TRANSCRIPT

State of the states: A review of the current municipal bond market and some of its largest issuers

Chuck Brown: Good morning and good afternoon to everyone. Thank you for attending today's municipal webinar. Before we get started, I think it's important to clarify that Tom [DeMarco] and Ilya [Perlovsky] are associates of Fidelity Capital Markets and they are in no way associated with Fidelity's fixed-income mutual funds or Fidelity's fixed-income SMA portfolios or any fixed-income ETFs. They are market strategists assisting institutional clients and personal investing clients on individual bonds.

So why don't we just get started? Tom, why don't you tell us a little bit about the municipal market?

Tom DeMarco: Thank you, Chuck. And thank you all for attending. You have to be brave to sign up for a 90-minute webinar on anything, but you have to be especially brave to do 90 minutes on municipal bonds. So, on a more serious note, this is a long webinar. Normally I would have preferred to have broken this up into three different webinars 30 minutes each or so to make it more digestible. But the event calendar as you heard is pretty full. So, in order to be timely this is the format that we have for today.

Let me just tell you about how the webinar is going to go. The first few slides I'm going to outline the market challenges that we saw in March, early April. I'm going to touch on the fiscal and monetary response as it pertains to the municipal sector. I'll very briefly touch on municipal bankruptcy before we transition to Ilya, who's really going to have the meat and potatoes for today talking about state budgets and doing a deeper dive on New York, New Jersey, California, Texas, and Illinois. So, if we dive right in, go to the next slide or slide two.

On this slide we're looking at municipal mutual fund flows. You can see on the right-hand side with the red lines being outflows and green lines being inflows. You can see that during March we had unprecedentedly large outflows, even bigger than what we saw during the global financial crisis. These outflows are driven by a number of things, spiking short-term rates, inverted muni curves, which led to credit concerns. We had forced selling by leveraged investors. We had rapidly rising rates broadly, though at extremely low levels.

And what I will say is that the flows have improved since then. I was saying originally that they were leaning negative. But this week we saw the biggest

inflow in 12 weeks. We had $900 million into municipal bond funds. So, it's possible we're at an inflection point towards more higher fund flows. But I'm not going to make a bet on that with just one week. So, it's something we'll be monitoring. And I'll explain why we look at these in a couple slides forward.

If you go to the next side -- next slide, excuse me -- this one, we're looking at with this widespread selling we saw interest rates swing wildly. On the right-hand side we're showing weekly changes in the yield on the 10-year AAA benchmark in basis points where 100 basis points equals 1 percent. You can see that since the early 1980s we've only had 13 times when rates have swung by more than 50 basis points over a five-day stretch. We had three of those periods in March of 2020 alone. In the midst of this volatility the primary market largely went dormant. And March ended up sporting the biggest one-month negative return on the municipal index since February 2008. Nevertheless, this dislocation as it generally proves in other markets and throughout time, this dislocation did provide opportunities for those with a stomach for volatility and who are nimble and understand municipal credit.

If we go to the next slide, I mentioned fund flows at the beginning. The reason that we look at fund flows is because the municipal sector unlike most other sectors is largely dominated by one investor class. And for munis it's the retail

investor class. As you can see with the pie chart on the right that retail holds 73 percent of municipal securities outstanding, be it direct in individual bonds, or indirect via mutual funds, ETFs, or separately managed accounts. What's interesting is that since 2008 we have seen the allocation to long-term funds increase from 13 percent to 24 percent of the market, while direct household holdings have remained relatively steady at about 46 percent of the market.

Some of the factors that limit the municipal sector from having a broad buyer base include tax and regulatory policy and inability to go short municipal bonds, a lack of general familiarity with the sector also I think plays into it. We have seen increased foreign participation in the market. I'm not showing it on the slide. But it is mainly in the taxable municipal sector which is a sector I particularly like. When I'm talking to our institutional clients on the corporate side, I always mention taxable municipal product as an alternative. Especially now in this market I still think there's some pockets of illiquidity there and it's fairly high quality, so I think there's some opportunity there for investors.

But I do think that the mention of state bankruptcies, even though it was off the cuff, by Senator McConnell a couple, three weeks ago may tend to frighten foreign investors away at least temporarily as they typically don't understand

the nuances of the muni market, muni bankruptcy, or possibly US politics for that matter.

If we transition to the next slide, this slide and then the one after that, we're looking at the responses from the Federal Reserve and the federal government. On this page the first three facilities I'm highlighting primarily deal with the front end of the municipal market. The Commercial Paper Funding Facility, commercial paper supports the flow of credit to households and businesses. Commercial paper markets directly finance a wide range of economic activity. It supplies credit and funding for auto loans, mortgages, and provides liquidity to meet operational needs for a range of companies. So, this market was broken, and the Federal Reserve instituted this facility to try to get that market back in order.

It wasn't very consequential for the municipal market. There was very little direct outstanding municipal commercial paper. This was more of a signaling effect I think that the Federal Reserve was getting involved in the sector. And it was an attempt to keep the yield on existing and new short-term debt low to try to prevent the curve from inverting or further inverting.

The Primary Dealer Credit Facility, I'm not going to read all that, again the main point for that facility was to prevent a liquidity shortage from becoming a default issue.

And then probably the bigger one of the three would be the Money Market Mutual Fund Liquidity Facility. And that one, again the original design wasn't that great. It left out probably the most important thing within municipal money markets, and that was variable rate demand obligations or VRDOs. And the reason I said that's important, those are the majority of the muni money market paper outstanding. Hospitals and states use a lot of these products. So, it was pretty important. The Fed did fix that in a tweak on March 20th. And again, the indirect benefit was to the long end of the market as well. If you have a short-term product that yields as much or more as a 30-year bond, well, why are you going to take the duration risk? You're going to buy the money market type instrument, if it's at the same risk level.

On the next slide we hit the main fiscal response from the CARES Act. That provided a fair amount of help to the municipal sector. It had $150 billion directed toward state and local governments, $10 billion to airport authorities, $120 billion to hospitals, and $25 billion to mass transit. Again, this was primarily to cover COVID-related expenses.

And then we had what was supposed to be the biggest thing, which was the Municipal Liquidity Facility. Here too the original design was a little bit flawed. The population cutoffs were a little bit onerous and would have limited the take-up. But the Fed did come back and revise it on April 27th. So, the Fed can now purchase up to $500 billion in short-term notes from states and US counties with a population of at least 500,000 residents. Initially that was at 2 million. And US cities with a population of at least 250,000 residents. And again, initially that was at 1 million. So, this was significant in broadening out the ability for entities to participate in this.

The Fed is also considering expanding the facility to include governmental entities that issue revenue bonds. So, I think that would be a helpful tweak when and if that happens. So, I'm going through this kind of fast because I want to make sure Ilya has enough time. But the net result of all these programs is that we've seen greatly improved liquidity in the market, especially the money markets. The SIFMA index, which is a seven-day floating-rate index which the VRDOs are based off of, that peaked at 5.2 percent on March 18th. It printed this week at 0.16 percent. So, you can see the Fed has had a significant positive impact on the market.

Overall liquidity out the curve has improved as well. The new issue market has reopened. Initially I said, and I don't know if I have it in my comments here, but initially I said that the market has felt fragile, nonetheless. It's improved since I made those comments. That was a couple, three weeks ago when we put these slides together. I'd say bifurcated is maybe a better description of the market right now where the better quality names I'd say the liquidity is almost back to normal, and then the credits that were challenged coming into this are still seeing a difficult time in terms of liquidity and pricing debt. The reasons for the bifurcation are a multitude to include obviously the economic damage to state and local revenue bases, conflicting signals coming out of Washington about a phase four stimulus bill, also again as I briefly touched on the CARES Act, so far the money has only been for COVID-related expenses and not for lost revenues. The Congressional Budget Office recently estimated that revenue losses for states would be close to $650 billion through fiscal year '22 and that's occurring at a much faster pace than what we saw during the 2000 and 2008 recessions. Yet what they received, if you recall, above on the slide was $150 billion directly. And that's already been spent. And again, just covers COVID expenses. It does nothing for what the CBO is talking about. And that is lost revenues.

BROWN: Hey, Tom, do you mind if I jump in real quick? Quick question.

DEMARCO: Please.

BROWN: So, is this Municipal Liquidity Facility a panacea for the municipal market do you think?

DEMARCO: No. And for a few reasons. Buried in the FAQs to this facility was a statement that each eligible issuer has to provide written certification that it's unable to secure adequate credit accommodations from other banking institutions, and that it's not insolvent. So, I don't think that's the case. I don't think that most muni credits or states -- I think they can access banking institutions and if you had an entity, a state or a city that couldn't, I don't necessarily think they'd want to make that overly public. So, I think that this provision will put a damper on the take-up of the facility. I think the net result, we'll end up seeing a jump in direct bank loans perhaps to states and local governments. Other reasons, I think that we won't see anywhere near that $500 billion take-up would be -- we're still talking about debt after all. And states can only take on so much debt before it's a rating issue. This is especially important for states like Illinois or New Jersey. There can be state constitutional and statutory limits on debt and debt pricing that can get in the way. And also, the pricing on this facility looks punitive to me. So, I think that the facility, unless it's tweaked further, I think you're going to see a fraction of

the $500 billion being taken up. Right now, it looks like it's just meant to be a backstop. I think this is probably disappointing for a number of investors. And that's why I think the next round of stimulus is therefore critical to prevent further bifurcation in the market between the haves and the have-nots. But the problem with the next round of fiscal stimulus is it's fifty-fifty in my estimation. And the timing looks tight to state fiscal year ends.

BROWN: Great. Thank you.

DEMARCO: So, if we transition to the next slide, if there's one saving grace I think for the municipal sector is that the sector is not very leveraged coming into this crisis. On the right-hand side we're looking at total debt outstanding for the municipal sector versus the corporate sector and federal government. You can see that the muni debt outstanding has basically flatlined since the fiscal crisis while corporate debt has more than doubled -- sorry, increased more than 50 percent since 2008, and federal debt has more than doubled. And we continue to grow. So, this is a positive, a very strong positive note coming into the crisis for the sector.

If we transition to the next slide, we have what is the impact to state governments. It varies greatly and the severity depends on how prolonged

and deep the recession proves. There's a lot of guesswork involved. On the right-hand side we're showing some of that guesswork. Moody's had a report out there looking at a baseline or moderate stress scenario. And then they're looking at a severe stress scenario. You can see on the slide what their assumptions were. Obviously on their moderate stress scenario we've already gone over their peak jobless rate a little bit, but we still don't know really what the peak-to-trough GDP decline is going to end up being. But in any event, there's a lot of guesswork going into this.

I would say that the Center on Budget and Public Policy Priorities has estimated that more than a quarter of all state revenues are going to evaporate in the next year because of the pandemic. That's going to create a budget gap that could force states to make some tough choices. Steep cuts to things like public education, health care, and other social services. Which again is why I think it's important to monitor what's happening in Washington in terms of another round of fiscal stimulus.

BROWN: Hey, Tom, do you mind if I jump in for another question?

DEMARCO: Sure.

BROWN: It's a question we often get on the high net worth bond desk. Are there any specific sectors we should be considered or are at the greatest risk? And additionally, is there anything unique as to how this municipal sector behaves in a recession?

DEMARCO: Yes, let me start with the last point because it's possible that some people look at this and they get overly nervous about things. I just want to point out that municipal credit quality is more resilient in a recession compared to other credit products. I'm not saying that the sector won't feel any pain. But recessions invariably affect all credit. But in munis like I say it's resilient. It happens with a lag also. In general, about two to three years. If you recall back Detroit didn't default with the automakers in 2008. It took years later before Detroit actually defaulted.

This time around I think with a hard-and-fast stop in the economy there's probably zero lag for the economically sensitive sectors. But the property tax-backed sector like most local governments are, I think you're going to continue to see a lag effect. But the lag may be shorter than two to three years. It might be a year, year and a half maybe.

I would say in terms of the highest exposure to this would be sectors that include hotel occupancy and tourist-driven special taxes, revenue-backed mass transit, health care, higher education. On a moderate level I'd say state and local governments, highway revenue bonds, tax-backed mass transit, public ports, student housing, airports, toll roads. Lowest exposure I would think would be school districts, water and sewer bonds, public housing. I would also -- my assumption would be that GOs with a manufacturing-concentrated tax base or tax increment financing bond or TIFs as they're sometimes called may see some pressure on the credit. Tourist hubs obviously with weak credit fundamentals like Guam or US Virgin Islands I think probably would see some pressure. And the steep drop in oil prices is obviously going to put pressure on the oil states, on their budgets as well.

BROWN: Great, thanks.

DEMARCO: You're welcome. If we transition to the next slide, slide nine I guess we're at right now, again based off of that Moody's baseline and severe scenario, on the right-hand side we're showing you the range of outcomes that happens from that. And revenue losses as a percent of 2019 general fund revenues. And then the horizontal -- I'm sorry, the vertical red line is the severe scenario median.

On the left-hand side we're showing the largest and smallest impacts under the severe scenario. I won't read those. You can see those for yourself, you have the deck, you can come back and reference that. So, it varies widely I guess would be my main point there.

If we transition to the next slide here we're looking at unemployment claims and you can see on the right-hand side we're looking at the percent of labor force that filed for unemployment by the sum of the five weekly initial claims released around the April peak divided by the labor force in each state. You can see these are big numbers. Again, there's a wide scope but these are significant numbers. I would say though that one message to take away is that claims are declining though. We've already passed peak. They are still a little bit stubbornly high. I'm a little disappointed about that. But we are past peak. And then most states do have large reserves. They do have borrowing capacity. The ability to cut spending and increase tax. And nevertheless, I do think that the magnitude of the fiscal shock still means that shortfalls will probably remain even after promised federal aid is taken into account unless of course it's increased further.

So, if we move to the next slide, again on the right-hand side going off of that baseline scenario we're looking at the fiscal shock as a percent of the general

fund. And then at the bottom in particular is what I want to focus on. The fiscal shock or the baseline shock net of reserves as a percent of each state's general fund. So, from this you see that five states have the reserves they need to absorb the projected baseline level of stress. That's in the dark green. Twelve states have almost the reserves they need to absorb the baseline scenario. Those are the light green. And the red is an unprecedented 21 states which still see budget gaps of 10 percent or more even after using reserves.

BROWN: Hey, Tom, this is a great slide. Before we go to the next one, I have a two-part question. Should we be concerned about a next wave of municipal bankruptcies? And also, how does this sector stack up against let's say the corporate sector?

DEMARCO: Yeah, great question. Maybe we can actually move on to the next slide while I address those questions. Let me just say up front to answer your question is no, not really. At the margin we might see some issuers who were extremely stressed coming into this. I suppose that's possible of course. But the municipal sector as I mentioned, it's resilient to shock. The vast majority are strong credits. If you just look at -- and I probably should have had a -- had I known this question was going to come I would have put a slide in here. If

you just look at the rating distribution of the muni market versus the corporate market, the median muni rating is AA while the median corporate rating is BB. Those are vastly different median ratings. So furthermore, as I just mentioned states have broad fiscal powers. They have the ability to tax. They have the ability to adjust spending for the most part. Most have diverse economies. There are balanced budget requirements. Some budgets are balanced better than others. But they do have balanced budget requirements. And as we pointed out earlier this sector has had declining or flat debt over the past decade.

A couple other points I guess as it pertains to bankruptcy and default. I would just make a few points. This is a big topic and I am not a bankruptcy lawyer, neither is Ilya. But a couple things I would point out. It's true municipal defaults and bankruptcies have become more common in the last decade but they're still quite rare overall. The average five-year municipal default rate since 2009 was 0.16 and over the 1970-2019 period it's 0.09 percent. For corporates respectively it's 6.2 percent and 6.6 percent. So again, big difference.

I would also say that while federal law does allow local governments to seek Chapter 9 bankruptcy protection the filing has to be permitted under state law.

States impose a range of restrictions and qualifying criteria for municipalities attempting to file for Chapter 9. We do have 15 states that have laws on the books granting their municipalities the right for Chapter 9 protection on their own. Quickly, those are Alabama, Arizona, Arkansas, California, Idaho, Kentucky, Minnesota, Missouri, Montana, Nebraska, New York, Oklahoma, South Carolina, Texas, and Washington. All the rest want a say in the process and in some cases require that they receive state approval before they file.

The other point I would make as it pertains to Senator McConnell's kind of off-the-cuff comment, states cannot be Chapter 9 debtors. It would require a totally new federal statute. Yeah, Congress could pass a law allowing states to file Chapter 9 or they could have a new solvency regime for states or for a particular state much like they did for Puerto Rico. But this is highly unlikely in my opinion, especially given the current political makeup of Congress.

Yeah, I think I'll stop there.

BROWN: Well, before you leave, I have one more question. It's probably very appropriate for this topic. Is there anything we can learn from the Puerto Rico bankruptcy?

DEMARCO: Yeah, this comes up a lot. Let me make a broad point and then I'll get into a finer point. The broad point is the Puerto Rico bankruptcy did not happen overnight. This was a slow-moving train wreck. Nobody should have been surprised by this. The same could be said for Detroit. You could see the Detroit default slash bankruptcy coming years in advance. So that's my broad point.

My finer point as it pertains to Puerto Rico, the one thing that was interesting was that US Court of Appeals for the First Circuit ruled that the commonwealth was not required to use special revenues to pay debt service on Puerto Rico Highway and Transportation Authority bonds during the pending bankruptcy proceeding. So, it relegated the automatic stay to the debtor's option.

This is the first time an appellate level court has addressed the issue of whether pledged revenues -- pledged special revenues, excuse me -- must be paid to bondholders. And frankly it's the first time any modern municipal bankruptcy issue has come before an appellate level court. And it countered the special revenue decision from Jefferson County where the county had to use special revenues to pay bondholders. So, I think this came as a shock to I'd say past the market. It didn't come as a shock to Ilya or myself, I can say safely. But special revenue status is great. It can bolster your ultimate

recovery position. But it doesn't insulate the bonds from default or impairment. So, let me reemphasize that more broadly. Legal security is awesome. I like to see it. I like to see it on paper. And it does impact your recovery rate. But it's a weak shield for default when credit fundamentals are poor. So, you should not be investing just on legal security. You should be looking at the credit fundamentals first. That's what drives your defaults. So, I think that ends my section, I believe. And now I'll let Ilya do the deep dive on budgets in the states.

Ilya Perlovsky: Go to the next slide, please. Thank you. So, in the next series of slides I will discuss the revenue impact to state budgets first in the aggregate here on this slide, and then I will do a deeper dive into the five states Tom mentioned earlier.

In terms of the current environment even with the federal support authorized so far, state and local governments face significant longer-term challenges, including the decline in oil prices for energy-dependent states, market volatility that will impact pension fund investment, and overall uncertainty about the duration of the economic crisis.

And as a result, state and local governments are likely to operate with significant structural imbalances and for some it could take years to recover and return to the pre-crisis revenue baseline.

So, the long-term credit implications across all sectors have yet to unfold. And greater visibility on broader impact should become apparent in the coming months. Now to the left the amount of fiscal stress that states may have to absorb is unprecedented. But many are actually prepared for such an eventuality.

The forecast scenario of course one uses depends largely on the length of travel restrictions and business closures currently in place across the country, but which is slowly being lifted. On this slide we illustrate the impact that virus-related spending and the economic hit to revenues from the recession will have on state governments under the more severe recession scenario that Tom mentioned. The stacked bars on the right side show the resources states have available including federal emergency aid and their own reserves, which will leave a shortfall of nearly $200 billion.

The encouraging takeaway is that state governments in the aggregate have never been more prepared for a downturn than they are at this moment.

However, in aggregate states will not be able to avoid severe spending cuts for tax increases without additional support from the federal government. The distribution across different states is broad though. Owing to each state's unique tax and industrial structure. In general, those states relying on more volatile revenue streams, for example oil and gas, beverage taxes, or very progressive forms of personal income taxes, are likely to see greater revenue decline. Likewise states with a heavy concentration in those industries most affected by the shutdown such as tourism and energy see greater impact as well.

The combination of tax structure and industry factors makes for a diverse group of states that will experience the most stress, with Alaska, Louisiana, and New Jersey among the most representative examples. The states that are expected to see the least stress rely on more stable forms of tax revenue such as sales taxes or flat income taxes and have higher concentrations in the health care and education sectors for example. In this cohort we find states such as Pennsylvania and Massachusetts as most representative.

Because states are unlikely to avoid spending cuts, additional knock-on effects are likely to follow. One of the most troubling is the subsequent impact to local governments, most of which rely on state aid for about a third of their

overall budget. If state fiscal stress gets pushed down to the local level it is much more likely that we will experience an uptick in defaults and bankruptcies. Of course, each one of those will have their own localized negative economic impact.

More direct federal assistance is being debated in the Congress and could entail around $1 trillion in aid to state and local governments if the current House bill is something to go by. But at present there are partisan roadblocks to a deal and swift passage of any bill of this size seems unlikely to us.

Why don't we head over to slide 14 and begin with our first state, New York, which has been the epicenter of the Coronavirus pandemic in the US, many know? Before I begin allow me to quickly address the slide you will be viewing here, which will remain up the entire time that I discuss New York issuers. In fact, the slides for the other states will look pretty much the same, only the specifics will be different.

At the top is a table showing the makeup of the state's general revenues, which for New York entails personal income taxes at 63 percent, sales taxes at 21 percent, business taxes at 10 percent, and other revenues at 7 percent. At the bottom of the slide there are two charts that show the impact to the state's

revenues under the baseline and the severe scenario discussed earlier, as well as the preparedness for dealing with the impact. The size of the shortfall if any is also shown.

Also recall that our assumption is that federal aid will cover the COVID-19-related spending needs but will not be sufficient to replace lost revenue. Hence mostly the revenue effects are shown on the individual state slides.

Because most of New York's revenue comes from personal income tax, it is much more susceptible to downturns, as income taxes tend to be more volatile than sales taxes, which is the other major revenue source for most states. As you can see here, New York faces a shortfall of 16 percent of revenues in fiscal '21 under the baseline and 24 percent under the severe scenario.

According to the state's newly enacted budget and financial plan, tax receipts are expected to stay below fiscal '20 levels until fiscal '24, for a total expected decline of 14 percent versus the pre-COVID-19 estimates. The budget tackles two significant hurdles facing the state in the current environment. First, the budget authorizes the state to issue up to $8 billion in short-term notes and

arrange up to $3 billion in credit lines. In fact, the state issued $1 billion of notes just this week in a privately placed transaction.

In addition to short-term borrowing authority made available to the enacted budget, the state has other cash management tools available to it, including adjusting the timing of certain payments and the use of cash balances previously intended for other purposes like capital spending.

Chuck, I think you're on mute.

BROWN: Oh, I'm sorry. Ilya, let me ask a question. I meant to ask this. It sounds like New York state will likely need access to the markets to issue short-term notes. What do you think the likelihood that it'll utilize the Fed's liquidity facility that we previously talked in the webinar?

PERLOVSKY: Yeah. So I'm not going to spend a whole lot of time of course answering this because Tom already went over it but New York is not likely to use it because one, the state will not be able to certify to the Fed that it cannot otherwise obtain banking financing which is a requirement, and two, based on current market pricing New York can borrow at lower rates in the bond market. And in fact, the state's proposed pricing is too punitive for most issuers. And

looking only at the states, New Jersey and Illinois appear to be the only states that can potentially get cheaper financing from the Fed than in the market for short-term notes.

Looking at New York's overall leverage, it's slightly above average for states although it does have a well-funded pension system. The state's combined debt, pension, and retiree health care obligations are approximately 12 percent of GDP compared to the 50-state median of 9 percent. So, 12 percent of GDP for New York. Twelve percent of GDP by the way, of the state's GDP, is tiny compared to the debt-to-GDP ratios of most sovereign governments. Even still less than 4 percent of the state's debt is in the form of GO bonds which are required to be voter-approved by the state constitution. Most New York state debt is in the form of personal income tax revenue bonds and similarly structured bonds backed by sales taxes, which together account for about 80 percent of the total. The dedication of those taxes to pay debt service are available to the state for general purposes only after scheduled debt service set-asides have been made and have historically been more than ample to service the bonds with coverage ratios typically exceeding five times.

For those in attendance wondering how strong five times coverage is, well, it implies that the ability to withstand an annual revenue decline of more than 80

percent. Not just in a month but on an annual basis. The challenge for New York near-term is that by statute state debt is limited to 4 percent of personal income. And debt service is limited to 5 percent of receipt. So, its debt capacity has in fact been narrowing in recent years. And these constraints could pose a problem if the current environment persists.

So that's the state. But what about the city? So, New York City spending cuts there and other measures are expected to balance the current fiscal year, but more significant reductions will be needed for fiscal '21 which has an estimated budget gap of around 7 percent of expenditures.

Beyond immediate revenue declines the city also faces an unprecedented state budget environment. The state budget for the fiscal year that started April 1 allows the government to make rolling adjustment as necessary depending on state revenue. Rather unusual. But this will put additional challenges on the city's budget if state aid payments are deferred or cut altogether.

Fortunately, the city cash was healthy coming into the current period with current reserves nearly $6 billion. The city's outstanding debt is nearly evenly split between GO bonds and bonds issued by the New York City Transitional

Finance Authority, which are secured by personal income taxes and state sales taxes as a backup. TFA debt service coverage has been between eight to nine times over the past five years. Implying that pledged revenue could withstand a 90 percent collapse on an annual basis and debt service would still be covered.

TFA is also insulated for New York bankruptcy risk because the state legislature established TFA as a separate and distinct legal entity from the city and did not grant TFA itself the right to file for bankruptcy.

New York City GO bonds on the other hand are secured by an unlimited property tax all of which is deposited into a fund controlled by the state comptroller and allocated first to pay debt service before any of it goes to the city. Generally speaking, local government GO debt in New York carries strong protection under the state law. And while New York does permit its local governments except for school districts to file for bankruptcy under Chapter 9, the status of GO debt in Chapter 9 has never been tested in New York state. Therefore, the treatment of GO debt in bankruptcy is unclear. The state's preferred approach to dealing with distressed municipalities has been rather via control board. Nassau County being a notable example. Quite a few states have mechanisms in place to ensure school districts have -- or

excuse me -- don't default on their own GO debt. New York's program diverts state aid due to a district and sends it directly to the bond trustee to cover any potential shortfall.

Now a discussion of New York issuers would not be complete without mentioning the MTA. Given the MTA's critical essentiality to the region, I expect the state and city will continue to provide political and financial support to stabilize MTA's severe revenue liquidity decline. However, many of these external sources are one-time in nature and therefore will leave significant out-year budget gaps that will be challenging to budget -- excuse me -- to balance as fare revenues and dedicated taxes only gradually recover. MTA's fiscal 2020 budget gap is $7.5 billion, and it will be balanced with a combination of deficit financing, access to normally restricted taxes, federal grants, FEMA reimbursements, and other resources. Now while these resources will improve MTA's finances in fiscal '20 and '21, out-year budget gaps are in the range of 20 to 25 percent of expenditures. And because 50 percent of MTA's expenditures are labor-related it leaves little room for savings barring layoffs or furloughs. In terms of bondholder security, the transportation revenue bonds, those are the ones currently carrying a A rating with negative outlook. They have a gross revenue pledge paid before operating expenditures that has historically provided coverage on the order of eight to nine times debt service.

Additionally, the debt service payments are set aside monthly before operating expenditures. It is, however, important to point something out here, that if debt service coverage was performed after taking into account operating expenses in order to run the system, historical coverage would be somewhere closer to one time, not the eight to nine times as calculated for the bond indenture.

The transportation revenue bonds are one of three primary credits that TF -- excuse me -- MTA uses to finance its capital program with a revenue derived primarily from transit and commuter system revenue. Further up the capital stack the MTA issues bonds under the Triborough Bridge and Tunnel Authority security with revenue derived from its bridges and tunnels. TBTA also, like many of the highly rated toll authorities in the muni market, maintains significant liquidity, and can sustain operations for more than 18 months while collecting no toll revenue at all. The MTA's highest-rated debt are the dedicated tax on bonds which carry AA ratings and are secured by a mix of taxes on businesses, fuel, general sales, and other fees. Coverage on this debt has historically been in excess of five times.

MTA is prohibited from voluntarily filing a petition for bankruptcy under New York statute, and the state has covenanted not to change the law while MTA

bonds are outstanding. And it's probably also worthwhile to point out that in the muni market under Chapter 9 an involuntary bankruptcy is not allowed. In other words, an issuer cannot be forced to file involuntarily.

BROWN: Hey, Ilya, do you mind if I jump in for another question? So, what you're saying is the bondholder security is quite strong here but how about MTA's liquidity situation and its ability to fund itself in the near term?

PERLOVSKY: Well, it's a timely question. Due to the steep revenue decline MTA's operating cash flows will remain negative. Meaning it will have more cash going out than coming in. However, the overall liquidity position is being supported by $1 billion of drawn credit lines, $4 billion of federal grants, and state legislative authority to issue up to $10 billion of deficit financing bonds. As of the end of February MTA's own internal cash and investments was $3.8 billion. When including external liquidity sources already in hand, MTA can preserve its liquidity position through 2021 on the assumption of course that it maintains market access to issue takeout bonds to redeem its short-term notes, like it recently did.

MTA has $45 billion of debt outstanding, and a significant portion of this at 30 percent is comprised of short-term variable-rate or affordable debt which

introduces various market access and interest rate risks that may be outside of MTA's control. After financing notes on May 15th at the top rate of over 5 percent, upcoming note maturities include $500 million due July 1st and another $1 billion due September 1st. The swaps hedging some of MTA's variable-rate debt had a negative market valuation of $480 million as of September 30th. And the swaps are subject to involuntary termination in the event of for example one reason being MTA gets downgraded below investment-grade. Again, highlighting risks, the MTA may not entirely be in control over.

MTA also has substantial pension and retiree health care obligations because of its labor-intensive nature and a fixed cost associated with servicing debt along with these liabilities represents a formidable 30 percent of operating expenses. That concludes our dive into New York. Let's change the slide and head over to New Jersey.

Thank you. So, New Jersey is New York's neighboring state and has also been disproportionately impacted by the virus for that reason. However, unlike New York, New Jersey is much less prepared to deal with its effects. As shown here, 44 percent of total general revenues, the state relies less on income taxes than New York. But it has much thinner reserve levels and will thus face

a larger shortfall at 22 percent under the baseline or 31 percent under the severe scenario. The state shifted its budget basis for fiscal 2020 to September 30th to allow more time to estimate revenues and identify solutions to the expected budget gap. The Coronavirus crisis will have a more substantial and lasting impact on New Jersey compared to other states because its structural budget position, liquidity reserve, and combined debt and pension liabilities were already weaker than other states.

Nonetheless I expect the state will identify adequate solutions to the budget gap it now faces in fiscals '21 and '22 although many of these will be one-time in nature and will force large structural gaps to open in fiscals '22 and '23 that will be more challenging to balance.

In response to the impending budget and liquidity shocks on March 23rd Governor Murphy proposed $930 billion of fiscal '20 appropriations and directed agencies to cease all nonessential spending. The state will also partially fill the budget gap with its reserves of $1.5 billion although these will be insufficient to balance the full cash need. As a result, the state has requested legislative authority to issue up to $5 billion of GOs to finance the deficit and then receive noteholder approval to extend the upcoming maturity of $1.5 billion of notes due June 30th to September 30th.

However, the note maturity extension and planned deficit borrowing will increase the state's interest cost and leverage position and illustrates how the state's low reserves leave it ill prepared to manage economic cycles.

BROWN: So, Ilya, if I understand you correctly, it sounds like New Jersey will probably be able to bridge its near-term budget gaps it faces with let's say one-time measures. What does this mean for years 2022, '23, and on?

PERLOVSKY: So as a result of the current recession I expect it will take more than three years for New Jersey's revenues to recover to fiscal 2019 levels. By fiscal 2023 revenues will be $6 billion or 13 percent below the level that would have been achieved without the crisis. In a more pessimistic scenario deeper revenue losses over the next two fiscal years leave revenue 20 percent below the pre-Coronavirus potential. A full recovery in this scenario could look like what happened in the wake of the 2008 recession which took seven years for revenues to recover. New Jersey is an annual taxable note borrower and has already drawn down $1.5 billion of a $2 billion privately placed note facility which the noteholders as I've mentioned agreed to extend from June 30th to September 30th in order to help the state manage its liquidity shortfall due to the shifting of the tax filing deadline. But at a high fixed interest cost of 4 percent New Jersey's already high debt position will increase due to its deficit

borrowing plan. Total tax-supported debt for the state is $37 billion, 80 percent of which is appropriation-backed, and 20 percent is GO debt. New Jersey's combined long-term liabilities for debt, unfunded pension, and retiree health care obligations, also known as OPEB, rank third highest in the US at 38 percent of GDP. Compared to a 50-state median of 9 percent and New York at 12 percent. And the required servicing cost associated with these liabilities represents 26 percent of the state's revenue.

The state's various appropriation-backed bonds including the one issued by the Transportation Trust Fund Authority and the Economic Development Authority among others are payable solely from anticipate state payments made pursuant to a contract, lease, or funding agreement subject to annual legislative appropriation. In other words, the legislature must appropriate money in the budget to pay debt service on these bonds each year. There is no standing commitment or legal requirement like there is with GO debt. That is why municipal bond market convention regards appropriation-backed debt as subordinate to GO debt.

That being said, a significant portion of state and municipal debt is secured in this very way. Therefore, if an issuer does not appropriate funds for debt

servicing, highly likely that it would lose market access altogether and be downgraded immediately to below investment-grade.

Similar to New York support for school district debt, New Jersey has several programs that essentially accomplish the same thing. That is divert state aid to local governments in order to fund a shortfall on their GO bond and thereby prevent debt service obligation from competing with other local expenditure priorities.

The strongest credits in New Jersey, for those wondering, in our opinion are the AAA-rated bonds issued by the New Jersey Infrastructure Bank for the state revolving fund as well as New Jersey's counties and the wealthy local governments that serve as bedroom communities for New York City, many of which are natural AAAs.

New Jersey provides strong oversight of its local governments by the way and will not approve a local budget unless adequate funds are set aside to pay debt service. The state does permit local governments to file Chapter 9 only with state approval, but as far as I'm aware there has never been a default on GO debt in New Jersey.

That wraps up New Jersey for us. Let's switch slides and head over to the Lone Star State, shall we? The size and the strength and increasing diversity of the Texas economy is one of its key credit strengths. Texas does not have a personal income tax and relies on a sales tax to fund the bulk of its operations which represent 68 percent of general revenue. Taxes on businesses, energy production, and other revenues encompass the balance. Despite sales taxes being uniquely affected by the current environment the state's sizable reserves allows it to survive both the baseline and severe stress scenarios without incurring a shortfall.

BROWN: Hey, Ilya, let me jump in real quick. And I think this is a good question that a lot of investors have. What is really the direct impact to the state from the recent fall in energy prices?

PERLOVSKY: Well, while it's widely understood that Texas is an energy-dependent state, most people probably don't know that Texas relies on direct energy production taxes for less than 10 percent of general revenue. The state's real GDP totaled nearly $1.7 trillion in 2018, second largest among US states. Notably although real GDP growth nearly slowed to a standstill in 2016 amid the oil price bust, that event, the fact that real GDP did not decline reflects an important shift for Texas. So, while energy is still a key sector, Texas has

diversified into other growth sectors that offset the economic impact of oil price decline. These include the technology, research, services, and health care sectors that help drive cities such as Austin, Dallas, and San Antonio. Texas's financial position is strong, and it maintains a reliable reserve building mechanism defined under a constitutional formula that ensures all severance tax revenues above a certain threshold be set aside in a reserve fund. These reserves are over 25 percent of revenues and allow the state to be able to withstand a severe economic recession without cutting spending or raising taxes unless policy makers choose to do so.

For example, in the wake of the 2008 recession Texas maintained most of its reserves, opting rather to cut spending in order to balance the budget. Bond debt in Texas, bonded debt levels are very low with debt which is mostly in the form of GO bonds just 0.6 percent of state GDP. One of the ways that the state is able to maintain low debt levels is that a great portion of its debt is self-servicing from user charges and does not burden the state's general revenue.

When taken together with the state's unfunded pension and OPEB Texas's total liabilities were 12 percent of GDP, similar to New York state. Also servicing costs for these liabilities were manageable at around 10 percent of revenues.

BROWN: Ilya, some of the webinar participants are probably wondering how safe are Texas school bonds, based on the guarantee provided by the Texas Permanent School Fund, which many people know as PSF. Would you like to address that with us?

PERLOVSKY: Sure. The PSF serves Texas public schools by providing funding for education and guaranteeing debt issued by independent school districts or ISDs and charter schools that meet program standards. The guaranteed bonds of ISDs are unlimited GOs that are secured in the first instance by an unlimited property tax pledge. The amount of charter school debt capacity is limited to charter enrollment as a percent of statewide enrollment which was 5.8 percent as of August 31st, 2019. Currently the program guarantees charter school debt totaling about $1.9 billion. Or a nominal 2.2 percent of total PSF-guaranteed debt. Since the approval of a state constitutional amendment in 1983 which allows the PSF to guarantee debt, there has never been any call on the guarantee because of the high credit quality of Texas school districts and the fund's credit quality parameters. PSF is made up of a diverse mix of assets and includes a largely liquid portion of $34 billion managed by the state board of education and a largely illiquid portion of $12 billion managed by the school land board. The fund's mostly liquid assets provide significant resources

relative to guaranteed debt but do include some equities at 26 percent of the total fund value and some alternative investments at 33 percent. The illiquid assets consist of real estate investments, sovereign and other land and mineral interests. While widely illiquid these assets are considerably more stable and generate income primarily through mineral leases and oil leases. The PSF is limited by an IRS ruling that requires the amount of guaranteed debt to not exceed five times the book value of PSF assets. However, the state imposes a more restrictive cap which currently stands at three and a half times. At the end of fiscal 2019 the $84 billion of guaranteed debt exhausted only 71 percent of the lower state-imposed cap.

As I previously mentioned, the PSF guarantee has never been tapped because of the state's strong oversight of school districts. The size, diversity, and strong credit quality of the underlying school districts' GO debt are in fact an important consideration for the PSF's own AAA credit rating. Local --

BROWN: So, I think what you're -- so I would say -- or you're saying the Texas school bonds with PSF are very safe bonds.

PERLOVSKY: Yes, and I have more to add generally.

BROWN: Sorry.

PERLOVSKY: No, with respect to local GO in Texas. So local governments in Texas, they pledge to levy dedicated property taxes sufficient to repay GO bonds in resolutions authorizing the debt. The pledge automatically creates a protected security interest that remains in force from the time the bonds are issued until they mature, protecting dedicated tax revenues from third party claims. A designated depository holds in trust revenues from the interest and sinking levy, and Texas law prohibits the use of these revenues for purposes other than bond repayments so long as the debt remains outstanding. The office of the attorney general must approve the issuance of most public securities. Once approved the securities are legally incontestable according to state statute. A bondholder can use attorney general's approval as admissible evidence to enforce the terms of GO bonds, a process tested successfully in state Texas courts. State law does authorize local governments to file for bankruptcy although certain special districts require state approval.

Before we move on, let me quickly address the state's public university systems, the University of Texas and Texas A&M, both of which are prolific debt issuers. More so University of Texas. The UT system debt is secured by a lien on a broad slice of systemwide revenue but excludes state appropriation

and other restricted funds. In fiscal 2019 pledged revenue totaled $11 billion while debt service for the current fiscal year is only $600 million. What makes this even more conservative is that approximately $200 million of debt service is funded by the state. And looking at UT's balance sheet, we find that it holds $49 billion of total cash and investments, against total debt of around $11 billion.

At Texas State University, which encompasses A&M system, we find similarly strong debt service coverage metrics provided by a broad-based revenue pledge which generated more than $900 million last year against debt service requirements of around $100 million. The balance sheet while conservative was not quite as strong as UT but did show total cash and investments of a little over $1 billion and total debt of around $1.2 billion. That rounds out Texas. Let's move on to the next slide and talk about California.

Great. So, it seems that whenever the economy is in recession investors start to worry about California, and with good reason based on its prior budget crises. Recall for example the budget gap that opened in 2002 to '03 and 2009 and '10 when the state's accumulated deficit reached more than 20 percent of expenditures. California has significantly less flexibility relative to other states when it comes to budgeting and revenue raising. Approval by two-thirds of

the legislature is required to raise revenues. And in a year when revenues are underperforming the governor does not have the power to order significant spending cuts or to raise revenues without the consent of the legislature. The state also revises revenue forecasts less frequently than other states, giving it less time to catch up in a downturn. Also, the state system of voter initiatives and referenda has resulted in costly expenditure mandates and voter approval is required to issue GO deficit bonds.

The state has a highly progressive personal income tax structure and taxes capital gains at the same rate as other income. As a result, a large portion of the taxes received are paid by a small portion of high income taxpayers which leads to a higher level of revenue volatility relative to other states. And combined with the state's structural inflexibility, volatility of revenues leads to steep downturns in periods of economic decline with fewer available solutions.

BROWN: Hey, Ilya, going into this recession we were told that California had kind of mended its ways and has never been more prepared for a downturn as it is today. Is that really the case?

PERLOVSKY: Well, while worries about California in a recession are not completely misplaced, the ability of the state to tackle the expected deficit this time around may not be as challenging as in 2009 and '10. And it's important to acknowledge some key reasons for that. Since the last recession some important changes have been made to the way budgets are passed and to fiscal discipline. The supermajority requirement for passing the budget was a major contributor to past fiscal crises resulting in late budgets and spiraling deficits. But in 2010 California voters approved Prop 25 which removed the mandate that budgets be approved by a two-thirds vote in the legislature. Now only a simple legislative majority vote on the budget is required. And lawmakers lose pay for every day after June 15 that they wait to approve a spending plan.

Additionally, voters in 2014 passed a constitutional amendment that created a rainy day fund as well as a debt repayment requirement for the state. California is estimated to have ended fiscal 2019 with reserves around $11 billion or 8 percent of expenditures, close to the highest in state history, giving it a significant cushion in the current recession. In fact, this slide here shows that the state would have enough reserves to offset the fiscal shock contemplated in the '21 baseline scenario but would fall largely short by around 3 percent under the more severe scenario.

BROWN: Hey, Ilya, let me jump in one more time. I'm sorry. But in the press, I've read that Governor Newsom of California is projecting about a $54 billion deficit. That is a lot. It seems like a huge problem. How does that square with your comments above, what you just mentioned?

PERLOVSKY: Well, yes. Governor Newsom's May revision includes different revenue estimates than what is used in the baseline and severe scenarios that are shown here. And as you state it is projected to be $54 billion. It's important to point out that our scenarios do not depict the best or the worst case. Either for California or any other state discussed today. And outcomes outside of this range are entirely possible. For California the administration's estimated budget gap is substantially larger than what is implied by looking mainly at revenue effects because it includes gross changes to the budget bottom line. Including spending that is based on current law. But once an actual budget is adopted, spending cuts and deferrals will significantly lower that initial estimate.

While the state's overall reserve levels will be inadequate to cover multiyear budget gaps unlike in past recessions when the state had virtually no reserves

and deep cuts were immediately necessary, California today has a sizable reserve and that will cushion the coming budget crunch.

In any case because of California's costly expenditure mandates under almost any economic scenario one uses budget deficits do persist until at least 2023 and potentially 2024. The legislature will have to use a mix of reserve draws, expenditure cuts, revenue actions, and cost shifting in order to maintain structural balance. And these will have knock-on effects for local governments that rely significantly on state aid. While spreads on California state GO bonds seem wide now on the perception of increased risk, California state GO bond security is quite strong and explicitly carries the second highest claim on state general fund revenues behind funding for public education. The state's lease revenue bonds issued by the state public works board have a weaker security that comes from the obligation of the state legislature to appropriate funds for debt service. California has about $85 billion of debt, the vast majority of which is GO at 87 percent, with only 12 percent appropriation-backed. When taken together with the state's unfunded pension and retiree health care obligations, these liabilities aggregate to still only 14 percent of state GDP. Yet their servicing costs consume an even more manageable 11 percent of revenue.

BROWN: Hey, Ilya, there's a question that a lot of California investors have. And that is we're all aware that the state needs to make some significant cuts, but how will this affect school districts in California that rely heavily on the state aid.

PERLOVSKY: Well, you are correct. One area that investors get concerned about when the state faces fiscal issues is school districts since a lot of their funding comes from the state. As already mentioned though under California constitution funding for public education receives the highest priority claim on state revenues, which unfortunately means that because of the sheer size of the public education budget expenditures tend to be a two-edged sword. First claim on state revenues and first to be deferred if forecasted revenues fail to materialize.

However, Prop 98 ensures a minimum spending level on public education obligates the state to fund school districts at roughly 40 percent of state general fund revenue, although the actual funding formula for individual school districts is a bit more complex. Ultimately state revenue distributed to school districts for public education wind up in school district general funds to support instruction and run operations. However, importantly, these revenues are not pledged to debt service -- excuse me, are not pledged to pay debt service on school district GO bonds. In California GO bonds issued by school

districts are required to be voter-approved. Which means that voters simultaneously approve the specific purpose for which bond proceeds are expended as well as specific dedicated property taxes levied to service the debt.

The obligation of a district to levy the property tax is unconditional, it's unlimited, and it's protected under the state constitutional security for the bond. Plus, the county where the district is situated rather than the district itself collects -- excuse me, levies, collects, and disburses the district property taxes including the portion constitutionally restricted to pay debt service on its GO bond which is paid directly to the bond trustee. This added security feature applies to community college district GOs as well.

And it illustrates how the security for school district GO bonds is delinked from its operations as well as from the amount of state aid that it receives. This structure likely places debt service outside the bankruptcy estate, though whether a school district can even file Chapter 9 in California remains unclear. And the issue has not recently been litigated. Although other types of local governments can file Chapter 9 without state approval.

Now California has many local governments that also issue debt, and some are supported by an economy reliant on tourism. And I have picked San Francisco as an illustrative example for this reason. The city has a very strong financial profile which has greatly benefited from the prior economic expansion and is stronger than at any point in the past decade. Following nine consecutive years with operating surpluses the city's balance sheet is currently at an all-time strong point with reserves at over 40 percent of operating revenue.

Its GO bonds are secured by a voter-approved unlimited property tax pledge where the revenues may be used only for debt service. And outstanding debt was only about 2 percent of the assessed value of property in 2019. Also, most of the city's revenue comes from property taxes, while the citywide sales tax comprised only about 7 percent and hotel taxes about 8 percent, both seemingly manageable exposures for the city.

That ends our discussion of California and some of its issuers. Let's move on to our final slide, everybody's favorite state to discuss, Illinois. So, Illinois has one of the most diverse economies of any state, some people may be surprised to know. And because its general revenues are also well diversified and it has a flat income tax, its revenues do not tend to exhibit a lot of volatility that California. In fact, of the five states presented in these slides Illinois was

expected to have the smallest fiscal shock as a percent of its fiscal 2019 revenue under either scenario. The problem is, which is evident from this slide, that the state has virtually no reserves with which to cushion the blow. Which would equate to a shortfall of over 15 percent under baseline, over 20 percent under the severe scenario.

Illinois GO bonds are trading at levels above those for some high yield corporate bonds, which is somewhat striking since comparable Chicago GOs which are a weaker credit based on several observable metrics trade at lower level. In other words, Illinois is trading like it has already been downgraded. But no rating agency is currently reviewing the state for an immediate rating action. Though we do concede that the risk of a downgrade below investment-grade does remain somewhat high by year end.

Proceeds will be used -- excuse me. Last week, Illinois came to market with a large GO deal that carries a top yield of 5.85 percent and investor demand for this debt was pretty strong. Proceeds will be used to fund pension plan contributions and capital projects. But the state is still anticipating issuing $1.2 billion of notes soon for cash flow management purposes, again mostly to do with the shifting of the tax filing deadline. And it's exploring tapping the Fed's liquidity facility.

BROWN: Hey, Ilya, before we -- go ahead, I'm sorry.

PERLOVSKY: Yeah, go ahead.

BROWN: I was going to ask a question. Before we go on -- and it was brought up earlier but not in detail. Could you address Senator McConnell's recent comments on state bankruptcy given that they were probably pointed to the Illinois situation?

PERLOVSKY: Well, as Tom already mentioned, these statements circulated in the press about the bankruptcy are more about political brinkmanship in light of ongoing congressional debate to extend further federal aid to the states rather than actual recommended policy prescriptions in our view. Senator McConnell's comments came at a key moment in time which has been not very well publicized in the press. Specifically, within one week of the Illinois state president Don Harmon's letter to the state congressional delegation requesting that the federal government provide the state with more than $40 billion of supplementary relief including $10 billion of cash or loan to help address the state's pension liabilities. Of course, such state-specific measures are unlikely given the precedent it would inevitably set for other states to seek

similar largesse. Anyway, from our vantage point there appears to be insurmountable hurdles before states are able to access a Chapter 9-like venue as Tom had already alluded to, including legislative hurdles because of lack of congressional support and constitutional hurdles due to violation of the Tenth Amendment. While Illinois will not be able to fix its pension problems without drastic reform, which needs a state constitutional amendment and which probably will not happen soon, that does not mean that the state is about to default on its GO debt in the near future. That being said, let's look at Illinois a bit more closely.

On April 15 Illinois revised down its current fiscal year revenue estimate by $2.2 billion or about 5.5 percent below the pre-pandemic forecast and this includes an expected 15 percent upward revision for federal funds. The state also lowered its fiscal '21 projected revenue by $4.6 billion or down 11 percent from the prior forecast. But this still assumes that voters pass a constitutional amendment implementing a progressive income tax system in November.

Voter approval, which is far from assured by the way, would add some revenue volatility but would greatly improve the state's ability to respond to pension contributions and other funding needs. Even if voters reject the amendment the state will still have levers to pull including implementing

aggressive spending reductions, increasing the existing flat tax on income, or applying the state sales tax to include services.

As it currently stands, assuming voters approve the amendment the state estimates that the budget gap for fiscal '21 will still exceed $6 billion or 14 percent of previously anticipated revenue. The important thing to keep in mind here is that the revenue adjustment was triggered by changing economic expectations rather than actual revenue trend information as the state has yet to release a substantial update coincident with the ongoing stay-at-home period. Eventual tax revenue impacts could either be more benign or more severe than the state's revised forecast and what we've devised in the stress scenario here. Even without the pandemic-induced disruption growth in fixed costs from pension contributions will continue to be the main source of Illinois's financial weakness relative to other states.

If Illinois had set aside the pension contributions required to keep its liability from growing the fixed cost for pension retiree health care and debt service would represent 36 percent of its revenues. More than four times the median for US states. Just the pension contributions indicated by law for the state even without factoring in the additional amount needed to keep the liability stable creates fiscal pressure, and may help explain why the state has

struggled to enact a balanced operating budget and has maintained a backlog of bills, in effect borrowing from private and public sector entities awaiting state payment.

The current bill backlog is around $8 billion and will likely increase because of the additional challenges posed by the pandemic. Under the state law Illinois accrues interest on some of these bills at annual rates of 9 or 12 percent. To manage the near-term revenue, ask the state plans to issue $1.2 billion of notes, the first such borrowing since 2010. The notes will add to the state's fiscal pressure next fiscal year while lessening it in the current fiscal year.

Illinois's cash flow notes are GOs of the state by the way, authorized by the state constitution's debt clause and the state's short-term borrowing act. This law provides for an appropriation of any money in the state treasury in the amount needed to pay interest and retire the note. The state's available resources in this regard include nonoperating fund groups that carry balances far exceeding the note principal amount.

BROWN: Hey, Ilya. With all the state's fiscal challenges I think many on this call may be wondering what does the state's liquidity picture actually look like. In other words, are they about to run out of money?

PERLOVSKY: Well, many people may be surprised to know that the state does maintain substantial liquidity in its nonoperating funds which can offset the operating fund liquidity stress that creates the accounts payable backlog that I discussed. Certainly, enough to retire short-term borrowing. Cash held across all the state's funds was over $11 billion as of March 31st. However, some of the state's nonoperating cash is not available to be borrowed for general operating needs, and for good reason, such as cash held in the state's GO bond retirement and interest accounts which had a balance of $1.2 billion on April 1. Illinois is a moderately high debt state. But the state's bonded debt is dwarfed by long-term liabilities associated with pension plans.

State public -- excuse me, state debt plus its unfunded pension and OPEB liabilities are about 38 percent of its GDP, similar to New Jersey, but compared to 14 percent in California and 12 percent in New York. Illinois's tax-supported debt consists primarily of GO bonds at 83 percent of total but also includes debt backed by state sales taxes called Build Illinois bonds and subject to appropriation bonds issued primarily by the Metropolitan Pier and Exposition Authority.

The legal security for the state's GO bonds is quite strong and is established under the general obligation bond act which provides for an irrevocable and

continuing appropriation of state funds for payment, whether or not there is a budget in place. The Build Illinois bonds that are backed by state sales taxes are supported by similar continuing appropriation language in their authorizing statute. The Met Pier bonds on the other hand, the debt service is subject to annual legislative appropriation.

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municipal market can be affected by adverse tax, legislative, or political changes, and by the financial condition of the issuers of municipal securities. High-yield/non-investment-grade bonds involve greater price volatility and risk of default than investment-grade bonds.

Indexes are unmanaged. It is not possible to invest directly in an index.

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