And here the challenge really is to find a good exogenous flows into mutual funds.  So, let's talk briefly to the story we want to rule out.  So, suppose that fund managers are receiving good interest, not because the money's coming in but because they're doing well, and they are just skilled managers.  And suppose these skilled managers are good at identifying issuers that are likely to perform well in a not default, not going to these here moratoriums and everything.  Then it's not that the money is driving the issuance but it's just this underlying endogeneity that's causing all these problems.  So, we want to ensure that the money coming in is coming in for reasons unrelated to underlying bonder issuer characteristics.

Here we're going to talk about a mechanical change in Morningstar's overall star rating. Now Morningstar's a very influential firm, great funds, and investors use this decision a lot.  There's a mechanical change in which the star ratings are calculated at the five-year mark. I'm going to talk about that detail in a minute. And dispute the change in methodology being known in the capital, investor flows appear to respond to this. So, we look at that as an exogenous closer vehicle money flowing into investors.

Another thing that we do is to compare within issuer the same point in time. So, by doing that we parse out any demand side issues and then look at funds with better flows, well not better, more flows or less flows and how that effects their decision to participate in the primary market.

So, what do we find? As expected, more money flowing into mutual funds, increase the likelihood of issuers issuing new municipal bonds, both the likelihood as well as the size of issuance.

Now this is not any correlation but there's a strong causal link because even when we, you know, identify a setting in which these money flowing in is unrelated to fund manager's skills and performance. We still find issuance decisions matter in response to those moneys flowing in.

And what we are finding also is that relationships appear to matter a lot. So, funds participate in bond issuance largely from their relationship with municipal issues. The underwriters are the issuers with whom they share the previous, the sort of previous relationship with. And one interesting thing that we are finding is that this temporary money flowing into mutual funds is being used to finance bonds with lower transactional costs, or shall we say administrative burden.

So rather than funding new bonds, they're being used to primarily to refund existing bonds, and revenue bonds are more common than general obligation bonds. The latter of which require virtual approval. And we see this difference particularly prominent among states that require simple majority approval for GO bonds. Revenue bonds that, you know, they are not relying on taxing powers. You don't have to do that, and the more difficult the political constraints that have those are, we see issuers flexing a lot more towards revenue bonds that are relatively free of this market.

So overall they seem to take advantage of temporarily favorable capital supply conditions by opting for issuances with less administrative burden.

So, the data is pretty standard. Information from Blumberg and Merchant matched with fund level information from CREST and Morningstar and our sample period is between 2000 and 2020.

So, let's talk about the Morningstar ratings. Okay. So, it's a very influential metric used by fund investors. And what Morningstar does is to calculate risk adjusted returns of fund performance. They do that for three, five, and 10-year horizons, assuming the fund is old enough to have return history over that specified horizon. And comparing that performance against their peers, they are awarded, you know, five stars, four stars, three stars, etcetera.

Now these star ratings are known to be highly influential. But there's a very interesting dynamic happening in the five-year mark. Now until five years funds don't have long enough history to have a five-year rating, so Morningstar calculates the overall rating using only the three-year rating. But when the fund turns exactly 60 months old, suddenly it becomes a rated average of 60 percent five-year and 40 percent three-year ratings.

Why does this matter? Because the five-year rating seems like new information but ultimately the new information that comes in is really what happened between three years ago to five years ago. That has been knowing the market for one already, years and years. So, this is stale information. Yet this effects the fund's star rating. Three stars, four stars, five stars, happening at the five-year mark. So, we horserace those that have been upgraded at the five-year mark against those that remain at their previous rating of the five-year mark.

The question is, A, do fund flows respond to this mechanical change? And B, do issuers respond to them? So, what we are finding is there's a strong flow response despite the fact this information was out there for years, been known for years, unlikely to be related to manager's recent performance, which we show in calculated tables. Yet investor response seems to be strong. So that's unlikely to be manager skill or recent performance typically. And in response what we are finding is following the upgrades issuers' likelihood of issuance also increased significantly in the first two quarters thereafter.

We confirmed this in a more formal regression setting called the difference-in-difference setting as well, rent controls and everything. So, what we're seeing is there's a causal link. This is not just a correlation, but a causal link between money flowing into mutual funds effecting the likelihood of issuances of issues that they hold.

Now in the last three minutes or so that I have, let's talk about relationships. So, we know municipal bond market is fragmented and it's the underwriters that will drive these decisions or not. So, we divide the issuers of funds into those three previous relationships in the primary market basis, there's definitely that. And this relationship can be defined in many ways, right? Fund and issuer or fund and underwriter, or fund, underwriter, issuer all sharing same relationship.

What we are finding is that the main relationship seems to be driven primarily by funds that share, a fund, underwriters, and issuers that share previous relationship in the primary market before. And what we are also noticing is, as you move from Column 1 to Column 3, the stronger the tight knit nature of that relationship, so when funds are related on the right and underwriters related to issuer, that's where we found the strongest likelihood of issuances happening in response to money flowing in.

And let me just skip this for the sake of time being. And in the last couple of minutes that I have, let's talk about where the money goes into. So, when capital supply increases, which bonds do municipalities issue? The two obvious questions that come to our mind is first all the difference between GO versus revenue bonds. GO bonds are backed by taxing powers and costly to issue because of virtual approval, and that's particularly difficult in states that require this signature majority approval. On the other hand, revenue bonds are easier and quicker to issue without point approval.

Another thing that we want to focus on is new fund financing versus refinancing. New financing's mainly for new projects, refinancing bonds replace existing bonds except they are generally easier to issue with no transaction cost.

What we're finding is that it's really the ones that are easier to issue where this relationship between capital supply and issuers is primarily driven. So, it's the revenue bond rather than the GO bond. Refunding, rather than refining where oldest relationship seems to be coming from.

And one last thing, this particularly seems to be driven strongly among Supermajority states. The states that require strong hurdle for voter approval, that's where the issuer's opting towards revenue bonds and shunning the general obligation issuers following capital supply.

So, to complete, what we find is a strong causal effect of fund flows, on conditions, using a quasi-natural experience based upon star rating introduction. And what we find in terms of empirical results is that A, relationships matter a lot, and B, issuers seem to take advantage of this temporarily favorable money in financing funds that are easier to issue, relatively speaking, in terms of institution, political history.

So, I stop here, and I very much look forward to Peter's discussion. Thank you.

MS. FINN: Great. Well, Jimmy, thank you very much. Now we'll have the opportunity to hear Peter's discussant.

MR. BLOCK: Oh, I was on mute, sorry. Good morning, good afternoon. It's a pleasure to be here. Jimmy Oh's excellent presentation, he brought up a lot of excellent points, many of which I don't think many practitioners in the industry have thought about. And they're very revealing and I think that they require some further investigation. I'll try to do my best here to go over some of the salient points that you made. I have some slides, and then we'll have a Q&A and look forward to our discussion.

So, turn to the first slide, please. So, the paper focuses on mutual fund flows, but I'm also arguing that mutual fund flows are but one of the three or four major sources of capital for the municipal market. Mutual fund flows are in fact measurable, and they are a good barometer of investor sentiment and demand, and most people do follow the ebbs and flows of mutual funds as a litmus test for retail investor demand.

The other major capital providers including individuals that buy individual bonds and reinvestment of maturing principal and coupon ads by all holders. In aggregate we can simply call this market cash flow.

I show at the top of the page a few years of historical asset class returns between municipal, taxable exempt municipal, taxable, municipals SMP500, other fixed income asset classes, including treasuries in the global Ag. The other metric that people in the municipal market often look at is the relationship between triple A municipal rates and treasury ratios, the 10-year muni treasury ratio, our graph since 2008, the financial crisis. And we can see that there was a big spike in the ratio during the Feds Taper Tantrum in 2013.

But those are two key metrics that investors look at quite frequently because they're always chasing returns, relative returns in value. In a moment on Slide 3 we'll talk about some other metrics for relative to value.

But it's difficult to say in every instance whether or not market cash flow is actually a symptom or a cause of market weakness or strength. Usually it's a bit of both, depending upon the macro market environment and specific technical factors within the municipal market.

One of the technical factors that we look at in municipal market is reinvestment, particularly as a percentage in growth supply. We call that net supply. We can see in this chart at the bottom of the page that there's a definite seasonality to reinvestment dollars in municipal market. Whereas the beginning of the year that new issuance, reinvestment are generally in line with each other while the summer months of June, July, August, are typically the highest reinvestment periods where there's a huge demand for issuance of municipals, and that usually leads to strength. We're actually seeing that now in municipal market wherein towards the end of June and July the municipal market has outperformed treasuries because the reinvestment dollars coming in and the lack of issuance that has occurred due to the spike in MMD and treasuries.

So, turning to the next slide. I graphed mutual fund flows since 2008. And we can see that, you know, there's definitely periods of drawdowns and it seems to happen every so often with macro events effecting, you know, the rates and equity markets generally. Occasionally there are muni specific events such as we saw towards the end of 2010, 2011, the whole Meredith Whitney scare that created massive amounts of mutual fund outflows, and then of course you can see, you know, the very latest that has occurred in this year with mutual fund outflows as a result of the spike in interest rates and high inflation. Previous to that you can see the onset of the pandemic. We had record outflows as everybody was running for the exits at once.

But when dealing specifically with mutual fund flows from the underwriter's side we tend to notice the effects on issuer/issuance decisions and the relative cost of capital more when the acute and massive outflows that I just talked about.

During these extreme periods of volatility issuers tend to delay or downsize issuance rather than cancel them altogether. This is because many issuers in the governmental sectors in particular, will issue bonds regardless of capital flows, mainly due to their program capital needs.

In more normalized environments the typical ebbs and flows of the market we find that fund flows are on balance less important to issuers' decisions as to whether or not to issue compared to just the general market stability and the certainty of execution in the market.

Turning to the next slide. This is just a graph of relative value in our market as of about two weeks ago when I prepared these slides. You can see in the upper left-hand corner relative value muni to treasury issues is really only fair right now. We're not super cheap relative to treasuries but on a spread basis for the different sectors and the ratings within the different sectors you can see that generally speaking we're pretty cheap. High yield has maintained a degree of richness, and I think that's just due to the fact that there's not a whole lot of high yield bonds that trade relative to higher grades in our market.

Turning to the next slide. Here's a graph of monthly issuance that we can see the seasonality here from 2019 through year to date. We do see that there are strong relationships between the underwriter and investors that results in best execution for the issuers. But like I said earlier, I wouldn't say any issuer's decision to issue bonds or how many bonds to issue is directly affected by any one or more fund inflows. I do see Jimmy's point with respect to how when this mechanic change in the Morningstar rating that there are more flows into the fund and then that fund invests more in an issuer's bonds. I personally think that has more to do with the fact that those funds may already own those issuers' bonds and it's an easier credit decision to make to buy more of those issuers bonds.

But if anything, if a new issue is well oversubscribed, it could lead to, you know, particularly on the refunding side, bond issues being upsized. But as we can see from the above chart, issuance is just like reinvestment and that is very seasonal, and it generally follows a pattern from month to month. I mean there are exceptions of course depending upon market stability and the market, you know, volatility, what have you.

But I do have to say yes, the point is well taken, Jimmy, that the underwriter/fund/issuer relationships in the business do matter and can heavily influence the quality of execution of an issuer's transaction. The relationship between the underwriter and the funds, the investors, is also significantly impacted by a couple other factors that I don't think you brought up. Which is the amount of secondary market business that the investor account does with that underwriter. You know, that's just trading, crossing bonds, buying bonds out of the underwriter's inventory. And then that underwriter providing liquidity for that investors when that investor wants to get out of the position.

There's also the historical amount of allocations of bonds when the lead underwriter has allocated bonds to that investor when that underwriter is the lead left or senior manager on previous transactions. So that heavily influences whether or not a fund is going to do business with that underwriter. Because they know that, you know, over time they're going to get better allocations on their new issue.

There's also a big component in our market called designations. We have this unique system that's not really present in the taxable market called Net Designated. Net Designated means that it's up to the investors to decide who gets credit for certain issues. Depending upon the syndicate rules that can matter dramatically to co-managers and co-senior managers of negotiated underwriting business.

And so, the relationship between the underwriter and the investor makes all the difference on who gets what allocations essentially, who gets paid more or who gets paid less on new issue. There's a lot of discussion around that and I'm not getting into that whole ball of wax, but that is a major, major topic in the underwriting industry as pertains to compensation.

In terms of the investors fund relationship with the issuer, I would say that this is a relatively less important topic except with the largest and most frequent issuers, which tend to have relationships with the investors themselves. I mean you'll often have, you know, quarterly conference calls, particularly in the hospital higher end sectors, sometimes the airport sector, you know, big transit agencies, states, what have you, where there are relationships between investors and issuers. But I think for the most part just given the tens of thousands of issuers in our market, the relationship between the investor and the issuers is generally non-existence except, again, for the largest most sophisticated issuers.

The other point I want to make is that the point that the point that the paper makes regarding funds experience in flows and being a participant on an issuer's bonds be more likely to buy the bonds offered. I would say that this is true but not always. Simply because an investor already holds an issuer's bond does not necessarily mean that just because they received fund inflows that the investor will necessarily invest in those bonds. The decision to invest in new bonds has multiple variables, including the current market, competing issuers on the data of issue, whether or not that investor is full on the name. Many investors have single name limits on the credits they can buy. And also, the investor's current view of the issuer's credit quality, and the yield at which that issuer's current bonds are issued.

Also of course impacting is just the general level of municipals relative to treasuries. In some cases, particularly in the short end of the curve, it's more efficient to buy treasuries depending on the market versus any issuer's bonds in particular.

And then turning to the very last slide. You know, we do a forecast every year, as does all major investment banks in our industry. We're generally year over year in the middle of the pack. This year we were calling for between $450 to $470 billion of issuance, we're significantly behind that right now. And obviously because of the backup in rates both in treasuries and municipals and it has slowed issuance dramatically, particularly on the taxable side, which for the last couple of years because of the low absolute level of risk, we saw taxables becoming what seems to be a permanent future of our market of about 25 percent. But that obviously has slowed down dramatically.

I'm in the process of revising this forecast down. When we talk about issuance in aggregates community year, you know, the new money component is a big variable obviously. But one of the larger components is just the universe of current fundable bonds and advance refundable bonds. And our guess is really no more than a guess as to the percentage of current refundable or advance refundings that will occur in the market. And that really has to do with, you know, the relative value in municipals versus treasuries to the absolute level of rates. And also, a lot has to do with investor, or issuer's psychology rather.

You know, the best example right now is the taxable still make sense for advanced refundings but it's very difficult for many issuers to wrap their heads around the fact that rates have gone up in most cases 100 plus basis points and that's one of the reasons that taxable issuance is down so dramatically versus last year.

So, with that, those are my final comments, my prepared comments, and I'm happy to continue the discussion wherever it may lead.

MS. FINN: All right.

MR. WESSEL: So, Pepe, there's one question from sli.do for Jimmy. Is there any sense whether funds with existing underwriter relationships are buying the bonds and holding them for their fund, or are they then flipping them into the secondary market?

And then I think we have time for Jimmy to respond to all those comments that Peter made.

MR. OH: Thank you very much. So, regarding your question, so currently what we are measuring is the primary market participation and primary market issuance. So yes, these funds are buying those relative issuers bonds in the primary market and holding them. We don't have a good way of seeing whether they then dump this onto the secondary market or not, but if there's a primary level of data and I think that's something that is definitely worth investigating. Thank you.

And regarding Peter's excellent discussion, this is exactly what we wanted from the Conference, you know. Get the perspective from those that are in the market. It's great.

And I also believe, I think we had a call before with Pepe and Peter and it doesn't seem like this is going to be a, you know, first order thing. That insurers are just suddenly going to find new investment because funds are suddenly getting muddy and that they would have their projects planned and they will have their needs. But what we are finding is that it's these accessible to margin when there is conditions that temporarily favorable either through refundings or maybe by just taking back something they have shelved from a few quarters ago, some funds are quickly doing that.

It's plausible that our empirical results are very much pointing towards to this that they are increasing some of those refunding or older projects coming back type of issuances and also happening at a larger size.

And I do take Peter's point regarding a lot of, you know, some of these might have to do with funds having better knowledge and better credits regarding this particular issuer. And that's one thing that distinguishes bond market from equity market, that mutual funds generally have informational advantages in certain issuers compared to others. Maybe through mandates or whatever, and that's also going to be accentuating in this relationship or not.

Your point regarding the secondary market relationship between broker and mutual funds is well taken. We'll look into that. Also, regarding historical allocations as well. And (inaudible) regarding the syndicate and investors pretty much deciding who gets credit. I don't think we have good data on that front yet but subject to data availability I think that's a very promising avenue that we can investigate further as well.

But all in all, I thoroughly appreciate all of your comments and that's a lot of feed to fulfill. Thank you.

MS. FINN: Great. Gentlemen, thank you both very much for your research, your time, your discussion. It was very informative. So, thank you both. And we will move into the next session.

MR. BLOCK: Thank you, pleasure being here.

MR. OH: Thank you very much.

MS. FINN: Next session this morning will cover the cross-section of municipal bond returns, which is a paper presented by Sam Wang, who is a Vice President at Dimensional Research. The discussant on that paper will be Steve Winterstein.

Mr. Wang is a Vice President at Dimensional Research. He leads a team focusing on fixed income research, including strategy design and customization, empirical study on bond investing, creating analysis as well as providing education on systematic strategies. He earned a Ph.D. in Mathematics from Purdue, specializing in probability theory and quantitative finance.

Steve Winterstein is the head of capital markets in Alphaledger, a developing muni block change agency where he leads the origination of municipal personal debt on the firm's block chain system. Prior to joining Alphaledger he served as the head of Municipal Fixed Income at Market Access. And before joining Market Access he was the head of Municipal Strategy and Research at Wilmington Trust Advisors. He has served on a number of industry boards, including the Municipal Bond Club of New York, EMSRB's Retail Investment Advisory Group, the Technical Advisory Committee of Municipal Bonds of America.

So, we look forward to an interesting discussion with them. And, Sam, if you would like to go ahead and start with the discussion on your paper.

MR. WANG: Thank you, Pepe. Is pleasure to be here and many thanks to the Brookings Institution for making this happen, and thanks to all the staff to helping with us on this topic.

So let me share my slides. So today I'm going to present the latest paper on the systematic municipal bond strategy, the cross section of municipal bond returns.

We have a couple of items we want to cover, but I have 15 minutes to cover the highlights of the paper. So, to start I'll introduce the framework to study the expected return of the municipal bonds, and then we'll move on to the key drivers, three key drivers of the higher expected returns from the municipal bonds. And in the end, I will cover a framework to design a well-diversified low turnover strategy that incorporates all this research into practice.

In order to study the cross-section of municipal bond returns we need to find a way to calculate or estimate the expected return of a bond. For a general bond the returns can be decomposed into three components. First, the yield; second the term; and the third is the future change of yield.

For example, if you think you buy a five-year bond, hold it for one year and then sell it as a four-year bond. The first component will be the yield you get when you hold the bond for one year. And the second component is when you buy the bond at cheaper price of higher yield and sell at a higher price with a lower yield, assuming the yield curve is upward slopping.

And the last term, the third term, the future trend in EO, that is random, which is not absorbable today. Based on many academy research and our internal research we found expected return from the third component is usually zero. Average, it's very hard to predict the third component, and today predictor, vast predictor of future yield curve is actually the current yield curve.

So, with that we are thinking why we shouldn't incorporate this same framework into municipal bond expected return calculation. However, there are some unique features of municipal bonds that requires us additional thinking. First thing, municipal bond is highly segmented and it's less liquid. Over a million bonds available on the market on a given day and not all sum are traded.

The second thing is the transaction cost is pretty high for municipal bonds comparing to treasuries or corporate bonds. About 20 basis point to 70 basis point for a round trip, give or take. And the last but not least part are related to pro capital gain taxes. Many municipal bond investors are tax sensitive. While the coupons of municipal bonds are tax free, but the capital gain from buying and the selling municipal bonds are not. So that's why we need to take this long-term investing behavior into consideration when we model the expected return of municipal bond.

In all, we propose a framework that uses yield to estimate expected return from municipal bonds. And we have data to support that.

MR. WESSEL: Sam, can you make your slides full screen? We're seeing the preview as well as the slide you're showing.

MR. WANG: Will do. So let me just change it. I think I can switch it.

MR. WESSEL: If it doesn't work it doesn't work. That's fine.

MR. WANG: It doesn't work right now for my end so.

Let me continue the discussion related to the cross-section of municipal bond expected returns.

So, we have a cross-section of data of the municipal bonds which covers all the index constitutions of the Bloomberg Barclay's Municipal Bond Index. We have the monthly data between October 2006 and December 2021 and the regression, a cross-section of regression based on these datas. So, we found there is a reliable and positive relation between the current year and the field and the future returns that show here the co-efficients of the main regression is above a 1, and the T stat is above 2.

In addition to that we also test the robustness of the regression condition on the liquidity of these bonds. Here we grouped the bonds into two groups. The first group has bonds that are more liquid, and the second groups has bonds are less liquid. And we have the similar redoubt the coefficients above zero and the T stats are pretty high.

So, in conclusion, what we have here is we found a strong predictable power about the current yield and future bond returns. And we certainly want to use that in our strategy design and ongoing research.

What we found next is there are three main sources of higher expected return. The first is related to the issuing state of these bonds. In essence, states with higher state income tax and when the exempt income tax from investing in state munis, these bonds are pretty much in favor by the local residents. We call this a tax clientele effects for example, in state of California, local residents have a higher demand for California bonds. That drives the price high and the yields low.

So alternatively for other states that have weak or no clientele effects, as we listed here, these states include states with no personal income tax, like Texas, and other states like states that generally tax both in state and out of state municipal bonds. And the last subgroup is states like Utah and Washington, D.C., they don't tax municipal bonds in general.

So, these states with potentially weak or no clientele effects generally have a higher yield comparing to states with stronger tax clientele effects.

And what does it show in the data? So, what we do here is we form two portfolios based on these two groups, weak clientele effect states and other states, and we studied the yield difference between these two portfolios.

On top we have the yield evolution over time, you know, a sample. And on the bottom, we have the yield difference between these two groups of states.

And we found that almost every month a yield difference between these two groups are positive. That confirms the saradical idea that there should be a premium between these two group of states because of the different tax treatment of the clientele effects.

The second premium of the sources of higher expected return we can find in our data is related to the term spread and the term premiums. What we found here is the intermediate term bond or intermediate duration bond outperforms short duration bonds in general. But there is a strong predictive power of current term spread versus on the future term premiums.

Here we show the bar charts of the average term premiums conditioned on the beginning month's term spreads. For example, on average the term premium is 19 basis points every month but in months when the term spread is wider, for example above 50 basis points, we can see the term spread for the next month increases to 20 spread basis points. And in months when the term spread is above

100 basis points, on average the term premium increases to 28 basis points.

So, there's indeed a reliable and relation, a positive relation between the current term spread and the future term premiums. And we also showed this relation in our paper, using regression, time series regression.

One more thing I want to add in this slide is the relation to positive and reliable relation is robust across different credit qualifies. If we group the bonds into triple A or double A rated bonds or alternatively single AL triple B rated bonds, the pattern is more or less similar.

The third high sources of higher expected terms relate to the credit spreads and the credit premium. We actually got very similar results in this slide comparing to the previous slide. We found on average the credit premium is positive but in months when the credit spread is wider the average next month's term premium is bigger. So, you can see the increasing pattern for all the bonds, for shorter duration bonds and for intermediate duration bonds. All these results can be found in the paper, and we've also run a time series regression and got similar positive and reliable relation.

With that now I'd like to introduce your framework to design a systematic municipal bond strategy that incorporates all this research into the portfolio design.

So, what we're trying to do is systematically overweighing, underweighting certain segments of the municipal bonds so that we can target higher expected return by being subject to different constraints. The highlight of the strategy is we want to have a variable approach when we're deciding the overweighting in between different states, different credit quality, or different duration buckets.

For example, when the credit spread is wider, we will overweight the lower tier bonds, like single A, tripe B bonds. When the spread is narrow, we might not want to do that. So, this is all captured in this constraint of setup in the portfolio design.

The last but not the least, I want to mention we also take the rebalancing and the turnover constraints into consideration in the portfolio design because the transaction cost in municipal bond is pretty high. So, in practice we have to incorporate that. But in the simulation, we will have a maximum turnover constraint and do the rebalancing anyway.

How does the result look like? Here we listed the three strategies with including the municipal bottom market, between one year and the 15-year maturity, custom status credit quality strategy and simulated systematic strategy.

We can find on average the systematic strategy outperforms the market by about 48 basis points. Of course, that comes with a tradeoff, the standard deviation of volatility is higher comparing to the market, and in some of the risk measures you do see them, the underperformers in certain periods and the metro drama is bigger when comparing to the market.

In terms of the characteristics, we can see the yield is higher for our systematic strategy. That means we are actually targeting the higher expected return if we use the yield as a proxy of expected return.

And the duration is comparable, but we also overweight the lower tier bonds comparing to the market. Some might say the performance, the outperformance not coming solely from the overweighting the lowering of credit quality bonds. That's why we introduce, we included a second strategy here which applies a static credit quality weight to the weight of each month between the different credit quality is exactly the same as the average credit quality weighting in the systematic strategy. We can see the systematic strategy also outperformed the static credit quality strategy by about 30 basis points.

So, there is value at when we apply this variable approach in terms so of overweighting, underweighting across different states, duration and credit quality.

Let me summary very quickly here about the key points we want to, the key take aways of the paper. So, we found there is a reliable relation between current price upon the yield versus future return. And the sources of higher expected return can be found in the issuing state due to the tax clientele effects and also within the duration premium or the term premium and the credit premium. And we can design a systematic strategy that targets higher expected return in the subject to different risk preference based on the time of request. And with that the strategy outperforms the market and certainly it adds a lot of value for long-term investors.

That's what we have for this paper. And thank you for listening to us. And I will get back to you, Pepe, and Steve.

MS. FINN: Great. Thank you, Sam. And now we'll turn it over to Steve for his comments and discussion.

MR. WINTERSTEIN: Thank you, Pepe. I apologize, I'm going to work from my notes because I want to stay on target and get through this in a short period of time.

First, Sam, I really enjoyed working with you on reviewing the paper, I thought it was a good job. The way that I kind of summarize it is I visualize portfolio construction methods as a four-quadrant grid.

On the Y axis we have total return and buy and hold strategy and then on the X axis we have portfolio construction systematic and then traditional, I don't want to call it unsystematic, but maybe a manual process or idiosyncratic process. And I think Sam really in the end developed a methodology for the southwest quadrant, that is buy and hold largely because he restricts his turnover in his sub-indices to .01 percent and it's systematic in its nature.

And that means in my way of thinking it's repeatable, it's scalable, it's transparent, and it's explainable.

As a foundation he postulates, and I'll just restate this very quickly, state income taxes, term premium and credit premium are the drivers behind expected returns. And I will say after having had 30 years of experience trial and error, it's very intuitive to me that this works. And I think Sam takes an historically and traditionally very loose and idiosyncratic approach and suggests a framework with a structure rigor there is an elegant solution that is again repeatable and scalable.

The goal I suppose is to replicate portfolio construction such that portfolios can be executed efficiently and quickly and with no friction transaction costs, if you will, have similar risk return profiles across the mandate, low total return dispersion for any given strategy or mandate, and I think he could probably articulate that potential, this potential list of objectives in the paper either at the beginning or in the conclusion of the paper.

So, the analysis, in the analysis returns can tend to converge on the yield to worst if held to maturity. And I think that's an underlying thread in the paper. And to increase that yield you have to purchase from low tax states, term spread, and credit spread. And again, it's intuitive in a low turnover portfolio.

Here are the things that I would consider, Sam, and make a few recommendations. First of all, I think using the same index, I'd recommend using the same index for the measurement of returns to constituents and your term structure. So, I think in the portfolio you reference PS and P intermediate non-EMT index which is a very robust index but then you measure your periodic returns against the Bloomberg Barclays Municipal Bond Index.

I just think it's cleaner to be consistent and use the same rules, if you will, on structuring the index with the index figure measuring returns on. You use option adjusted duration as an approach, and you and I discussed this, Sam, so I'm not, this isn't coming out of left field. You used option adjusted duration as a proximate measure of price sensitivity, but you used yield to worst for term structure and term premium. And of course, as we know, the market is ripe with optionality.

So, with a portfolio in the range from one to 20 years, in terms of the downs of the maturity, 96 percent of the portfolio in your study had a duration of less than 10 years. I'd recommend using OAS, an OAS model which you presumably have, for your spread analysis. And I think you could be a little clearer by specifying your risk-free curve and the implied volatility that you're using. I think using a unit spread per unit OA duration or OA spread per unit of duration is a great way to define your term premium.

Also, we've had this discussion, Sam, sectors matter. For example, typically a double A, double A hospital will have a materially different yield than say a double A, double A, state GO with the same rating. As to PS 22 sectors and subsectors, in their indices, I think your results would be more robust if you included sectors as a factor that you're loading on or rate your analysis.

Liquidity. You only looked at how recently bonds trade as a measure of liquidity. And I think that's oversimplified. High quality highly liquid bonds may not have traded over the past year or so and they don't fall into the bucket of highly liquid bonds, so you bifurcate the market only considering how recently a bond traded.

And MSRD did a white paper several years back demonstrating the so-called, and I'm not quoting the paper at all, but this is my words. Kind of the half-life of new issues that come to market and how they trade very frequently over the first month or so. By the second month they start to, as we call it "go away," into portfolios, buy and hold portfolios, and just disappear. And from that point forward they transact by appointment only, to use a euphemism.

Several years back Blackrock, Richie Craigor, Dan Bonner and Steve Leslie developed a model for liquidity that includes market depth, price resilience, average daily volumes, bid ad spreads and immediacy, that is how quickly I can sell a bond without effecting its price. Translated that into the muni market I think is difficult, it's not without its complications, but I think it could be achieved if you are interested in developing this into a more robust process it could be achieved through clustering or using neural networks to evaluate those securities.

The study that you did took place from 2006 through 2021. On the tails of that period, we saw episodes of extreme volatility. So, we saw, and we saw a couple of episodes intermitted, and I think Peter mentioned these in his last talk. But essentially, we had the credit crises off one end, we had the pandemic on the other end, and we had two notable episodes in the middle, the Meredith Whitney 2010 default announcement and then of course the Taper Tantrum in 2013. Otherwise, the market has been relatively benign in a steadily declining rate environment.

And I wonder how the results would have differed if we were in a steeper yield curve versus a flatter yield curve environment, number one. And as I mentioned, periods of volatility matter. So, with spread compression as rates decline, bonds with higher credit premium would naturally tend to outperform. And I suspect spread widening has had more of an effect on total return over the past year or so as volatility has spiked.

So, with a look back, and I'll wrap up by saying, you know, with a look back over say since June '21, I'd be very interested in seeing how your model worked in predicting returns over the subsequent year. That is looking from today back one year when the SMP intermediate AMT free index that you use as your term structure has a one-year and year to date return of negative 5.5 percent roughly and 5.4 percent respectively.

Finally, I guess what I would say is, and this is my experience in how I think this could be more relevant if you wanted to make it so. Investors with low turnover buy and hold strategies, they operate on the premise that they hold the bonds to maturity. And I understand that you're readjusting the portfolio but have a very finite, a very small threshold for turnover. And investors think of it as their rarely sell. And then their returns approximately is the rolling average yield over their time horizon. The problem is that I've never seen an investor in my 30-years' experience, whether it's retail or institutional, whether an institutional corporate client is classifying held to maturity or available for sales at the 115, they've actually had to liquidate the portfolio at some point, whether for tax reasons, whether because of market volatility or because of a liquidity debt or because of a mere change of strategy. That said, and so I think we need to think in terms of total return.

So, you elegantly and concisely describe a method of portfolio construction and you limit the scope of your paper as such. I would be interested in seeing a factor-based performance attribution model based on the same index where you load on effects of the curve, that is to say the yield parallel shifts slope and twist, convexity in the role. And then non-curve effects or spread duration loading on state, sector, couponing, and the rest of it, de Minimis and so on and so forth. And using that model as a feedback loop for portfolio construction, I think may be more useful in a volatile market where asset managers are competing on total return in the context of allocating a risk budget.

And with that I'll stop.

MS. FINN: Thank you, Steve. Sam, do you have response or comments to Steve's --

MR. WANG: Yeah. All these are very helpful comments and suggestions as we have discussed before. These points are very helpful, and there are many from practical problems, particularly some of the discussion related to OAD, related to the call ability. They're very helpful and broaden our views and thoughts on this topic.

Once thing I can comment on is related to the attribution. So, we do have an attribution framework to study the decomposition of the returns, realized return based on the proposed measures or factors we have put together in the paper. So, I will say in this particular full interest environment a lot of the contribution areas coming from the falling yields. So that is basically I'm confirming what you had observed, so that's what is true.

And also regarding to the strategy performers in the first half of this year, we will see an underperformance because of the design. But over the long run it is still outperforming, but we will see it as a risk measure embedded in this strategy because after all you are targeting high expected return and that comes with a tradeoff.

So, for long-term investor I believe the framework and the system can help them achieve their goals. So that's it. Thanks, Pepe, thanks, Steve.

MS. FINN: Thank you, Sam. David, were there any questions that you saw from the audience?

MR. WESSEL: There's one question here. Where did you get the monthly pricing data from?

MR. WANG: So, we used a Bloomberg Barclays Municipal Bond Index. We have the constituent level data for this index. And one of the reasons we didn't use SMP data because the SMP data we have had a shorter history so that's why we switched to the Bloomberg data. And the results are more or less similar, but the periods will be shorter. Yeah.

MR. WESSEL: Okay. That's all I got. So maybe we should have a break scheduled. We can come back, I'm just checking my schedule here, at 12:15. Is that okay with you? Is that right?

MS. FINN: No. Well actually we're coming back at 12:30, but before we do that, I just want to ask Steve if he's got any additional comments?

MR. WINTERSTEIN: Yeah. I think Sam put together a very cogent and helpful process. And I think knowing that structure is very helpful for a portfolio manager who has done it on the fly in the past. And it takes this heuristics and puts it in a very practical, repeatable, transparent, and scalable process. And for that I think it was a fantastic paper.

MR. WESSEL: You're right, you're right, Pepe. It's 12:30 and why don't we resume. I don't see any other questions.

MS. FINN: If neither of our discussants has any final comments, we will adjourn this session and see you all back at 12:30.

MR. WINTERSTEIN: Thank you. Thanks, Sam.

MS. FINN: Thank you all.

(Recess)

MR. WESSEL: Okay, Pepe. You can start.

MS. FINN: All right. Thanks David. Good afternoon and welcome back. Our next paper covers Local Government Debt Valuation. The presenter on this paper is Oliver Giesecke. Oliver is a Ph.D. candidate at Columbia University and a visiting scholar at the Hoover Institute at Stanford University. His recent research focuses on state and local governments' finances. Previously, he has worked on the transmission of monetary policy on the cross-section of (inaudible) and the textual analysis of reports of the Federal Reserve System. Before joining Columbia University, he was a senior research specialist with the Julis-Rabinowitz Center for Public Policy and Finance at Princeton University. The discussant for this paper will be Richard Ciccarone. Mr. Ciccarone is the President of Merritt Research Services, an investor tools company, a municipal bond data and research company which was started in 1985. Merritt's municipal bond credit data and analytical package covers over 10,000 municipal bond borrowers. He is a member and a co-founder and the national board chair of the National Federation of Municipal Analysts. Over the years he has been a frequent speaker on municipal bond issues and often cited in national news sources and trade publications. So, with that we will turn it over to Oliver and let him begin with the discussion of the paper.

MR. GIESECKE: Thank you, Pepe, for such a nice introduction. So, I also want to thank the organizers for putting this paper onto the program and I am very happy to present today. The title of the talk will be Local Government Debt Valuation and this is joint work with Haaris Mateen and Marcelo Sena.

Local governments are an important entity in the United States. They account for about 1.6 trillion, or 8 percent, of GDP of public expenditures and about 10 percent of non-foreign payroll. Despite its economic importance, we actually know very little about the financial position of those local governments. In 2020, Covid-19 has sort of brought to the fore the immediate financial fragility of some of those local governments. Back then, the Federal Government stepped in and provided substantial fiscal relief in the form of those four stimuli packages to local governments which amounted to a total of about 415 billion U.S. dollars.

So, in this paper we want to ask one question: What is the financial situation of local governments? And we are taking two approaches to answer this question. First, we used the financial disclosures from the ACFRs, or the Annual Comprehensive Financial Reports for the book values. The disadvantage here is that book values are an accounting measure and they are predominantly backward-looking. In our second approach, we try to estimate the market values of local governments' equity. And here the advantage is that they are forward-looking and thus may provide a stronger signal about the financial situation of local governments.

Let me just briefly summarize the two main findings of the paper before I jump into the main session of the paper.

MR. FINN: Excuse me one second, Oliver. I'm going to interrupt you for one second and just ask you, can you make the slides larger? Is there a way to do that?

MR. GIESECKE: Oh, larger. I think actually they --

MS. FINN: May not be.

MR. GIESECKE: -- taking already the full screen.

MR. WESSEL: It looks pretty good on my screen, Pepe.

MS. FINN: Oh, all right, okay. Then that's my bad, it's not how it is showing up on mine. Sorry to interrupt.

MR. GIESECKE: Okay. So, with that let me briefly highlight the two main points of the paper. First, we document the financial health of local governments, and we find that in 2018 about 15 percent of cities in a nationwide sample operate with a negative net position. The negative net position is akin into a book equity position in the corporate context. If we were to use a negative unrestricted -- if that used the unrestricted net position, which is another measure, it would be even 61 percent and so an even larger share. We find that these obligations are predominantly related to legacy commitments, that is, pension and other post-employment benefits. In the second part, we then examine the market valuation and find that there is a strong positive relation between the book and the market valuation of equity. And we find that these market values also suggest that a substantial fraction operate with a negative market value of equity.

So, in terms of the literature, obviously we are contributing to a large literature and local finances. In the interest of time, let me skip that. And we are also building on a very mature literature on dynamic asset pricing, which allows us ultimately to price some of the non-traded claims in order to get the market values for those.

And with that, let me now get into the financial conditions. Before I do that, let me just briefly introduce the main data sources. Some of them are quite noble, at least to the academic literature. We are building on the annual comprehensive financial report which we receive from Moody's Investor Service for a nation-wide sample. In addition, we manage to collect those for which we have entities in the census, certainly sampled but are not in that data set. Second, we are building on the annual survey of state and local government finances which gives us a long time series for expenditure and receipts claims which we use for the pricing. We also get information on municipal bonds from the municipal bond data base. In addition, we link the debt securities to these issues by building on disclosures which are required by the Security and Exchange Commission. So, with that let me briefly introduce our sample.

We have these nationwide sample of local governments and further restrict it to those entities for which we have information in 2007 and 2018 available. So, in any temporal comparison we do not have to worry about composition effect. Our final sample contains 1,803 local governments which cover a total population of about 107 million in 2010. Obviously because of the nature of the data set, this data sample is tilted towards bond issues, and we were initially worried that this may tilt it to much larger municipalities. Why that might be true, the median population is only 21,000 which we consider as fairly modest.

With that, let me briefly introduce the two main financial indicators. So, first we are using the unrestricted net position as a share of operating revenues. Second, we are using the total liabilities as a share of market values of taxable properties. While none of those by no measure can perfectly describe the full complexity of municipal finances, we do think that these two measures have some merit. With that, let me now come to my first histogram and the first descriptive result. On the X axis, you have the unrestricted net position as a share of operating revenues and on the Y axis you have the corresponding density. We find that the distribution in 2007 is actually fairly symmetrical and centered slightly above zero. If we now overlay the distribution in 2018, we find a marked leftward shift of the distribution. Further, we realized that the left (inaudible) becomes fairly thick. Very concretely, the median of these distributions decreases from about 28 percent to minus 19 percent and the fifth percentiles with the left tail (phonetic) decreases from minus 25 percent to about 191 percent. To make that a little bit more concrete, let's take a look at some of the examples that are sitting in the left tail of the distribution. We have Chicago, Illinois which received a lot of financial press about their financial situation, we have Hamden, Connecticut and Dallas, Texas. Let me give you one additional piece of evidence where we relate the unrestricted net position over operating revenues to a yield spread. So, in this specific case we used the (inaudible) which is essentially a duration (inaudible) spread. We find that indeed when municipalities or local governance that operate with a more negative unrestricted net position on average pay higher yield spreads. I do want to point out that if we now compare municipalities with a positive unrestricted net position with a very negative unrestricted net position, despite these tremendous dispersion, the yield spread is actually fairly modest. This is like .3 percent. So, that's the point that I will come back to later. So, this was basically descriptors on the book position. Now, obviously book position have a lot of shortcomings. One of them is, for instance, capital assets are counted at cost minus depreciation and so this is really sort of a backward-looking measure. Instead, we now want to look at market valuation which captures the economic value going forward, so it's a forward-looking measure.

So, for that we start with a simple balance sheet identity. So, it's simply that equity equals assets minus liabilities. We then decompose the assets in the present value of revenues plus cash. For the liabilities, we have the present value of expenditures plus the present value of pension obligation plus the present value of OPAB plus the present value of debt. This results in equation one, which is the market value of equity. I want to briefly go through some of the individual components and where we get them from. So, cash is, you know, is simply a liquid mean and so we take that from the balance sheet. For the present value of OPAB, the present value on the debt and the present value of pension obligation, we are building on some of the landmark papers in the literature and follow that valuation. What is a little bit more difficult is to get the present value of revenues and the present value of expenditures. So, for those two components, we really have to do some work, and let me briefly describe how we do this.

So, for that we are building on dynamic as a pricing model and before I go into a little bit more detail, let me just briefly convey the man concept. So, essentially, we are postulating stochastic discount factor and a stochastic discount factor prices all assets in the economy. Then we using some of the assets for which you observe actually the prices in order to estimate the stochastic discount factor and then use the stochastic discount factor to price the revenues and expenditure for which no prices are observable. So, using this methodology we can price the revenues and expenditures consistent with those asset prices that are observable in the economy. Very concretely, we are postulating via our process for the state variables. We also postulate our (inaudible) stochastic discount factor following the literature and then use observable asset prices to obtain the parameter values.

To just give you a sense about how well we are doing in terms of the fit, here I'm showing you the results for nominal yields on government bonds for one year, two years, ten years, twenty years and thirty years, and I think overall we do fairly well. We do these also for inflation protected securities as well as the equity market as a while.

Importantly, what I want to point out, we are doing pretty well to apprise representatives benchmark yield in the municipal bond market, so all of the valuations of revenues and expenditures will be consistent with the pricing that is observed in the money market, too.

In the interest of time, let me just briefly skip these two slides and maybe just summarize some of the important components in this chart here. So, this is the price dividend ratio on revenue. So, please don't be thrown off by the term "price dividend ratio." It is essentially the present value that you get if you receive one additional dollar in revenues today. And there is, interestingly there is a large dispersion of these price dividend ratios across different local government and that comes from the fact that local governments are differentially exposed to the risk in the economy. So, one of the big drivers that we found is, for instance, the share of revenues that you receive from property taxes. It seems that municipalities that have a large share of property taxes seem to be a bit more resilient to the business cycle and thus they would have higher present values for each dollar in revenues.

Okay. So, once we have these price dividend ratios for revenues and expenditure, we are now able to use our previous formula in order to compute the market value of equity. And so here in my last slide I want to briefly contrast the market value with the book values that we receive directly from the balance sheet. Here in the left panel, you see the market value of equity on the Y axis and the book value that is the net position on the X axis. And indeed, we find a fairly strong positive relationship between these two values. It turns out and maybe that is not a surprise that the relationship is even tighter if we correlate the market value of equity with the unrestricted net position, as you see here in the right panel.

Let me just briefly summarize. We have -- essentially, we find in both instances we find a fairly strong positive correlation. Obviously, we also find that some of the variations of market values, there is a little bit more dispersion which comes from the idiosyncratic characteristic or those local governments. But overall, it seems like the market values support the message that we receive from the book values and even here in this chart we find that a substantial share of local governments operate with a negative market value position.

So, just briefly let me conclude. So, we found that, we saw an overall deterioration of financial conditions. We found that some municipalities operate with a negative book equity position which may raise some concern. We computed then the market valuation and found that those market values broadly support what we found from the book valuations. Lastly, I want to raise like one point that I alluded to earlier. We found like relatively little dispersion in the credits but despite like large differences in the financial position of local governments. And so, we -- this seems to suggest that there might be some implicit insurance by the Federal and the State Governments. And, in fact, this is something that we want to explore in more detail in future iterations of this paper. I stop here.

MS. FINN: Great. Thank you, Oliver. Richard, your comments?

MR. CICCARONE: All right. Can you hear me there? Yes, there we go. Now, may I ask, will I be posting my own slides, or will that be done for me here?

MS. FINN: You will be the master of ceremonies on your own slide copies.

MR. CICCARONE: I hope I can do that technically right. First of all, let me just say I'm grateful to be given the opportunity to do this. I've welcomed the Municipal Finance Center's annual meeting as an opportunity for us to get the best wisdom we can from the academic community and every year it seems to impress me. The paper here that we just heard Oliver talk about here has been one of those that has impressed me on a very important issue. When I was originally asked to discuss it, I was attracted to doing, saying yes to this one right away because it deals not only with the important issue, do prices match up with fundamentals? But it also focused it on two of the metrics that I've been trying to get more and more people to use for a long time. We introduced them in our data base when they came out, when Gasby 34 (phonetic) provided the elements to allow them to come out. We'll talk about those elements. But, you know, the reaction in the market and getting them to be primary metrics has been slow. One a little faster. So, we're going to talk about that. I think that's good. These are the four things -- let me put up my slides here, we'll see if we can keep this rolling and keep my limit of ten-minute period. That's a challenge but I'm going to try to do that. So, let me see if I can do this right. We'll bring up slides, if I'm lucky. Can you see this? I've got to do the share the screen, that's right. All right. We'll use that and we'll make sure those slides -- here we go. And put them on slide view. All right. Is that possible to see?

MS. FINN: Perfect. Yup.

MR. CICCARONE: Thanks very much. Technical assistance always helps me, so thank you. All right, in this first one, I'm just going to go over the points, the themes that I'm going to talk about. Oliver's talked about so much and some of it I need a course in statistical - a Babel course in statistical training in order to keep up with Oliver's thoughts there, but it's more important about what his findings are from my perspective, in the context of which he is making them, and his team's making them.

So, the five areas that I want to talk about, first of all, is the large segments of municipalities which operate with negative net position. He calls that equity. Municipal people don't usually use the equity term very often in our lingo. It's a corporate term and I understand where it's coming from. But the net position is a similar thing for net worth in our industry. But we have that problem based on the new elements we have since Gasby 34. Number two, the financial condition that municipalities are in decline. I picked that up in the study and there was some reason that was made to say that, but let's talk about that. Then the recognized -- this is all recognized by the market in the form of higher spreads. And then accounting book versus market valuations are highly correlated. And then finally, this is an important one, and one of the attractions I have, is that the negative equity position, also net position, which I am going to try to call more often in this talk, reflects the presence of equity insurance and that's by state and local governments. Those are important areas, they come up in our market in different language, but they are, other analysts talk about it. The first slide I have here is, what I'm also trying to do, Oliver and to others on the call here, I like what I see so much that I want to also validate it in any way that I can, and since our data base does cover over ten thousand municipal credits in 1,600 cities in 2020. 2021's are still coming in. I'm focusing here on the fiscal year 2020 net unrestricted position. It used to be called net unrestricted assets before Gasby changed the words. And comparing it to expenses and revenues. And the reason why I wanted to do both is because the study itself uses a different denominator. It uses operating revenues which is not off the accrual based Gasby 34 of (Inaudible) statement. I believe it's Moody's and I believe they are using operating funds based on fund accounting, which is not accrual. But if you look at here, and we're using expenses rather than revenues, it really shows that it doesn't make any difference whether you do that or not. So, I'm going to stick with the idea of expenses in my comments. But what you're showing, and I went a little beyond, Oliver, what you did here. The bar charts in the middle are the cities. And you can see that negative unrestricted position is very strong for cities, negative 30 percent. And you find the same thing for states is negative, 19 and for counties not as much, 10. And this is unrestricted. And I think that Oliver covered it, but it's really important to look at the unrestricted rather than net position. I know the state of Illinois auditor likes to use the net position. He should be using the unrestricted position. And the reason why, because it's a better number if you're trying to get a better look at also the shorter-term liquidity issue, because you're taking the infrastructure assets off the -- out of the picture, by using unrestricted. Because most of us believe they're not easy to sell. They are being sold today from time to time, but that's not the point of a city is to sell its assets. In some cases, they can't sell it anyway. But in here we surely validate that we have a negative position when use this bottom-line ratio, which I think is very much underestimated, understated in our market. Most analysts still, or many analysts, still use, and the rating agencies were slow to adopt this. They were using fund accounting and fund balanced revenues. Fund balanced expenses. And by doing so, what they're missing that this has is the rich information about liabilities in total. And that is the pension and OPAB as well as debt that's not covered by infrastructure. So, with that, that gives you an idea. However, I want to say again validation in here. In the study that Oliver did, and his group, they said 61 percent had a negative unrestricted net position. We have 65 in our study which may be a little bit bigger, every one of them, there's no census data in here, but it's a number that's very close, and I would call it immaterial. We would agree. Now, the net position, which is also referenced in their study, if you were to look at it from the standpoint of all your assets and putting them in, would you still be positive? Actually, you're surprised that not everybody is. Most are. Eighty percent in our study, 82 percent, of the cities would have a positive number on net position if you added their infrastructure assets back in. Interestingly enough, some do not. And it's usually your more distressed cases. So, and that, what can that be due to? It's not just pensions and OPAB. Sometimes it's also due to the fact that they've mismatched their debt to capital estimated useful life. So, they may have debt outstanding that's not being excluded. Not only because of operating needs but more so because of that mismatch in debt service.

And the next slide is the financial condition of municipal bodies is declining. Here, you know, went back into 2008, and we see clearly that it has declined when you look at this number, and I did use counties and states too. But the city is the most important one, since that's what our study today is about. And it is showing that it's definitely a big negative versus 2014. Now, that said, you know, I wish, Oliver, I'd mentioned this specifically in our meeting we had earlier, but I think the study should have had in it that it should at least recognize the fact that Gasby changed the rules twice since they adopted this methodology, and it made a huge difference on the numbers. You used 2007 and 2018. In this one here by looking back here you can see when they put the full brunt -- they had a large portion of it in beforehand, but when they put the full weight of their pension liability into the equation in 2015 there is a very sharp drop. It also drops again in 2018 when the full weight of OPAB came in. Now you see, and this is not on the study but it is interesting, and maybe we can come back if others are interested in it, states actually have gone up some in recently and that's due to prior, you know, we're talking about some changes, improvements in not only funding for the pensions, that's a small part of the potato, but they actually improved their overall bottom line significantly at the state level just prior to the Covid and it wasn't hurt when Covid came in. In fact, you can see in here, it accelerated with the thrust of all those new funding that came in from the Federal Government which actually reinforces the point that Oliver makes and others in the study make here that there is a considerable amount of Federal transfers that can come into our industry.

And now, the third slide here is that the study says most of the decline is associated with legacy assets, or obligations. Know I'm getting -- I want to watch my time here, so if I start going too fast, my words, I'll lose all of you. So, if you don't mind, I'll slow it down and try to finish up. These few slides here are my most important.

Legacy obligations certainly are the big picture. Again, it can be some cases they don't match up. Debt service, that adds to it. But you can see when you look at this particular slide here, that the weaker credits, the triple B's and even cities over 500,000 actually have the most serious, I think, negative picture on this chart. Now, the blue line is all cities which is even a small potato city. Not to diminish it. I love those cities. But they don't have the weight of our problems that we are talking about here. And when you look at this, and a lot of them are suburbs, the reason why it doesn't move sharply upward to show that decline is because of the fact that full values tied to a tremendous boom in real estate that we have had actually helped. When you're comparing this particular liability weight against the full market value, you actually provided a benefit, so that this was not an overburden on the particular community. Now, the 2021 numbers are still coming in, but you can see where they are with this amount of the results there is so far.

Okay, the next slide here. Now, this is probably one of the most interesting ones because this is what we do, this is what we're dealing with. We're dealing with markets and things that are traditionals, what may be impacting spreads. I think that the paper we just talked about here has some very impressive data. Spread relationships and linking them to the fundamentals. I hope this will add a little interesting insight as well. But what you see here is that the blue line is the local GO triple A yield index. And you can see it - -it's still in historically low territory. It jumps up a little bit there in 2018 before coming down during the Covid period of time. But we're still in historical levels that are low since World War II. And when you look at the spread relationship, you have two bumps upward. Pretty significant in 2014 and that's in, you know, Puerto Rico is in that picture, in that period of time. Detroit soon after. There was a number of bankruptcies by our standards relatively speaking. And defaults that were impacting. Concerns about GO's. Prior to that period, it really reinforces this whole idea, was there implied backing by somebody. We can talk about that, that it usually didn't affect concerns or spreads in the GOs as much for a long time. But when we got shocked by Puerto Rico and Detroit and San Bernadino and Jefferson County, Alabama, and to go on, a few others in California and places close, at that period of time, you could see it bumped up, the spreads. Not huge, but they are there and they're very noticeable. And then they bumped up again for Covid.

MS. FINN: Excuse me. We are closing in on time, so I want to --

SPEAKER: You're what?

MS. FINN: -- let you get to the --

SPEAKER: The most important part?

MR. CICCARONE: I am going to be able, because a lot of them could be covered very easily by what Oliver has already said, so. Let me just say, you can see this idea that spreads widening is inconsistent sometimes in the way we play it out. May I just say, because I think you will find this interesting. Is, I'm just thinking, you know, I did look a lot at individual situations last week in the market. New York City, Corpus Christi and Houston. And I found that using a 4 percent coupon priced to yield or priced to the call in 2029, similar in duration, all double A somewhere in the double A scale, New York City has a negative 200 percent unrestricted net assets ratio, Houston 239 and Corpus Christi positive 2.8. What you found is New York City had 177 basis point spread which would go along with what the study, you heard that there is some widening versus other credits. And Houston, which has a bigger unrestricted net position, actually has a narrower spread of 146 and Corpus Christi which has a positive is still 132 which isn't much different than Houston. So, you can see that we have other issues that are going on. Sometimes it's supply demand, is double tax exemption, although the cases I gave you are not reinforcing that, but I can tell you that it exists. The rating recalibration that was based upon default rate actually causes a problem to this whole idea of spreads. State protection, security provisions, all the same. This one here, correlating market with book, I'm going to just skip this because I think Oliver covered this so well. I would like to talk about it if it's of interest to others. And then finally, the last slide here, this whole idea of our prices reflect the implication that insurance by state and local governments is a reason to keep the prices low, even when they have, and they do have, there are cases, I've said, that they do have cases in which their spread is not showing up, which is my problem. I think the market should do that more than it does. And it has to do with this historical view that somebody's going to bail you out. And Barney Frank even once said that in the early part of the -- in the hearings when they needed liquidity immunity market, and they were asking Congress' help, Barney Frank being the House Ways and Means, said, "Don't all immunities get bailed out?" So, you can see that thought process was even in Congress. This concept doesn't hold true for all municipals or we wouldn't have talked about the default and the bankruptcies we have, but this built-in legal, political and economic system for municipals does provide some supportive system. If you overlook those factors, then you're underestimating immunities. But on the other hand, the last thing I wanted to say, and the very last thing, Pepe, I want to say, is that if we all bought into the idea or, let's say, if we all price bonds only as if we are all going to get bailed out, it is an extremely risky proposition. I don't think, Oliver, that you're saying that. However, I think that is in the backdrop of a lot of investors in muni markets from time to time. And that it really shouldn't be there. The leveraged trends we're seeing right now are unprecedented and hazardous and if they are dismissed we are going to run ourselves into some trouble.

MS. FINN: Oh --

MR. CICCARONE: I know I went a little long there. I ask for your -- I apologize to you and ask for your -- beg for your forgiveness here for me, from me, and I hope we can have some time here for Q and A.

MS. FINN: Unfortunately, we're pretty much tapped out. I'm going to ask Oliver if he's got any concluding comments.

MR. GIESECKE: Yeah. So, maybe I just want to briefly respond to one of Richard's points. It was point 2 about the secular decline. We have a very similar picture like you did actually also in the paper and we come essentially to the same conclusion that there were like sort of two big discontinuities that is like from 2014 to 2015 and 17 to 18, because of the additional disclosure requirements. While we think that that is certainly obviously affecting our measure, we would also like to make, bring it to your attention that, you know, at this point the municipal bond market was not aware about those latent liabilities before that. And so, when these rating disclosures, when these financial disclosures came into effect, the market was somewhat surprised and then basically started to adjust. So, yes, can we say that in principle it did decline? No, maybe not. But maybe there was sort of a latent component to it that ultimately led to the decline if you were to just focus on two points in time.

MR. CICCARONE: Fair point.

MS. FINN: Terrific, gentlemen. Thank you very much for your time and your comments. We appreciate that and we will move on to the final paper for this segment which is Taxable Advance Refundings: A Critical Examination.

The paper presenter for this topic is Andy Kalotay. He is an expert on the quantitative analysis of municipal bonds including risk management, tax management and debt management. He founded Andrew Kalotay Associates in 1990 and sold it to Intercontinental Exchange in 2021. Prior to that, he was with Solomon Brothers and prior to Wall Street he was at Bell Labs and AT&T. On the academic side, he created the first graduate financial engineering program in the country at Polytech University which is now part of NYU. Previously, he has taught at Wharton, Columbia and Fordham and holds a Ph.D. from the University of Toronto in mathematics. He was inducted into the Fixed Income Analyst Society's Hall of Fame in 1997. The discussant on this paper will be Win Smith. Win is an AI engineer at Wells Fargo. He was previously an independent consultant, a CFO, an investment banker, a municipal adviser and client. A man who's worn many hats. As a client, he developed innovative tools to optimize advanced refundings and Win has shared his research on government debt markets in the Financial Press. So, with that, I would invite Andy to begin the presentation on his paper.

MR. KALOTAY: Thanks very much, Pepe. Rich Ryffel in his opening comments mentioned that we have many newcomers and also many old timers and I am one of the old timers. I actually attended the first meeting in Boston. I have always enjoyed these meetings and it's nice to see the old timers. It's a pity that we cannot meet in person, but perhaps next year.

Now, the presentation, hang on, you cannot see this, can you? I would like to -- I need some help here to share the screen. Hang on.

MR. WESSEL: Howann (phonetic) can you --

MR. KALOTAY: Here we go.

MR. WESSEL: Do you have Andrew's slides?

MR. KALOTAY: All right. I'll try it again.

MR. WESSEL: Nope, we got it, we got it, Andy. Hold on.

MR. KALOTAY: Okay. Can you see the screen now?

MS. FINN: Yes.

MR. KALOTAY: Okay.

MR. WESSEL: Howann has shared them, so you'll have to tell her when to move to the next slide.

MR. KALOTAY: How's this? Can you see this?

MS. FINN: Yes.

MR. KALOTAY: All right. So --

MR. WESSEL: Wait, wait. We are seeing Howann's slides. Howann's screen. Your slides. Not your screen. So, we can use this, but you have to tell her when to advance.

MR. KALOTAY: So, what should I be doing, David?

MR. WESSEL: Just tell -- we see your slides, but they are on our screen at Brookings, so you have to tell Howann when you want her to go to the next slide, okay?

MR. KALOTAY: Okay. She's going to run it. All right. Okay. So, this presentation is about taxable advance refundings and this particular transaction was introduced around 2019. It was very popular in 20 and 21. I wasn't too sure what was happening this year but Peter Block in his presentation indicated that there is more taxable advance refunding. On one of his slides Peter showed 67 billion expected this year, so Peter, thank you for that information. The paper I am going to present I wrote it back in 2000 and -- at the beginning of 2020. It was published in the Journal of Fixed Income, I'm sorry, the Municipal Finance Journal last year and I estimate that as of the end of last year about 200 billion dollars of tax-exempt bonds were advance refunded with taxable bonds. So, can you go to the next slide? Okay. Thanks. Here's the outline of my presentation. I will quickly tell everybody what advance refunding is about in case you are not familiar with it. Then instead of a hypothetical case in my paper I will look at, show you an actual refunding that I found on the web. And I'll talk about the timing decision, when should you refund. The question is, are these refundings prudent or are they premature? So, the question is timing, and I will say something about that and then I'll make some suggestions to understand about how to reduce the cost of borrowing by restructuring bonds somewhat differently than the way we are structured today. So, let's go to the next slide and, again, for those of you who don't know what advanced refunding is, there is an outstanding bond, it's a tax-exempt bond, it's not yet callable, it is a high coupon, basically a 5 percent coupon, that's the standard today. And the municipality issues a refunding bond owed but it's still outstanding. Until 2017, they could issue tax-exempt bonds, but they can no longer do this, so what has been happening is they have been issuing taxable bonds and they have also been exploring other alternatives to advance refund this not yet callable high coupon bonds. The proceeds of this new issue are invested in a so-called treasury escrow and, here's a technical term, they defease the outstanding bond to the call date. They match the cash flows of the outstanding bond to the call date. Then when the call date comes, the old bond is retired, and the new bond remains outstanding. And an important part of this exercise is savings. The municipalities always report how much they saved by advance refunding and in the next slide, if you can go to it, I will show you this. Now, this slide, as indicated at the bottom, I found this example on the web. The Massachusetts (inaudible) building authority, and it's very similar to the example that I have in my paper, so if you look at the paper and you compare it with the transaction here, you see a lot of similarity. So, let's look at this transaction. The authority in 2009 issued 715 million dollars of taxable bonds to refund outstanding tax-exempt bonds. The take, which is like the yielded maturity of the new issue, was about 3.24 percent and if you assume the outstanding bonds have 5 percent coupons, it looks pretty good. It's 175 basis points below the coupon of the old bonds. Then these proceeds were reduced to refund these bonds most recently in 2011. Now, they are not yet callable. They would be callable in 2021. So, there's two years between the taxable issue ends and the call date. Now, here is the amazing fact here. This is out of this document at the bottom of the page. They saved $135 million. Amazing accuracy to the nearest dollar here. Which is 18 percent of the refunded principal. Eighteen percent. We talk about 3 percent or 5 percent savings. This is 18 percent. Phenomenal. They saved a hundred and nine-two and a half million dollars here on discounted flows. This is all in the document. They also mentioned that on this escrow account in this two-year period they have earned $444,000 and that's not very impressive, and it makes you suspect if you earned $444,000 on $715 million investment, it makes you wonder, is this a good deal? The book running manager was B of A and the adviser on this enormous deal was TFM (phonetic). Now, what you don't see in this press release is the cost of issuance. Of course, there is always some issuance cost, let's see, it's 4 million, but much more important, what's missing from here, is the value of the forfeited option. The, I'll talk about this later, but once you advance refund you cannot refund again. And I estimated that the value of this option was $180 million. They saved $135 million. So, what happened to the rest? They wasted $45 million. That you don't see. And that's the topic I would really like to focus on today.

Let's go to the next slide if we could. And talk about just about this 5 percent bonds, callable in year ten. What happens to them? So, let's begin with something that we never hear about. When you issue these bonds, you pay for the call option. The question is, what if this 5 percent bond happened to be a non-(inaudible) bond. So, I just assume here that you could sell it for a hundred and forty-five instead of a hundred and twenty. So, that is the cost of the option, which is 25 points up front. And when we talk about how much we save, 18 percent or 20 percent or 25 percent, we should be thinking about relative to what we paid for the option. And we should expect to save more than 25 points just to make it a good deal. And the municipal issuers and advisors do talk about 3 percent savings, 5 percent savings, which is just completely inappropriate when you're in a different area when you issue 5 percent bonds. So, when you advance refund cash flows (inaudible) 18 percent in the case of the Authority, but, as I mentioned before, you give up the option to refund later and, again, I estimate the option value as 24 percent, so the net loss is 6 percent per hundred million principal. Quite substantial. Mentioned $45 million loss estimated in the case of the transaction before.

Here's an interesting question that you may want to think about. So, if there is this loss of option value, who benefited from the waste? I have posed this before and I know it's not as easy as you might think, so, think about it. Who benefits from early premature refundings? Now, I mentioned one notion that I'll come back to later on which is refunding efficiency that I have been advocating for many years. What the issuers should be looking at is how much they save normalized by what they give up in optionality. In the typical taxable advance refunding, the reissue (phonetic) is about 75 percent. In the paper I mentioned 70 percent. So, this is way too low, and we should be aiming for 95 or 100 percent.

Okay, let's go on to my next slide, if you could. And the next two slides are from the paper. And the first, this one, is actually just a (inaudible) analysis, so let's look at it to understand what's going on. In this case, we refunded a 5 percent bond. It's taxable bonds, whose rate was 3.05 percent, somewhat lower than the last two examples. And saved $24 million. However, this is two years prior to the call date. And at this time the tax-exempt rates were 2 1/2 percent, as indicated towards the bottom. So, the tax except rates were 55 basis points lower than the taxable rate. That's kind of a conservative estimate. And the question is, what if you waited until the bonds became callable and then you used tax exempt bonds? Where would tax exempt rates have to be two years from now in order to save $24 million MPV. Well, at the rate given, as you can see on the right side, would be quite a bit higher. Rates could move up from 250 to about 330. That's an 80-basis point spread just to break even. In other words, unless rates move up at least 80 basis points it would have been preferable not to advance refund. Standard (inaudible) analysis and keep in mind, rates could also go lower, who knows where rates are going to go? But the point is, at the time you make a decision the implication is that you expect rates to go substantially higher, and, by the way, that seems to be pretty standard assumption when you talk to municipal treasurers. Rates are always expected to go higher.

Okay, the next exhibit is more technical. It shows the refunding efficiency. Now, what's refunding efficiency? It's the ratio of the savings by the option value. How much you get versus what you give up. And ideally you would like to get the whole value, 100 percent. Well, in this case, in order to get close to 100 percent you would have to refund at 2.6 percent. But we refunded at 3.05 percent, and we got only about 70 percent of the option value. Which is, as I keep on saying, is just unacceptably low, at least in my opinion. So, remember this refunding efficiency, look at savings divided by option value. We can talk later about how you calculate option value. But at the very least let's recognize that there is an option which needs to be taken into consideration when you pull the trigger. --

MS. FINN: Andy, you've got a couple more minutes, just so we're sure that Win's got time to jump in.

MR. KALOTAY: Okay, that's fine. Let's go to the next one. I have two more exhibits and I think they are important. So, how to improve the refunding decision? As I keep on saying, consider forfeited option value and this refunding efficiency. Don't use 3 percent and 5 percent threshold. There's absolutely no justification for it. They are not suitable for 5 percent bonds. They were bonds when they were issued at par. You should utilize industrials bank analytics. Steve Winterstein referred to the difference between yield curves and interest rates. People often miss that very not so subtle point. And so on. Now, one important -- and I do want to mention this -- where do you get help if you are a municipal issuer? If you look at the GFO Best Practices, it mentions, I did yesterday, it mentions savings 39 times, it mentions option value once, and it's just, oh, if you need help, go to the MSRB. But the MSRB certification municipal advisers, they don't teach, you don't have to know anything about option value. So, how are you supposed to be making the right decision if you don't have proper help? I'll let you think about this.

Now, my next exhibit, if you could go to it, it's a general point about what municipalities should do and what should not do. This 5 percent non-called in bonds increase the call prices. Don't allow calls at par. Because everything is refunded, and I mentioned it last year. Can you find any 5 percent bonds older than ten years? And, if not, why do we call these bonds 30-year bonds? When they are all issued (inaudible) ten years. You have huge savings, you have huge transaction costs, but these are intermediate bonds, not floater bonds. At the bottom, I mentioned a couple of possibilities that you probably haven't heard of. One is ratchet bonds which ultimately refinance themselves. No transaction cost. And you wonder why haven't you heard about it? They issued over a billion of these. Ultimately, long-term bonds ultimately refinance themselves at low cost. The coupon obviously climbs, it never decreases. And issue optionless bonds. It turns out that optionless bonds have a lower expected cost than callable bonds and it has to do with the fact that municipalities should be discounting their cash flows at their taxable rates and not at their tax-exempt rates. I just wrote a paper about this. I don't want to elaborate.

Let's go to the very last exhibit because I have some, if you can show the references. There's a lot of literature and using just the literature and common sense, I think people could make much better decisions. The only thing I'd like to highlight is this Optimum Bond Calling and Refunding that I wrote back in 1979. It was very widely (inaudible) billions, and billions were refunded using the call efficiency concept and, unfortunately, very few people are familiar with this in the tax-exempt world.

One more thing I want to say, the very last reference which has to do with what do you do about these 5 percent callable bonds? And as Win Smith suggested in his bond buyer article in 2016, increase the call prices so that you refund them only if rates actually decline. Don't refund them when rates are 3 percent, rates go up to 4 percent, they are refunded and everybody's cheering about the savings. No. If you increase the call prices, this will not happen. So, I'll stop here and let Win take over.

MS. FINN: I was going to say, I'm going to give Win a chance to jump in.

MR. KALOTAY: Okay. Thanks very much, Pepe.

MR. SMITH: Okay. Great. Can you hear me?

MS. FINN: Yes.

MR. SMITH: Okay, good. All right. Hi. Thanks for this opportunity to comment on Andy's presentation. Andy's worked on these issues longer and harder than anyone. And he makes really important points.

Before I begin, I'd like to stress that the views I express are my own, not necessarily those of Wells Fargo. At Wells Fargo I apply artificial intelligence techniques to helping manage risk. But before this, I spent many years solving financial problems or helping solve financial problems for governments and businesses. I still have a keen interest in municipal finance. I took it personally when Congress abolished tax-exempt advance refundings. My inbox blew up yesterday when some market participants saw I was going to discuss Andy's paper. I heard some reasonable points and I'm going to reflect on some of those in my comments today. I want to comment on really two big questions that are raised for me by Andy's presentation. But first I want you to picture two characters: a treasure hunter and a farmer. A treasure hunter and his well-paid team want to dig up buried treasure as quickly as possible before somebody else gets it. The treasure hunter thrives on speed and execution. It is tactical. The farmer knows the value of her crops and expects to wait until the crops reach their peak in value. She understands risk and waiting, but she has a plan that can be adjusted as conditions change. The farmer is patient and strategic. With those two characters of mine, let's move on to the big questions.

First big question is, should issuers use callable premium bonds when they finance new projects? We'll think about the cons and pros, we'll think of them in that order. The cons would ally with Andy's thinking on this, I think, and a lot of what my thinking has been.

One of the cons for me with callable premium bonds, these 5 percent par call bonds, is they don't really provide long-term committed funding for the bond issuer at a market rate, like say a par bond would. Instead, they provide really what's a worst-case scenario. Worst case scenario is that for some reason they cannot actually refund them, and they're stuck with a 5 percent coupon, and they incur really a high yield to do that. Another con of callable premium bonds is the issuer is likely to have to refund and so they're likely to pay transaction costs more than once, as Andy was pointing out, and they're likely to have to do an expensive taxable refunding, or at least they are quite likely to do that. Another issue with the callable premium bonds is they really create this new asset for the issuer. And let's say that it's a small school district, but now on their balance sheet there's this really cryptic option. What is this thing and what is it worth? Is it really appropriate for say a small bond issuer to even have to think about how they manage an option? Also, as Andy really alludes to, the callable premium bonds muddy the waters of words like savings and maturity. What are savings when you refund a bond that really kind of had savings at the moment it was issued? But what does savings mean anymore? And also, what does maturity means? Is a twenty-year bond really a twenty-year bond if it's really likely to go away in ten years? And Andy's touched on those points. Another thing about callable premium bonds is if the issuer doesn't call the bond, they're going to really end up paying a high coupon that they were never compensated for. It's kind of like unpaid overtime. And if you think about the true interest cost, that's based on the debt to maturity relative to the bond price and that's really going to get bumped up by the callable premium bonds. And I think that that can be a sign of trouble.

But what are the pros? They certainly may achieve the best yield to the call date, or the best pricing yield. It does need to be understood that the best yield of the call date is not the best yield to maturity. They can create at least a worst-case debt service schedule for the issuer and that the issuer can likely improve on. And maybe this isn't the worst thing in the world because if the issuer sets up a worst-case debt service schedule and they plan around that and they budget around that, that creates perhaps some conservatism and that could be a good thing. Most importantly I think in the market, in what the options are available to the issuer, sometimes callable premium bonds may be the most realistic option available at least for part of the bond issue. There is a lot of demand for the high coupon bonds and for callable premium bonds. There are investors who really prefer the limited risk with a shorter duration and the less exposure to rising rates. They do like that potential for upside if the bond isn't called. Of course, they all have been as far as we know. And Andy and I have both recommended par call but that may make the bond less attractive because it becomes less generic. So, that has to be considered. I'd be open to trying to at least starting to increase the call prices and see what happens. But it just may not be the long-term committed funding in the sense of par bonds isn't really available from investors. A couple years ago I worked on a hospital issue, and we were really limited on the average life of the deal that the investors would accept. We had to structure it so that we could meet that threshold. And I've been thinking that the market price at a premium bond in some sense does reflect all the contingencies that could come up with that bond, including the bond gets refunded, or currently refunded, it may run to maturity, it might even default. Now, the price really should reflect all those contingencies even if the pricing rules kind of make it look like they don't. And although the concept of maturity is muddled by callable premium bonds, that's not something that's totally going into the markets. You've got mortgages, for example. You have thirty-year mortgages but in the mortgage market it's understood that mortgages aren't generally going to run to thirty years. People sell their homes and refinance and maybe the expected life is more like seven years. So, that's something that can be dealt with if it's understood. My observations on this is, I would be inclined to secure fully committed funding for the life of a bond issue if I were an issuer as much as possible. I would rather do the equivalent of par bonds or do high call prices and make it kind of equivalent to par bonds, where I've really locked in funding for the life of the issuer at a market rate. But if a fully informed issuer with their eyes open decides that they want to set up more of a worst-case scenario, that they think they can improve on, that could be reasonable. But they should consider, as Andy says, the whole lifespan of the issue. They should make a plan for managing the bonds. Just as our strategic farmer plans for the whole growing season. They should not be surprised by adversities such as shifts in interest rates or regulations, as we saw with advanced refundings, or their own circumstances. And maybe it's even possible that they will be stuck with those high coupon bonds if rates go up high enough. But they should be anticipating the cost of future refundings if that's really part of their plan. But there's a challenge for municipalities because maybe one finance manager acts like that wise farmer but when they're gone the next one just looks at the debt schedule, sees that it's scheduled, and they think that any change from that is really savings. When really that was a worst case and not a base case in a sense. It's like getting excited that your kid is getting C's when they used to have F's. It's not really what you're looking for.

The next big question, and I see that I'm getting a little short on time, is should issuers use taxable advance refundings. And Andy has covered the cons. We know that there's going to be negative arbitrage. That the escrow is not going to be able to earn what those bonds cost. They're not going to be able to extract the value they had optioned. And, at least theoretically, they are better off -- they are likely to be better off waiting. And also, the savings are really misleading, whether compared again against that worst case scenario. And they tend to get over-hyped. So, there's a real problem with the savings calculation and presentation. However, if the rates on the original bonds, or if interest rates are very low, and there are rumors of inflation, like there were last year, it may be really prudent to go ahead and refinance, as ugly as it is, and take away that risk of higher rates. I don't think any issuers who refinanced last year regret that. Another point is that it could be hard to know, well, what is that option exactly worth? There's the question of what is the volatility? What's appropriate? Do you look at history? Do you try to get a market volatility from another market? You're going to get different answers. And I will defend the savings number a little bit in that at least it's a reference to the actual debt service schedule. And that is a number that -- those are numbers that take on meaning. So, I think that an issuer should take the value of that option extremely seriously. And they should understand it as well as they can. And their advisors should help them understand it. And Andy's right that advisors need to work harder to understand and explain option value. Issuers need to understand how costly taxable advance refundings can be. They should not jump like that treasure hunter when they hear about some possible large savings. Just because the power points show up doesn't mean you necessarily should jump. I think issuers should act like the strategic farmer and think strategically. They should know that the savings were planted at the beginning of the bond issue. They should be harvested when they peak in value. In theory, it may be best to avoid taxable refundings completely. But in practice issuers should not ignore their own circumstances, their own risk tolerance, where interest rates are and the other uncertainties that they may be exposed to.

So, to conclude, I would rather avoid callable premium bonds as much as possible. I'd rather not have to sell taxable advance refundings. I'd much prefer to be able to wait and sell (inaudible) debt if I could. But in life I would also rather not see appliances break down when in the old days they used to last forever. We have to deal with reality. But we can also seek to improve on reality, and I applaud Andy for his commitment to making those improvements. Thank you.

MS. FINN: Thank you, Win. We appreciate your insight. Andy, I'm going to give you two minutes --

MR. KALOTAY: That's plenty.

MS. FINN: I'm setting an alarm because they're people coming behind us.

MR. KALOTAY: No, no. Pepe, that's plenty. A few comments about the premium bonds. So, everybody needs to understand that institutional investors want to buy premium bonds. They don't want to buy par bonds. Let's start with that. The problem is not just the premium. The problem is the par call. So, one way to do it is to increase the call prices as Win advocated and I support. The other one is just to issue longer term optionless bonds. What's wrong with optionless bonds? We don't see any bonds over ten years, non-callable. That's one point. Second being referred to as take (phonetic) and the problem is again with take is that it doesn't look at the options. An alternative to take is option-adjusted take. I probably (inaudible) bond buyer if they are not using it, options must be taken into account. And finally, about the restoration of advanced refunding, just one comment. There was a lot of lobbying to do it. And who's lobbying for it? Primarily, if you look at it, it's the infrastructure, the people who benefit from the advanced refundings. Not the issuers. It's the American Buyer Association is a huge advocate of advanced refunding. And I'll stop right there.

MS. FINN: Great. Thank you. I know this is an issue that is critically important and both of you all are passionate about, and we appreciate your bringing that passion to the discussion and to the conference.

We will take a brief break and we will come back at, I'm in a different time zone, at 2:40 east coast time.

MR. WESSEL: Now, 1:50 east coast time.

MS. FINN: 1:50. Okay. We will see you all back then. Thank you.

MR. WESSEL: Thank you so much, Pepe. You did a great job as a moderator with not always cooperative speakers.

MS. FINN: They just all worked very --

MR. WESSEL: Michelle, I just sent you a note. Do you want -- do you want me to introduce you, or do you want to just jump right in at 1:50?

MS. KASKE: You can introduce me, if that's okay.

MR. WESSEL: Okay, I'll do that then.

MS. KASKE: And like you said, I can introduce the panel?

MR. WESSEL: Perfect. Okay.

MS. KASKE: Thank you.

MR. WESSEL: Thanks for doing this.

MS. KASKE: Oh, no problem.

MR. WESSEL: Good afternoon. I'm David Wessel, Director of the Hutchins Center at Brookings and one of the co-sponsors of the Municipal Finance Conference. I'm very pleased today that we have a terrific panel to talk about Puerto Rico's Bankruptcy: Lessons Learned both for Puerto Rico and for the entire Muni Market. I'm going to turn the virtual podium over the Michelle Kaske from Bloomberg, our very capable moderator. She's been an excellent chronicler of Puerto Rico's travails and she will introduce the panel and take it from there. So, over to you.

MS. KASKE: Hi. Thanks, David. Good afternoon, everyone. Today we'll be talking about Puerto Rico and Puerto Rico's bankruptcy. We have Natalie Jaresko, who is the former Executive Director of Puerto Rico's Financial Oversight and Management Board. We also have Sergio Marxuach. He is the Policy Director at the Center for a New Economy. And David Skeel. He is Chairman of Puerto Rico's Financial Oversight and Management Board. He also teaches law at University of Pennsylvania's law school. And then also we have, and finally, John Ceffalio. He is an Analyst at CreditSights. He is a Senior Muni Credit Analyst at CreditSights who's been following Puerto Rico for quite some time. So, we're happy to have everybody here. We're looking forward to this conversation and I just wanted to start off by saying just, on background, as many people know, Puerto Rico for years was suffering from economic contraction, economic decline, population loss, and during those years through different administrations the government then were borrowing money to basically keep the government operating and that could last only for so long. During that time there was this municipal bond market that was very, very willing to continue to lend to Puerto Rico but, again, it got to a point where the market just wasn't going to continue to lend to Puerto Rico at rates that Puerto Rico could accept and this all really came to a head and Puerto Rico at the time of the bankruptcy filing, Puerto Rico and it's agencies owed about -- owed more than 70 billion of debt. And also had a pension fund that was essentially pretty much empty. And Puerto Rico's -- the Financial Oversight Board sought bankruptcy on Puerto Rico's behalf in May of 2017. So, since then about half the debt has been restructured. There are more workouts to come. Most notably, Puerto Rico's electric power authority. But basically, we wanted to get into -- I wanted to ask the panelists, you know, Puerto Rico restructured its general obligation debt in March. That effectively ended its five-year bankruptcy for the central government. And so that restructured about 19 billion of debt and started funding its pension fund. So, I wanted to ask and maybe if David Skeel wants to jump in or Natalie, sort of, with Puerto Rico's bankruptcy, you know, what worked, what didn't work and what are some of potentially the implications for the rest of the muni market? Sort of, what lessons can be learned as of now from Puerto Rico's bankruptcy?

MR. SKEEL: So, I'd like to say in response to what works, what didn't work? Everything worked in the end. I don't know that that would be exactly an accurate statement. It did take five years and there were lots of ups and downs that were exacerbated by the hurricanes, the earthquakes, the ousting of a governor, and the pandemic. So, it did take a long time, but it really did work overall, in my view. We ended up -- our objective when we started was, our mantra was once and done. That we couldn't do this -- Puerto Rico can't do this multiple times. They have one crack at bankruptcy. They're not going to have another crack. So, you can't just do a hope and a prayer where you restructure the debt a little bit and hope that in five or ten years the economy is doing well enough to carry this heavy burden. We believed it needed to be once and done. And what that meant was we were very, very careful about how much debt there would be going forward. There's a maximum of 1.15 billion dollars in any given year, which is less than 8 percent of Puerto Rico's own revenues, the revenues that come from Puerto Rico, to make something that made sense for the creditors and was fair to them and consistent with the rule of law. We also added a significant amount of cash and created a contingent value instrument, an instrument that, if Puerto Rico's economy does well in the future years, we'll pay more to creditors. If it doesn't do well in future years, it will pay less to creditors. And we can maybe get into some of the details of this if folks want later on. But it was a very long process. It took longer than we would have liked. I would say that's the main downside. But the restructuring we ended up with, I'm just, I could not overstate how happy I am with it and as I see Natalie, I have to do a shout out to Natalie. Natalie was the point person throughout this process. A really great result for everybody, in my view. Clearly sustainable for Puerto Rico going forward. Clearly fair to the creditors. The general obligation bond holders, in particular, will end up doing pretty well in the end. So, really, really a good result, in my view.

MS. KASKE: Yeah, Sergio, you wanted to say something?

MR. MARXUACH: Well. Yeah, I mean I generally agree with David, but I will do my analysis of *Promesa* a little bit different. I think the law was enacted by Congress basically concentrated on three different items and he mentioned one of them, which was the debt, you know, debt relief and that restructuring, which is very important. And Title 3 did produce a plan of adjustment that provides significant debt relief to Puerto Rico. Remains a question how you measure that, but, in general, I agree that it succeeded in getting some debt relief to Puerto Rico. The second part of *Promesa* was on reforming the budget process. And there I think progress has been a little bit slower due to the fact that there has been a lot of, you know, give and take between the board and the local government, which I think was foreseeable since the beginning. And I remember talking to people at Treasury saying this -- this is not going to be that easy, you know. Politicians are just not going to give up this power to allocate the budget, especially because Puerto Rico in many ways is still pretty much a patron client society organized around extracting rare -- I mean, rents from the government, and the politicians are loathe to give those powers. And then there was a third component, a very small component, but that was very important, and it was a big selling point for the Obama administration, which had to do with Title 5 and, you know, strategic projects to get the economy going. And for several reasons that didn't quite work out. So, I think in general though when you analyze *Promesa* as a whole, not only the Title 3 component, you know. Some things worked, some things have worked partially and we're still dealing with the budget process, especially, you know, getting Puerto Rico to implement the internal controls and the budget disability process that it needs to going forward, and the economic growth and strategic projects part generally fell down by the wayside, mostly due to the hurricane, to be honest, but I just wanted to give a little more context as to how I see the entire *Promesa* process go -- working.

MS. KASKE: I think you're right, Sergio. It's definitely -- *Promesa* is, what it did is, you know, giving Puerto Rico the ability to actually reduce its debt and fix the pension fund. That, that seems -- I mean, that has really moved things along and helped Puerto Rico to get on a new path, but it does remain to be seen whether the local government will live within its means and Natalie's got something to say here.

MS. JARESKO: I just think that you really can't take the pieces apart that way. I think that the debt restructuring and the reduction of the debt payable and the resolution of the pension problems, the adoption of the plan of adjustment on the basis of a fiscal plan, which provides for a vision of how to see forward through this, is the baseline for being able to manage a balanced budget, because we've reduced the stress on that budget so dramatically that now other choices get to be made. And it provides the baseline for economic development, because you theoretically have a government that's more credible in the marketplace. You have a market with a resolved debt structure that should reduce capital costs across the board. Now, there are many other things that, you know, governments need to do to be attractive to investment. There are many other things that governments need to do in order to solve all the social problems that, unfortunately, remain in many societies. But without the debt restructuring none of those things are possible. And so, it's kind of a chicken-and-egg in some way, but I think the debt restructuring is the baseline. Now you need political will on the part of the elected leadership to do what elected leaders need to do and what their constituents drive.

But I think that PROMESA was never supposed to be, was not seen as a control board and we didn't play that role as a control board. As an oversight board, I think we accomplished a great deal and I think we put Puerto Rico on a path where if its elected leadership and the constituents demand that of their elected leadership can accomplish both, again, resolving social ills with the government spending as well as attracting and -- and economic development attracting investment in economic development. I don't think that, you know, pieces failed. I think that they were never meant to be -- it was never meant to be a control board, which would have had the ability to enforce in that -- in the way that Washington, D.C., for example, did.

MS. KASKE: That's true, but I think then part of the problem then is down the road how -- what is going to force the local government to live within its means and to implement these structural reforms? I mean, at some point it will fall back onto them, and I think that's the uncertainty going forward.

MS. JARESKO: As it is in any municipal environment, right? I mean, if you look at Detroit, you know, you have to have a government that serves the interests of its constituents. If you look at cities that are undergoing financial challenges, you know, there's Chicago or the state of Illinois, I mean, it's the same demands being made of elected leadership everywhere. Are you serving the people? Are you using your resources wisely to reduce social ills and to attract investment and grow your economy?

You know, why are we expecting that somehow the Oversight Board was supposed to be a magic solution for Puerto Rico? It provided the baseline for Puerto Rico, but, you know, elected leaders need to take responsibility as well.

MS. KASKE: Mm-hmm.

MR. MARXUACH: I do think that going forward, though, and I know that a Plan of Adjustment has some, you know, debt limits and other fiscal rules incorporated into it, but eventually the Plan of Adjustment will end, right? I mean, it has some termination date.

I do think there's a need to legislate new Puerto Rico safeguards in terms of fiscal rules, limits on deficit spending, and debt issuance. We already have some of those even in our constitution, and they obviously did not work or at least they were relatively easy to work around, let's put it that way. And we do have to do that work going forward in terms of what are the modern fiscal rules that make sense for Puerto Rico? What kind of safeguards can we have going forward?

And we have been doing some thinking on that. There's a lot of work, as Natalie knows, that has been done on many other jurisdictions about this. And that's certainly pending on Puerto Rico's side to work on that, perhaps even amending the constitution to have some real fiscal rules that make sense.

MS. KASKE: And even the fiscal plans, they do warn that Puerto Rico will face future budget deficits if certain structural reforms aren't put into place. And part of that has to do with that even with the debt restructuring, some of these fixed costs, like future debt service, which, as David Skeel pointed out, has dropped dramatically. But if you add that along with the pension payments that Puerto Rico needs to make every year, it still is taking up a sizable amount of the yearly budget. And that's the reality, but, again, it's -- future balanced budgets will really depend on some of these structural reforms.

MS. JARESKO: Again, future balanced budgets require growth. You need to grow the economy. You need to have a model of economic growth. You can't do it all through the expenditure side. You can't balance budgets solely by reducing expenditures constantly, whether it's debt, pensions, or, you know, other expenditures: education, police.

It's just not -- there's a limit to the reduction of expenditures. At some point you have to see a model, and that's what those structural reforms are about. How do we get growth? How do we see a Puerto Rico that's competitive and attracting investment?

To date, Puerto Rico's economic model has been based on federal funding, federal tax relief, and/or Puerto Rico tax relief. How do you get out of that model and move to a model that's not based on offering tax reductions when you need those taxes to invest in your social policy? How do you have a different economic growth model?

And that's why those structural reforms focused on, you know, the competitiveness of the regulatory environment in Puerto Rico, permitting, property registration. The competitiveness of the labor market in Puerto Rico, how do we make it so that people believe that Puerto Rico's the best place to put their IT business? How do we build a cadre of workers that attracts investors?

So, that's why those structural reforms are there because, over time, you've got to grow. And to grow, you're going to need different policies in place than what are there today.

MR. MARXUACH: I agree it's required that we need to growth the economy, but I think we have to go one step back, Natalie. Some of the policies that you mentioned may be very useful, but I don't think they constitute really a growth strategy. I mean, and that's the exercise that Puerto Rico needs to do. I mean, what's -- where are we -- where do we have a comparative advantage relative to the region, relative to the mainland? Where are the places where we should be making our bets in terms of economic development. We really haven't done that analysis.

I do know that Manuel Cidre and the people at the Department of Economic Development have put out something out there. I'm not really convinced that what they have put out it's really a strategy in the sense where you can actually identify sectors where Puerto Rico has a comparative advantage and, you know, focus on those sectors and then measure whether or not they're delivering in terms of income, in terms of employment, in terms of generating economic activity. And then, you know, reassess whether or not the whole plan is working.

There are many examples around the world, not only in Europe, also in the Caribbean, the mainland. A lot of jurisdictions have done this. We in Puerto Rico did it back in the 1950s, when we were -- we had less resources available, so it's not impossible. But I think that's the step that we're totally missing right now in terms of like doing that economic strategy, industrial policy, choose your name, for the island.

MR. SKEEL: And I don't disagree with Sergio at all. I would just say that those sorts of things, in my view, are not a primary responsibility of the Board. Our most important responsibility -- and you're not saying otherwise.

MR. MARXUACH: Right.

MR. SKEEL: I just want to clarify for folks who might not instantly pick up on that. Our primarily role, in my view, in this area is to create the conditions for growth, to make sure the balance -- or budgets are balanced. Try to put in place a framework that will make that true not just now, but for a while to come.

And we have created a runway that's going to be very helpful in that regard, so we have in the Plan of Adjustment limits on the issuance of debt for the next few years. Sergio alluded to those as well.

We also require that massive amounts of money be put aside to make sure that we can make those pension payments that Michelle alluded to, that $175 million a year minimum up to 25 percent of the surplus, or I think it may even be 50 percent of the surplus, which is likely to end being about $10 billion set aside to make sure that even if things do turn down in the future, those pensions will be paid.

So, there is a runway that has been created. And the Board does have some role in development. There are some things we can do. Title V is a piece of that. There's some other things we can do, but really that's Puerto Rico and its lawmakers will be the plans in place.

MS. KASKE: Yeah. And definitely there's the question, too, of what's forward for Puerto Rico once all this federal money dries up? There's been a lot of FEMA money that's come to the island and there's the COVID relief money. And, John, I know you and I we've talked about this is the issue of what happens after all that federal money runs out?

MR. CEFFALIO: Yeah. I think -- Michelle, thank you. I think that's a cause for a lot of skepticism in the muni market just as you look back in Puerto Rican history. It seems that at times when Puerto Rico -- it seems that when Puerto Rico was prospering and growing it was often because of investments from Washington, be they military investments down there that helped the economy or tax breaks down there that helped, and now money from the hurricane relief and rebuilding and also stimulus. And if you look at the underlying Puerto Rico economy and the foundations of it, it seems very weak without that.

And I think I'd particularly call attention to the demographics in Puerto Rico. And Puerto Rico lost almost 13 percent of its population during the last decade, which is just a staggering number. And you almost -- you really can't find any jurisdiction in the world that hasn't had war or a famine or something that lost anywhere near that amount. I mean, people made a big deal in the 2020 Census when Illinois lost population and they lost less than 1 percent of population. So, Puerto Rico's loss is staggering.

And when you look at the young population in Puerto Rico, that Puerto Rico now -- or the 2020 Census had half of the population of 14 and under that it did in 2000. So, that's the labor force for the next 10, 20, 30, 40 years that that's small. And so, who's going to be on the island? Who's going to work? Where's the labor force coming from that's going to attract employers?

So, I think there's a lot of concern that as the stimulus wears off, which had an outsized importance in Puerto Rico, and as the hurricane rebuilding and reconstruction wears down, what's left in the economy. And so that's really up to Puerto Rico, is if they can take that money and build a better infrastructure with it and a better water and sewer system, better highway system, better power system. Then that could help build a foundation for future growth. But if that money is squandered or not used efficiently, not used for future growth, then we have real concerns 10 years out about Puerto Rico servicing its debt because of the economy.

MS. KASKE: And what are some of the industries that Puerto Rico could look towards to really help grow the economy? I know tourism, governments -- the different administrations, they always talk about growing the tourism business. I think a lot of people are surprised to learn that even today tourism is still less than 10 percent of Puerto Rico's overall economy. I was like shocked to hear that a number of years ago because everyone thinks it's like just the main that's driving the island.

But John and Sergio, what are just some of the options that Puerto Rico has?

MR. MARXUACH: Well, we still have a significant footprint in pharma and, you know, biotech, which has decreased over the years. But we do have a certain infrastructure there that we can leverage.

Also, there's several opportunities that I think we're not taking into account. You know, everything from like, you know, certain agricultural products where they're high value-added, low volume, you know, like herbs and spices to things like healthcare. And by healthcare, I mean, you know, doing R&D on specific illnesses, for example, that affect Hispanic populations. We may have an advantage there.

We also have some great opportunities in green energy, you know. Secretary Yellen is talking about onshoring, or friend-shoring I guess is the word she's using, some of the stuff we buy from China now. Again, there are opportunities there.

The big difference now relative to the 1950s is that in the 1950s we were basically the only player in the region. We're not the only player in the region anymore. Right? We have competition from Costa Rica, the Dominican Republic, other countries that have signed, you know, bilateral trade agreements with the United States. So, we really have to put a lot of work into this and a lot of thought into how we can do it, but the opportunities are there, in my opinion.

MS. KASKE: Let's --

MR. CEFFALIO: I think it's --

MS. KASKE: Oh, I'm sorry. Go ahead.

MR. CEFFALIO: I was going to say I think it's -- I generally agree with Sergio. It's a little bit of everything, a little bit of agriculture, a little bit of tourism, a little bit of high tech, manufacturing, and -- but I -- a lot of the manufacturing has always required federal tax incentives, which is worrisome. And then the other worrisome thing about manufacturing and having too many eggs in that basket is as time goes by manufacturing tends to get more and more efficient and you need fewer and fewer employees to do the same thing. So, it's not always, you know, the best thing for a local economy.

I grew up in Northwest Indiana and there used to be steel mills that employed 50,000 people. And they still make steel there. They make a lot of steel there. But now it's, you know, 100 people with master's degrees that are doing it. And so those towns that used to have all those working-class employees that were paying taxes and living in the homes there and going to school aren't really there in the same way. And so that's the tough thing about having a lot of eggs in the manufacturing basket.

MR. MARXUACH: Yeah, and I agree with that completely. That's why I advocate more of a portfolio approach. I think traditionally, you're right, traditionally Puerto Rico has done that. You know, we have put too much weight on that sector. But I wouldn't disregard it completely, though, going forward. We do still have some opportunities there. That's all I'm saying.

MR. CEFFALIO: I agree.

MS. KASKE: I'd like to get back to the bankruptcy itself again and sort of get into some of those details. And definitely one thing that I was struck by with Puerto Rico's bankruptcy is it seems like it's starting -- or not starting, but it's continuing this trend of pensioners faring better through the process than bondholders and other predators. And so, in Puerto Rico there were no cuts to pensions, to pension payments, and the bankruptcy itself actually, as we said before, ensured that Puerto Rico would once again start investing in its pension fund, so it can support its retirees.

A similar thing happened in Detroit. If I remember correctly, in Detroit pensioners actually took a little bit of a haircut, but it was -- might have been around 10 percent or just less than 10 percent, which was a lot of less than the haircuts that the bondholders took. So, it seems like it's continuing this trend where the retirees, the public workers are going to do better than the bondholders. And I'm wondering what you guys think about that. Do you see that continuing in the muni market?

MS. JARESKO: I'm going to sneak in and say that I think that Puerto Rico's somewhat unique. And I think comparing it to Detroit, and others may disagree, and to other munis is not necessarily a fair comparison. A couple things.

One, prior to the bankruptcy, not in the Plan of Adjustment, Puerto Rican public pensioners took a variety of cuts over the periods of the lead-up to the crisis. And so, if you only measure it as what's in the plan, you're correct, there were no cuts in the plan. However, there were a series of cuts prior to that.

Second, I would argue that if you look at the average pensions of public pensions in Puerto Rico, they are substantially lower than in many other municipalities in the United States. And so, we were faced with a challenge in Puerto Rico that if you were to cut too deeply or cut in any major fashion the public pensions, you would find yourself with a new social set of expenditures which would reduce your ability to sustain debt going forward anyway. Because these people had literally in many cases, let's just take teachers, for example, no alternative. They had no Social Security. So, this was their singular source of income when they retire.

I think the other thing that needs to be taken into account is that we didn't leave Puerto Rico with the same pension system. So, there are no defined benefit systems left in the Puerto Rico public pensions. All of them have been frozen. All new employees are enrolled in what we would call, you know, a defined contribution or a 401(k), something like that. So, the government is not incurring new expanding liabilities on the behalf of new public employees going forward. And I don't think there's a municipality that I'm aware of that has that benefit that was created financially for Puerto Rico in this process.

So, I think, you know, if you were to ask a pensioner that freeze and that fact that no one -- no one -- is earning a defined benefit going forward is a major cost to these pensioners that doesn't appear in the numbers. But, in fact, if you were attracting cops, just as an example, one of the reasons the Oversight Board had to come up something incremental in the defined contribution side for police is because you're competing with every jurisdiction in the United States for these cops. Bilingual police, you know, are much in need throughout the country. And there isn't a single police force that I'm aware of that doesn't offer a defined benefit plan.

So, you know, public pensioners had had problems previously -- excuse me, had reductions. I think we need to take that into account. And I think that, you know, take the second point, the average pensions were quite low in the teachers and the general public pension fund. And I think, third, not having a defined benefit plan going forward is a very meaningful thing that was given up, which fiscally is much better for Puerto Rico going forward, but makes it very different than other munis they're going to be considering.

MS. KASKE: Well, that's true. That's a good point. And that was -- I agree with you. I think for Puerto Rico it is a much more complicated situation in terms of how do we deal with the retirement system and fixing that than in some other places. But it makes a big difference for the island's finances and the people on the island that, once again, there will be a pension fund, it will be growing every year.

And I also wanted to get back into the -- we talked about it, David Skeel mentioned it very briefly, the CVI, the Contingent Value Instrument, and how that -- that was part of the compensation for bondholders. And what this is, is it's a very new type of instrument for the municipal bond market. And basically, if Puerto Rico's annual sales tax collections come in greater than expected, better than expected, then that's how bondholders receive payment that year on the CVI.

So, David or Natalie, if you just want to talk about this instrument. Like how did it come -- I think in the past you guys have told me that it was, you know, the people at Citi or a financial advisor maybe brought this up and -- but, you know, tell me really how it all came to be.

MR. SKEEL: I'll say a few words and then maybe Natalie can fix my mistakes and clarify it and add things. The idea of a CVI was out there almost from the beginning, so it was floating around the question would there be a CVI, would there not be a CVI? I think Citi did come up with the ultimate idea. I may be misremembering, but that's my recollection.

The obvious benefit of a CVI is it's a way to agree to disagree. The creditors through Puerto Rico was going to go gangbusters in the next 20 or 30 years. We were more concerned about where things were headed. There was a very big difference of opinion on likely future revenues, and a CVI is a way to bridge that gap.

There are real downsides, real risks with CVIs as well, however. If you connect a CVI to a number that's either undependable, it doesn't really track the economy well or it's manipulable, it can be gamed, the CVI can be a big mess. And in the past, in the sovereign space, CVIs have often been late to GNP, and they have sometimes misfired. So, we were very concerned about that, did not agree to one until very late in the process.

As you mentioned, the one we agreed to is connected to sales tax revenues. And in our view, it was -- it's a really, really elegant CVI. It's very attractive because it's only a portion of Puerto Rico's revenues. The maximum it can end up being is less than 8 percent of Puerto Rico's revenues.

It's also a stream of revenues that's very difficult to game. Sales tax revenues, as revenues go, are pretty precisely determined. It's pretty hard to play games with them. They also track the economy really well.

And so, we ended up with a CVI that I think it's a wonderful CVI. Maybe we'll come back in 10 years, and it will misfire, and we'll say what in the world were we doing? But I really think it is -- it's an elegant CVI that I think people ought to look at in other public entity bankruptcy or restructuring kinds of situations.

MS. KASKE: Yeah, John, do you anticipate that this CVI structure could be used in other muni workouts potentially?

MR. CEFFALIO: Yeah, I think so. I think it's a good idea and it does make sense and align the creditors and the debtor together. Yes, absolutely.

MS. KASKE: And so far, you know, it's only been a few months, but what has been the market's reaction to the CVI?

MR. CEFFALIO: I think it's generally been pretty favorable. I think that, you know, there's been outflows market-wide, so it's been a challenging time for, I guess, all the -- the entire market, but all the Puerto Rico bonds over the last few months.

MS. KASKE: Mm-hmm. And, John, did you have some time to say about pensions? Was there a comment that you wanted to make about (inaudible) pensions?

MR. CEFFALIO: Oh, well, just quickly because I totally agree with everything Natalie said, but she's right to bring out the fact that all these reforms had already been made and the reforms going forward and that the pensions were modest to begin with. But I do think the original question about is this going to happen in the rest of the market, and I think yeah. I think that there is a precedent that was set in Detroit and in some of the California bankruptcies, you know, that's never been litigated all the way up.

So, I don't know, it might not be the case, but I think when you think about it, when you're in negotiations, it's just the pensioners I think have a better moral claim and a better political claim, you know, a retired bus driver, a retired teacher, or something, than does a mutual fund, for example, who might be hesitant to get into a public fight with pensioners. So, I do think that that's largely a precedent and it'll continue to go that way.

MR. MARXUACH: I also think this is an interesting policy should -- that will arise in other states. You know, in general, human beings are not very good at making intertemporal decisions between different timeframes. And this raises the question, you know, which group is better positioned to assess and assume this risk, bondholders or pensioners? And in general, you would say bondholders would have -- or their financial advisors, would be in a better position to assess and assume this risk than your average government worker. And generally, you want to allocate risk to those who are the better positioned to bear them over the long run.

So, I think this precedent may -- I mean, this issue will keep coming up. I mean, Illinois has problems and other states have problems with pensions, it's not only Puerto Rico. And this issue is going to keep arising, you know, which group is really best positioned to actually assume this risk?

MS. KASKE: Mm-hmm. And I want to get into PREPA, the Puerto Rico Electric Power Authority. That's really the main entity that's sort of next in terms of -- that needs to be restructured. There's about 9 billion -- roughly about 9 billion of debt that needs to be worked out.

And PREPA is the main supplier of electricity on the island, and it has its troubles. I hear from many people who live there, Sergio, you can tell us about this, but that outages are very common. The electricity is not cheap. And so, there's been a lot of frustration on the island with the electricity.

So, David, if you could, you know, kind of get us up to speed on sort of what's the next step in PREPA's bankruptcy and where is it at?

MR. SKEEL: That's precisely the thing I can say the least about, but I can (inaudible) because we're in mediation right now. I can put the framework in place, though, and if others want to make comments, they can make comments.

So, PREPA was a disaster even more PROMESA was enacted. When people talked about Puerto Rico's financial crisis back in 2014, 2015, they usually had PREPA in particular in mind. PREPA had blackouts back then. I remember on the eve of our first public meeting back in 2016 there was a blackout. So, PREPA was a mess even before PROMESA. It got even worse after Hurricane Maria. So, it is essential to Puerto Rico's future. It has been the biggest problem or one of the biggest problems in many respects.

The two things that I would mention or the two pieces of the transformation of PREPA, one is the debt restructure, and I'll get to that in a second, which is what you asked about in particular. The other is transforming PREPA so that these problems of the past will be problems of the past and not problems of the future.

The governors of Puerto Rico with the Oversight Board's support have brought in a private operator to run Puerto Rico's transmission and distribution. PREPA is still publicly owned, but there's now a private operator called LUMA for the distribution and transmission. They're coming in over the last year or so has been -- has not been a magic wand that has caused all the problems to go away, but the trajectory is good. And I think they will end up being an important part of the transformation of PREPA. There is a Request for Proposals process that is well underway to bring in a private operator for the old generation assets, the legacy generation as well. So, a big part of PREPA's future is getting this in place, transforming it to make it a reliable source of electricity.

The other part of it is the restructuring. There was a restructuring that was partially negotiated before PROMESA. It was renegotiated in the several years after PROMESA. We ended up with an agreement in principle, which was called a Restructuring Support Agreement, with most of the bondholders, who are 90 percent of the debt of PREPA. That was tentatively reached in 2018. It was finalized in 2019. But then we had the pandemic and also some resistance from the legislature to passing the legislation that that agreement needed.

It kind of -- it was in place. One of our advisors described it as having been on life support for a while. Earlier this year the governor terminated it. We agreed with the governor's termination of the agreement because the economics no longer made sense after everything that had happened with the pandemic.

We are in negotiations with the bondholders and with the other creditors. That is in mediation. It has been in mediation for a number of weeks now. We have a deadline of August 1st to either put a plan on the table, a proposed Plan of Adjustment, or put a term sheet on the table or put in place or suggest a schedule for litigation. There are several key issues that are the subject of litigation and that litigation at this point is all on hold.

So, where we are is we're in the middle of the restructuring. It's in mediation, so I can't say really much of anything about the details.

MS. KASKE: Do you think it's --

MS. JARESKO: I just want to add two things, Michelle, one pre and one post.

Pre, just so everyone understands that the FEMA monies to rebuild the damaged electric system only started to -- PREPA only started to access them this year, so four and a half years afterwards. So, when we talk about LUMA and we talk about short -- you know, LUMA is operating a system that was incredibly damaged and has only now, literally I think January, was the first access to the FEMA monies to rebuild and restore the system. And so, you know, that is really critical. There's a substantial amount of federal funding going to rebuild the system, much of it, the great bulk of it into transmission and it's only just begun. So, contracts were only starting to be let in January and February this year. That's all ahead of us.

And then the second part that I'll just mention in terms of the future is that just as important as that P3 that is in process for the legacy generation is the government and the Board working carefully together on a wide variety of RFPs for renewables. And I've been gone off the island for a month, so I can't say exactly, but I know where we were, which is we had done 1,000 megawatts already and we were in the process of doing the next big piece of renewables such that you could slowly decommission the legacy assets over time and move to cleaner, cheaper, and more reliable generation on the side of renewables.

So, two more pieces of this PREPA picture to take into account.

MS. KASKE: That's interesting. Yeah, it's going ahead. And just like how the economy benefits when it's diversified, for PREPA as well to diversify, how it creates the energy is super important as well.

And, you know, David, not to be negative, but what would -- if PREPA were to leave Title III and need to be litigated, what would that look like? What court would that be in? What would that process be like?

MR. SKEEL: It would be in the Title III Court.

MS. KASKE: It would stay in Title III Court? Okay.

MR. SKEEL: It would stay in the Title III Court.

MS. KASKE: Okay.

MR. SKEEL: So, Judge Swain would be overseeing it. As I said, there are a number of different issues. One of the big ones is whether the bondholders have a valid lien. And if they have a valid lien, a lien on what? How much do they have a lien on?

Our view is if they a good valid lien, the only lien they have is a lien on amounts that have already been transferred into a trust and it's a very small amount. So, there's litigation along those lines that -- and there's some other issues around that as well. The Creditors Committee has some litigation that it would like to pursue as well. Hopefully, that won't be necessary, but it is out there.

MS. KASKE: But don't bondholders have a lien on PREPA's ability to generate revenues?

MR. SKEEL: Our view is no, that they have -- they only have a lien on the payments made by customers once those are put into an account for the benefit of bondholders. But until they're put into that account, the lien does not cover that.

MR. MARXUACH: So, I have a question for David. So, it appears to me that from your answer you seem to be ruling out the potential of actually dismissing the Title III case.

MR. SKEEL: That's not one of the options we were given. We don't have --

MR. MARXUACH: Well, also, the --

MR. SKEEL: But that is another possibility. I know it is a possibility.

MR. MARXUACH: They did say that one of the options was for the Board to submit a memo as to why -- to show cause as to why --

MR. SKEEL: That's true. That's true.

MR. MARXUACH: -- it (inaudible).

MR. SKEEL: That's true.

MR. MARXUACH: Okay.

MR. SKEEL: Yeah, I don't think anybody thinks that would be a good outcome, but you're right, it is in the memo.

MS. KASKE: As of now, I mean, do you see things leaning more towards that August 1st due date being extended because there have been extensions in the past or are things progressing that something could be filed?

MR. SKEEL: That's precisely the sort of thing that I can't answer.

MS. KASKE: I've got to try. I've got to try.

MR. SKEEL: Obviously, yeah. Like the good reporter that you are, as I learned very early on in this case, be careful what you say to Michelle.

MS. KASKE: And, you know, everybody's been telling me this for years, you can't fix Puerto Rico's economy. You can't -- the economy really can't grow unless you fix PREPA because the businesses need to know what their future costs are for electricity so they can forecast that to attract people to live on the island. That needs to be fixed. Does anyone want to weigh in on that?

MR. MARXUACH: We have been saying that since 2005, actually.

MS. KASKE: Yeah.

MR. MARXUACH: You know, having reliable, affordable energy affects all economic activity, you know, hospitals, hotels, farm -- server farms, everything, so, unless -- retail. So, unless that's taken care of, I mean, it's a necessary, but not sufficient condition for future growth.

The other risk going forward in addition to PREPA, I'm going back to something that Natalie said, is, in my view, is the Puerto Rico political class. I mean, they seem to have learned nothing since 2003, and that worries me, you know. Things that I have seen recently, attempts to cover recurring expenses with nonrecurring revenues, raiding the state insurance fund to lower electricity costs for three months, those are the kind of things that got us into this mess in the first place. Right?

So, going forward, more than economic risk and more than geopolitical risk over what's happening in the world, you know, endogenous to Puerto Rico is that our political class is not getting its act together. And it's demonstrating to the world that they really, really have learned nothing and forgotten nothing since 2015.

MS. KASKE: Well, I mean, who knows? I mean, there could be -- I don't know, there could be maybe younger people on the island who start pursuing office and local office, and you never know. I think there is -- on the mainland sometimes I'm very -- I feel very optimistic about some younger people who are becoming more politically active and involved. And I would imagine that that's got to happen in Puerto Rico as well.

MR. MARXUACH: I would hope so. I would hope so. But just recent actions that have been taken by the legislature and the executive, to be fair, do not inspire a lot of trust, I think.

MS. KASKE: No, it's true. It's a major shift that needs to be made that we really haven't seen the full effects of yet. And I think we have roughly about five minutes left or just a little under that I want to get into two things: this issue of the idea that -- I mean, at some point Puerto Rico will probably get credit ratings again. And beyond after that, maybe even possibly investment-grade credit ratings. And I also want to talk about the future of the Board.

So, John, I wanted to ask you, you know, what do you think it's going to take for Puerto Rico -- because as of now, the new GOs, the restructured GOs, the COFINAs as well, the restructured sales tax bonds, they don't have credit ratings yet. What is it going to take for them to get ratings and then even after that investment growth?

MR. CEFFALIO: Yeah, thanks, Michelle. Well, the ratings are important. A lot of firms have bought the Puerto Rico bonds, but once they get a rating, more people can buy the bonds. It'll be a bigger market for the bonds. A lot of funds are not allowed to buy or are limited on the amount of unrated bonds they ca hold. So, betting the rating is a big deal and should change the pricing of the bonds.

I think a key thing would be getting audited financials. I don't work at a rating agency, so I can't say exactly what they need here. But I do believe at the Puerto Rico investor conference I heard promised later this summer that the FY '19 and '20 of audited financial statements would be out. So, if that's the case, that would be a big help. I don't know if that's enough to get the rating, but I think that would be a big step.

I think getting PREPA solved, even though it's not directly related to the GO, just would reduce uncertainty, and so that might help make the case to the rating agencies. I think that right now -- I mean, I would wager, like if I just had to guess where the rating would be, I would probably say that at the majority rating agencies the GO would probably be a high category, around there, and that maybe COFINA and PRASA, which never defaulted on its muni debt, maybe could be a notch higher than that.

And then I think possibly the rating, you know, if the performance is good, the governance is good, could rise at maybe a notch a year after that would be kind of aggressive so you can -- you know, it would be a few years to get to investment grade.

I think the rating agencies, I think, though, have the same concern that investors do: is what happens when the Board goes away? And what's the willingness to pay like and the discipline of the local politicians, which is what we've talking about earlier, once the Board has left. And some of the rhetoric down there has maybe not inspired confidence. So, I think the rating agencies will be thinking about that, too, is what's this rating like when the Board is not there watching over the finances?

MS. KASKE: Yeah, that's true. And there's also the question of how much longer the Board is going to be there. Under PROMESA there needs to be a number of years of consecutive balanced budgets and there needs to be market access. But, John, do you have sort of an estimate of how long you think the Board will remain, the Oversight Board?

MR. CEFFALIO: I mean, I think the way that Congress wrote PROMESA is pretty frustrating. When you read it, it's adequate access to short-term and long-term credit markets at reasonable interest rates. And so, what does adequate mean? What are reasonable interest rates? It seems like the rates the bond trade now is pretty reasonable. I would think getting a rating would be good to proving that adequate market access and then maybe selling a small bond issue with that rate. That would help in the four years balance budgeting. I'm a little unclear, do you have to have modified accrual balance budgets? Do you need to have audits to prove that? I have a lot of questions about how that works, and I'd be interested to hear David or Natalie weigh in, too.

MS. JARESKO: I'll give my unofficial perspective and then David can speak officially. I have a little more freedom than David does about it.

So, the law is really written such that the Board gets to make the determination. There are some cardinal aspects of the determination written into the law, but there is enormous flexibility on the part of the Board beyond what's in the law. So, the Board has recognized four consecutive years of balanced budgets on a modified accrual accounting basis for all covered instrumentalities. All covered instrumentalities.

Now, can the Board say it will only look at this covered instrumentality or this one or that one or all of them? That's up to a Board to make a determination.

At least while I was there my view was this Let's try and get four. Let's try and get one, two, three, and then four because we worry about whether or not it's only the Commonwealth or the Commonwealth and PREPA or the Commonwealth, PREPA, PRASA, and all the other instrumentalities.

Remember that all the municipalities are also covered in straight (phonetic) taxes. And it's up to the Board to make the determination when it's time and the Board shouldn't, in my view, have to make that determination too early because we're not even there yet with the most basic entity, which is the Commonwealth.

And in my view, yes, you would need an audited financial statement in order to use it as a comparison to the self-reported results to be able to say, yes, I the Board designate this as a year of balanced budget based on an audit. Now, the audit won't be necessarily based on modified accrual accounting, so you're going to have to do a mapping between the self-reported and the audit. And all of that is a process.

But to get there, and this is why the focus has been on the audits, which you mentioned, John, you got to get caught upon the audits. So, if my understanding is we should be caught -- or Puerto Rico should be caught up -- I'm still saying we, there you go -- Puerto Rico should be caught up some time, you know, next year. By the end of next year it, theoretically, could have the fiscal year in place audited. Then you could look back to '21 and say '21 was or was not the first balanced year for the Commonwealth.

And that's leaving aside all of the judgment involved in the second piece that you mentioned, which is adequate market access at reasonable rates. That's just the first piece, right? Let's just try and get the first piece was my view.

And we're not even at one year technically because we don't yet have an audited year for the balanced year. And a balanced year would require post-debt restructuring so that your debt service was actually in there when you made the determination.

So, you know, that's where I think the Board has -- the law gives the Board enormous space to make the determination above and beyond, you know, what's written in the text of the law.

MS. KASKE: Mm-hmm. David, was there anything you wanted to add about the Board and how much longer the Board would be working on Puerto Rico's finances?

MR. SKEEL: No, I was really glad that Natalie did all the talking. All I'll say is just to kind of underscore, I share Natalie's view that we need audited financials. And so, we will not officially have the first balanced budget until we have not audited financials. I believe we're through 2019 at this point. And the fiscal year '22, the one we just finished could be the first balanced budget. It has the potential to be, but we won't know until we have audited financials.

MS. KASKE: That was fiscal '22?

MR. SKEEL: Fiscal '22.

MS. KASKE: Yeah, the current year.

MR. SKEEL: Yeah, the key was restructuring the debt and Puerto Rico making payments on its debt obligations.

MS. JARESKO: Yeah. This gets back to something Sergio mentioned earlier that everyone needs to take into account. I mean, there is a constitutional requirement for a balanced budget. And so, we get to the question, you know, why is that not happening? Well, because it appears that it's been kind of understood to me that when you adopt it are the numbers balanced, my projection of revenue, versus do I maintain an actual balanced budget during the course of the year?

So, you have a legislature that typically, you know, legislates expenditures that are not budgeted during the year. They have to stop doing that as a practice. Right? If you haven't budgeted an expenditure and you're adding it, that's clearly going to put you out of balance during the course of the year. And that happens, at least while I was there in the last five years, constantly.

So, I think this concept of what is a balanced budget need, needs to really e refined in the thinking of the legislators and the elected officials.

MR. MARXUACH: And actually, the language in the constitution says that whenever, you know, expenses exceed available resources as opposed to revenues, which is a big problem, then Puerto Rico should -- must increase taxes. The thing is that the phrase “available resources” has been interpreted by different lawyers and even by the Puerto Rico Secretary of Justice, Attorney General, to include the issuance of debt. So, that’s how we got into this mess into the first place, right, because the concept of available resources is much broader than available revenues. And they include the issuance of new debt for deficit financing in order to bridge the gap. So, that’s one of the things that we definitely need to fix in the constitution.

MS. KASKE: John, was there one thing that you were going to say?

MR. CEFFALIO: I was just really quick going to say Congress could change this at any time.

MS. KASKE: It’s true. Yeah. There is a bill currently in the U.S. Congress that would allow the Board to wrap up sooner than what PROMESA spells out. From what we’ve been hearing so far is that there doesn’t seem to be a lot of movement of that bill, so -- but we’ll see. We’ll see what happens.

But I want to thank everyone for participating today. And I really enjoyed this and it’s great seeing you guys all together and discussing Puerto Rico. And thank you again so much for a wonderful panel.

MR. CEFFALIO: Thank you, Michelle.

MR. SKEEL: Thanks, Michelle.

MS. JARESKO: Thank you.

MR. SKEEL: Thanks Brookings.

MR. MARXUACH: Thank you, guys.

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