

TRANSCRIPT

Bond Pricing Study 2022 – Pricing out the Competition

Presenters: Richard Carter and Stephen Traugott

Richard Carter: Welcome, everybody. My name is Richard Carter. I'm the vice president of Fixed Income Individual Securities at Fidelity Personal Investing joined here with my colleague Stephen Traugott, director of Fixed Income as well.

And today, we're going to be focusing on a discussion around bond pricing and why we feel, it's a very narrow subject, but it's of great importance to us to ensure that our prices are very competitive. We invest a lot of money and time in our whole experience, the tools, and the service, et cetera, but to get you, the customer, the best bond price we can and to make it in turn a very good yield for you. Bond prices and yields are inversely related as we'll be discussing. That's one of our key priorities.

So without further ado, one of the things we want to do today as we talk about the bond market is look at the bond market as a whole. What makes it interesting and unique? And from that perspective and that context, it can help us understand what drives the prices that you see. And with that, we come on to the trading costs themselves. And we've done some work there as alluded to with a quite interesting study that shows how aggressive pricing is in the face of our competitors.

So we're going to begin with a quick overview of the bond market. And I think it is important. It does play a role in determining how prices are derived and the types of prices you see on the fidelity.com. We're going to start with a look at the composition of the bond market. Steve will give us some sense of the size of it, and the type of trading is done, and how it varies from one area of the market to the next. So with that, Steve, maybe you could kick us off today.

I think one way to go with this is that I think most of our audience might feel more familiar with the stock market and the bond market might be a little bit less well known to them. Of course, most people in investing, who have had investing experience know of the stock market being a centralized exchange-based experience, and the venue. Generally, stocks are fairly actively traded, they're transparency, the price is transparent, and the stocks are fairly liquid.

On the other hand, we know that the bond market is fairly fragmented. There's many types of bond markets and the bonds trade over the counter. In what is essentially a negotiated market. So perhaps you could kick us off with some of these topics and show us some of the stats behind it.

Stephen Traugott: Sure. Thanks, Richard. So yes, like you mentioned, most customers I think are understanding of the stock market and how it functions. When we look at the stock market, we have a number of companies. We have shares of those companies publicly traded on exchanges. We can find those exchanges most places. Fidelity.com has that information available.

However, when we look at the bond market, we have a number of different segments of the bond market. So we see here debt securities issued by corporations. We have governments, government agencies, municipalities. So a lot of different entities that are involved in the bond market. Overall, the size of the stock market is, we're somewhat, limited to the size of the shares that you have in each of the companies. Whereas the bond market, we have both relatively small and large debt instruments. You can have a small municipality who has bonds compared to, say, the US government, which issues a large number of bonds as we'll see later.

Trading marketplace for the stock market centralized. You have the New York Stock Exchange. You have NASDAQ, very clear place where those are available. Whereas in the bond market side, we have more of a fragmented market. As Richard mentioned, the bonds trade over the counter, which really

just means they're traded on a negotiated market. So when we look at how that's handled, it's going to be a little bit different and we'll touch on that a little bit later as well.

And then lastly, transparency. When we look at transparency you can get a stock quote anywhere. There's lots of research available for different companies. You can find that once again on fidelity.com. However, on the bond market, it can vary quite significantly. If you have large issuers, say once again, the US Treasury or something like that, we would see some varying in the degree of liquidity there. So let's look at some specific numbers and an example to get an idea how this looks.

So overall the size of the markets fairly similar. Bond market now at about 53.6 trillion. Stock market about 49 trillion. But that's kind of where the similarities end. We start seeing the differences now as we go to the daily trading volume. Daily trading volume on the bond market about four times larger than that of the stock market. Big difference in the number of securities.

So the stock market, you have about 6,300 or so different companies listed on the exchanges. However, on the bond market, we're looking at about 1.3 or so million different individual CUSIPS. And so that's different issue. It could be different issuers and within those issuers different bonds that they have available. So big difference there.

So how does that manifest itself in an example? So here we have Ford, very popular, well known company stock market capitalization about 69 billion. Bond market, they have about 115 billion in outstanding debt. And then the big difference here once again, one ticker. You're looking for Ford it's just the F-ticker, and then as opposed to bond side, you have about 490 different Ford bonds outstanding. So a big difference in how that looks.

So if we dive a little bit deeper into just the bond market, we have a chart here about daily trading volume and the number of CUSIPS outstanding. So on the left, we show a scale of the daily trading volume. On the right, we have our scale of the number of CUSIPS outstanding.

So first the thing that jumps out, the size of the Treasury market, about 622 billion in daily trading volume. Largest of all the fixed income markets. Next would be mortgage backed securities, about 213 billion. The corporate market, about 39 billion and then we get down to the municipal market, about \$17 billion, and the government agency market, about 3 billion.

However, when we look at the number of securities, we see a much different story, where treasuries there's only about 1,000 outstanding CUSIPS available to choose from that are traded in that 622 billion daily. On the municipal side, you have over or just about a million different individual CUSIPS. So a lot of different variances, and different types of bonds, different municipalities from different states that you're going to see there. So quite a different variety of markets. So we're now going to dig a little bit deeper into how these features of the bond market can affect the pricing. Richard, you're on mute.

Richard Carter: Thanks to you. Sorry. Yeah, I know especially, I mean, what a huge variance there right between that liquidity in the Treasury market and the liquidity of the municipal market with a million different bonds to trade and to potentially be investible. So with that in mind, we're going to break this down into key areas here of what does it mean to say a bond's price?

And we're going to start off with the foundation of what we'll call, valuation pricing. This has to do with the pricing of every single bond that one of our customers might in their accounts, whether it has recently traded or not. And then we're going to turn our attention to more active markets, the corporate market, and the less liquid municipal market. But really look here at live, live trading, live pricing, and see how that is determined. And then we'll adjunct to

that, what happens when there is no liquidity or pricing? That's when we cover our request for big quote.

So let's jump ahead there into the sort of foundation which is this valuation pricing. And we start off here with an example from a statement. Most of our customers will be familiar with this. This is a monthly statement example and it focuses on the bond section. And we've highlighted in green that some of the bond prices for the end of that month. And you can see here, for example Ford credit company that is priced at 99.22% that's potential par, and it is the price as of that evening. And you can look down the column, you see similar prices for the treasuries and any other bonds the customer may own.

Now, what's key about this is the universality of it, if you like. It may well be that this particular company, Ford or the Apple bond just below it, it may or it may not have traded that day. But we still need to provide a price. Customers rely on it, our tools rely on it, and you can't just say that this particular bond didn't trade that for no price. So what we have when it comes to statements is a valuation price that's determined by third parties. It's not a price that we conjure up.

But the companies like Refinitiv, or Ice, or S&P help contribute to our creation of a valuation price. And so for us it's a third party of the gentleman. If there has been no trading, these companies will assess a price based upon peer pricing of other bonds that look very similar. They're of a similar maturity and so forth. And that is a price that is generated nightly.

So for example, you may also see it on fidelity.com when you come to your position page. So on the portfolio summary if you dive down into a particular account and look at the positions, what you'll see there listed again is a very comprehensive pricing of every single bond that you own. And again, it may well be that one or two of those bonds are not actively in the market today

being traded, but we have at least being able to use the same evaluation pricing to determine a price from these third parties for your viewing.

And so again, when you look at this page, all those stocks, the stock positions will be of that day. Intraday they'll be changing. This price here, the last price, is set and it's really an the valuation of the night before. And then the changes that you see to the right are the changes from the night before that. So again, this is updated daily or nightly and it aligns to the statement price, which is obviously on a monthly basis.

So that was historical pricing. I'm going to turn now back to Steve, if you would, and help us transition to looking at more live pricing, and how the market comes up with those prices, and how we derive those prices for corporate bonds and municipal bonds.

Stephen Traugott: So as we transition from the nightly pricing to more live pricing, it's important to understand where does fidelity get the prices that we show on our website. The live prices. So I think we'll start over here on the right hand side of this slide. And bonds are owned by hundreds of different dealers. Many of which you might recognize, whether it's Goldman Sachs, Morgan Stanley, RBC, or it could be smaller, regional, or boutique type firms that hold positions as well.

So these dealers participate in electronic trading platforms known as ATSEs. So here in the light blue, we have trade web direct, ICE bond point, ICE TMC, and our own inventory, which we get from Fidelity capital markets. So these dealers provide their inventory to the ATSEs, the ATSEs is then aggregate the inventory and send that inventory to fidelity.com.

Now before it gets there, we do apply certain inventory screeners to make sure that customers are getting prices and put in offerings that they're able to execute on. So we only accept firm and executable prices. For example, we

don't have structured products currently in the secondary market at this time. So we want to just make sure that the positions that are showing online are things that the customers are going to be interested in and able to execute on.

Once it goes through this screening process, it then gets to fidelity.com, and those are the prices that we then show, and you see as a customer on the website. So each day we have, at any given time, about 75,000 different unique bond CUSIPS available on fidelity.com. And we have about 120,000 different total offerings, meaning some of the CUSIPS have depth of book to them, meaning multiple offerings or bids that dealers are providing for the same CUSIP number.

So while we discussed earlier, there's about 1.3 or so million different CUSIPS available in the marketplace. All of those don't trade on a given day, and we'll discuss that a little bit more in each of the markets as we go forward. But we look at about 120,000 different available prices for different bonds on a given daily basis on fidelity.com.

Richard Carter: Well that looks great, Steve. So maybe we can just look at some examples, right? Just the sort of, it makes it tangible for folks.

Stephen Traugott: Absolutely. So let's start with the corporate market. So here we have a listing of two different corporate bonds available on fidelity.com website. Many of you may be familiar with the search results page we have here. The different prices that are available. So first we have in the highlighted area on the left, we have our bid price. So the price that a customer would be able to sell if they were looking to sell their bond.

Next, we have the ask price or the price that a customer would be able to purchase the bond at. And then if we look a little bit further over, we have our depth to book for both of these positions that's available and the third-party price that Richard was discussing earlier that we show on a statement and on

your positions page is also available here to look at. So it makes for a good comparison to see, well, how close for example is that third party price to where the bond is actually trading currently in the market.

So as we dig a little bit deeper into our bond live pricing, we have two more examples. So on the top we have a Johnson & Johnson bond. Very familiar company. Triple-a rated by both Moody's and S&P. Currently, there is a bid price available at 95.869. So once again, that's the price you could sell at. The offer price or ask price at 96.033. It's the price that you'd be able to buy at and the current yield to worst, 3.698.

Comparatively when we look at a Carnival corporate bond, so this is rated by Moody's as B2B minus. So this is a high yield bond. We see a bid price of 79.582, and an ask price of 81.750, which equates to a yield to worst on this of 11.149. So the big difference here is going to be in the risk that you'd be taking on as an investor to look at each of these bonds or consider these bonds for your portfolio. And the risk is creating the difference in the yield. So dealers need to entice buyers for a high yield bond with additional yield to have them become interested in purchasing that.

The other key difference here we can see is the spread. So the spread is the difference between the bid price on a bond and the ask price. So the spread on the Johnson & Johnson bond very small, only about 0.2 in the price. So not much difference between the bid and ask. Whereas when we start looking at the Carnival bond, we're almost a little over two points difference between the bid and ask price.

So something to consider when you're purchasing a bond is, well, if I do need to sell that bond, how easy would it be to sell that position? In this case, it would be, you don't need to make up as much on the bid price side, on the triple-a bond, compared to say a high yield bond.

So as we continue to dig into corporate bonds, we see our depth of book. This is also a key difference, I think, between, as we'll see, between municipal bonds and corporate bonds as we'll discuss later. But also, even between certain corporate bonds, say, like this. Once again, looking at our Johnson & Johnson bond, we have eight different dealer offerings with different prices, different quantities available. And then, nine different dealers are willing to purchase that security. Once again, different quantities and different prices. So plenty of different options that are available.

Now, on the search results page, we're only going to show you the best price available. However, when we dig into the depth of book here, you can see if you had a quantity that perhaps wasn't fulfilled by the best price available. So here we have the best price at 100.79 for 150 bonds. If you wanted to purchase more than 150 bonds, for example, there are prices and availability on this particular CUSIPS for you to do so. The same goes for the bid side. If you were looking to sell more than 200 bonds, you have the ability to do that on fidelity.com, just at a different price perhaps than what the best price is available.

Richard Carter: Well, it's great Steve. So do all bonds have this type of view?

Stephen Traugott: So not every bond is going to have depth of book. Some will have more than others. Usually it depends on a number of different factors like the number of bonds outstanding for that, the amount of liquidity in that particular issue. Usually you see higher quality bonds or bigger issues are going to have potentially more depth of book. Smaller issues will have a little bit less liquidity and potentially less step the book, or it's possible just have no depth of book at all.

Richard Carter: Right. OK.

Stephen Traugott: So another way to look at pricing is by looking at recent trades. So we kind of looked at the valuation pricing initially that Richard went over on the statements and in your positions page. We looked at the live pricing that you're going to have on fidelity.com. Now, this is a bit of a look at both historical and current pricing that's available in the entire marketplace.

So when we look at recent trades, when we post those on fidelity.com, those are going to be trades not only of fidelity customers, but every trade in the marketplace that's occurring for that particular CUSIP. So we look here and see a bit of a correlation. We have the equity chart on the left for AMC. We have the same type of recent trade charting that we have available on fidelity.com from a particular bond available from AMC on the right.

And you can see that the trend line of both of these bonds and the equity chart is very similar. As AMC price started to come down, the bond price also started to come down. And this occurs because the correlation a lot of times between high yield bonds, between the equity price, and the price of the bond is going to be similar. And you can see this trend by looking at some of these recent trades and where trading has happened in the marketplace. It also helps you understand the live price and how well the live price on fidelity.com correlates to the most recent trades done in that security.

So as we dig a little bit deeper into that, we see have here a Bed Bath and Beyond bond. And really just looking on the left, we have the chart done. Looking at it from a yield perspective and on the right, we see it from a price perspective. So both of these you can toggle between each of them on fidelity.com when you're looking, and this really just helps understand the correlation between price and yield. So as bond yields go up, as we see on the left the price, on the right is going to start to come down. And the inverse is true as well. If prices begin to go up the yield on the bond is going to start to come down.

Richard Carter: That's great, Steve. Very interesting. Yes, so the connection again between price and yield, right? We just toggle back and forth between these two jobs at the same security. Well that was great. So there's a lot of information there on corporate bonds, maybe we could just spend a few minutes talking about the municipal bond market.

I remember from your earlier slide, right, it's something like, almost a quarter of a million different corporate bonds, but over a million municipal bonds. And I do know from other reading that there's something like 65,000 different municipal issuers in the United States. So this is a very thinly traded market. How do we make sense of that for again, purchasing or evaluating and then purchasing on the website?

Stephen Traugott: So fidelity offers all of the same, or pretty much all of the same tools for municipal bonds as we offer for corporate bonds. However, there are going to be some key differences in the markets and what we're going to see as an investor on fidelity.com for municipal bonds. So here we have, once again, our search results page. This is a live listing of offerings for municipal bonds, and a couple of things jump out right away.

On the bid side, we see highlighted there, there's no bids available for any of these positions on fidelity.com as opposed to, say, the Johnson & Johnson bond. We looked earlier and there were, I think, nine dealers who were willing to provide bid prices on there. In addition to that, we see only one of the bonds here in the list. The North Dakota State Housing Finance Agency has depth of book.

So whereas on the corporate side you will see a lot of the positions there with some sort of depth of book as we discuss, on the municipal side, we're not going to see nearly as much depth of book. So this has two different offerings on this particular bond. 120 bonds at the best price there at 91.828 and then 40 bonds available at 92.834.

So reasoning behind this is you'll see because of the way municipal bonds are issued, an issuer will come out and have a particular new issue offering. They'll have a range of maturities that they will offer, say, from 2023 to 2040 and then they'll split the bonds amongst those different maturities. So that creates a number of different CUSIPS as we discussed earlier, and also creates a number of different types of bonds and formats that you might have for each individual offering.

So as we dig into a little bit deeper, we go back into our recent trades for municipal bonds. This is another key difference you're going to see between the corporate market and the municipal market. So here we have our Santa Clara County California bond. In the top left, we can see that the bond is being offered at 102.936. So that's where we could buy it as a customer. However, there's no bid price available currently, which is not too surprising. We also noticed here on the right is going to be our key difference.

Now, as we saw with the earlier charting between Johnson & Johnson, AMC, Bed Bath & Beyond, there are lots of trades happening over the course of days, weeks, months. Here however, we can see that there's only basically one trade, a sell and a buy, between customers going on each month for the past few months. So much different than what we had seen in the other market. So the pricing can be a little bit more difficult to come about and understand. But it does follow the pricing that we've seen in yield increases that we've seen over the last few months in the bond market.

So, as we go into, as Richard mentioned earlier, it can be a little bit more difficult to find a price. What if a price is not available, for example, on a bond that you as a customer are looking to sell? Well, we provide you with the ability to do that through our request for bid quote capability. So we have in a top left, you can just go into your positions page and click on that Sell button, if you decide you're interested in selling. It's going to bring you to our new trade

ticket experience which will allow you to just enter the quantity, account quantity, and submit your bid request off to the dealers. Now, this is also going to go.

We talked about our dealers earlier and how there's hundreds of different dealers through the ATSEs. When you request a bid through Fidelity, it's going out to that same network of dealers and allowing those dealers to put a price on the position that you're looking to sell. Now, the benefit to you as a customer is that you have hundreds of different dealers competing to put and give you the best price possible on the bond you're looking to sell. So an advantage there to make sure you're getting the best price possible when you're, even if there's not a price that's available on fidelity.com.

Richard Carter: Sorry, to interrupt you. But this is like a process of asking them, right? So how long does it take to get that response?

Stephen Traugott: Correct. So on the ticket, we will display how long it's going to take. So for corporates, agencies, CDs, you're going to have 15 minutes with the response. So we give dealers 15 minutes to provide a quote and then we send you back to the best of those dealer quotes, back to you as a customer. For municipal bonds, we give dealers an hour to do that. The market's a little bit more difficult to deal with. So we do give dealers a little bit more time to do that. So after that hour is when you get the price back.

Now, we do have a couple of different options for you as far as how you would like to receive the price back. So you can get that price back either by email or by text alert. So within the last year, we have updated the ability to get a text which was something we heard from customers, which is a lot easier. I know that email is becoming somewhat antiquated for some and everyone just does everything over text these days. So now you can get the response via text.

If you do get a response via email, it will have a link in there that will send you directly to the trade ticket. If you have received a text, it will come back and have a link in it as well, which will send you to our bid request dashboard, which we will show right here. So the dashboard is a great place for customers to kind of aggregate all the different bid requests that they've had in the past and see the pricing as they're coming back.

So you just select the account that you're interested in looking at. You have the requests there. It gives you the description, the CUSIP. How many bonds you requested a bid for? It comes back with the best price available, which you can see, for example, in the First National Bank CD was 98.12. It tells you how long that bid is good for. So that's the amount of time that you have to enter the order. This is going to be the time, during that time, most likely dealers are going to fill the order and respect the price that they had sent back.

And then lastly, in a status page, you can see either the bid was responded, or it will also give you that response expected time. So as we discussed, the 15 minutes for taxable bonds and then the hour for municipal bonds. So it's easy to see. You can also place an order here directly once you get the bid price back, which will bring you to the trade ticket. If you requested a bid yesterday and wanted to try again today, you can request the bid again the same security in that action column as well. So very easy to use and aggregates all the pricing there for you in one spot.

Richard Carter: So obviously, thanks so much. That was really good section there. I think covering everything from the live pricing, and, as you say, how much depth there is in a lot of corporate bonds, and then the bid wanted process. I can see here it's labeled for things like municipal bonds or CDs. They've had customers investing in CDs. These are hard to see the two-way markets and this unwanted process, leveraging all the dealers we have contacts with is a really great way to get that liquidity when people need it.

So let's move on and look at the, coming towards the final section of our presentation today and that is understanding bond costs. I mean, trading costs for bonds is a key component that goes into the end price and, of course, as these charts were showing that in turn leads to the yield that you'll be investing in able to invest in as an investor. And so in order to do that, we want to look at this notion of, to what degree can we understand what different dealers are charging for the bond transactions.

And moving on from that, it isn't that easy, but what we've done recently with a party called Corporate Insight that can shed some interesting light on that. And then in turn, the magnitude of these trading costs and why we, fidelity, believe that it's very important to keep those low. So maybe, Stephen, you could just kick this off for us and maybe, if I could ask you how to set the stage for us in terms of how bonds are priced, and why is it that it's difficult for the average investor to determine how much companies are charging for bond transactions?

Stephen Traugott: Thanks, Richard. So generally, dealers are going to use two different types of pricing models. So here at Fidelity we use what we call transparent pricing and then other dealers can use more of a bundled approach to their pricing.

So in our approach, which you can see here on path A, we show the dealer prices exactly as they come in from the ATS. So kind of as we discussed earlier, if you have a dealer who's showing a bond through one of the aggregators, could be somebody from Morgan Stanley trader showing that bond on one of the aggregators, that bond is now on fidelity. Whatever price the Morgan Stanley trader is showing the bond on the aggregator is the price that you are seeing on fidelity.com.

When you go to enter in order for that particular bond, you will see that we add \$1 per bond markup to the transaction. And that's disclosed on the

trading ticket. And so if for example, the price of the bond was showing at 100.5 and you went and bought 10 bonds, the price that you would actually pay is 100.6 for that particular bond. So that's our path and that's the way we do it here at Fidelity as far as \$1 per bond.

Now, other dealers use the bundled approach, as we kind of mentioned. And so on that path, you have the same dealer, say at Morgan Stanley, but then what happens is when they show it to a customer, they're going to add an additional undisclosed markup to that particular bond and then show that particular price. So it could be a much different price. It's not always the same.

Whereas fidelity we charge \$1 per bond¹ no matter what the maturity is or the time frame. Inside of a year, we actually charge a little bit less and have a maximum of \$50. But outside of that, it could be almost any price that the dealer is charging you on that particular bond position.

So an example of this can be seen as we look at recent trades. So this is a particular Loews company bond. We were able to go back and look at a fidelity customer trade, which is the bottom there, kind of in the blue section. One of our customers purchased a bond. It was shown on fidelity.com, 95.371. That dealer-to-dealer trade. And then the customer went and purchased it at 95.471. So that's the dollar per bond difference that you're seeing. That path A. We went through a transparent pricing with fidelity.

However, when we look at another trade a few days later by another broker dealer that was shown on the recent trades, we see a much different story. The dealer-to-dealer trade, 94.616. However, the markup between that and the customer buy ends up being 96.035. So a difference of \$14.19 per bond compared to the dollar per bond that you see at Fidelity. So much bigger difference on this. So Richard, I don't know if you want to just talk a little bit more about this and what a recent study showed, done by Fidelity, when comparing fidelity to other brokers.

Richard Carter: Yes, thanks Steve. That's great. I appreciate it. Yes, so as you were saying, you were looking here at some of the footprints in the market for what Fidelity's customers were paying, the dollar per bond, and then some evidence that we saw from other customers trading at other firms. What they were paying.

And absolutely what we've done in just the last few months is a new study that's actually out on our website now created for us, by a company called Corporate Insight.² And what we're trying to get at here is the pre-trade cost differential. Pricing differential. And so what they did for us was to look at thousands and thousands of observations across Fidelity's offering of corporate bonds and municipal bonds and compare them to some of our key competitors.

And what they were doing, as you mentioned earlier, Steve, there's so many bonds out there and it's not necessarily given that bonds that we're offering are also offered by a competing firm at any one point in time. But what they were looking for were these matches. And so when there was a match of a bond offered at Fidelity and one or the other three firms in the study, then they were using that data to say, OK, so now we have something to go on. We have the same CUSIP at all venues or one or two of these venues. How does the price compare in terms of what the customer will pay?

And as you are saying, most or all of these bonds actually created a bundled price. So it was the channel diagram that showed that the cost of the trade was bundled inside the price. And so when we did the comparison here, Corporate Inside added our dollar per bond, which is the Fidelity charge, the Fidelity markup and compared the two. So we're really on an apples to apples basis.

And I what we are able to show from this is a very high level. Look at all the data just to give you the sort of visual of what it showed was quite encouraging

to us. Being competitive as we are that our prices are a very good value versus the competition.

And I'll just explain this. Again, each dot represents a comparison of a Fidelity bond offered and a competing firm offering the same bond at the same time. And the x-axis shows the maturities of these bonds going out to 2060 and the y-axis shows the cost differential.

So anything above the line would indicate that the competing firm was more expensive than Fidelity and evidence below the x-axis cases where the Fidelity price was more expensive than the competing firm. And so the fact that they're clustered as they are is encouraging to us that it looks to be, just eyeballing, there's somewhere between a 7, shall we say, 7 to 20 or so dollars of improved price per bond at Fidelity.

Now, we also ask them to evaluate the frequency of this observation and to try and boil up these numbers. So they're a bit more digestible. And so we can see here from this page the three key takeaways. Firstly, that when you average it out across these firms, we were more competitive, on like for like basis, 97% of the time. And then quantifying the amount of differential of our pricing versus the competition, it was on average \$15 per bond. More favorable to be buying that bond at Fidelity. Again, this was done over 27,000 different observations of corporate or municipal bonds.

There's a slight variance. You can see on the second chart hit lower left between corporates and munis. We actually found; the evidence found a slightly greater pricing differential in the corporate area than the municipal bond market for us. So more favorable to be buying the corporates than the municipals, but both fairly wide differential.

And then the third point, which people may have seen earlier when I showed the first chart was that the degree of differential expands as time goes on. So

that the longer the term, there's a slight increase in the amount of differential over time versus the very short maturities that get much more competitive.

We actually posted this on our website. People may have already seen this page. But this is a summary, and you can see it in the breadcrumbs top left from our investment products fixed income page. And there's a link here to the detailed page, which I just showed prior from on this page. And then over to the right here, we're showing a viewpoint. Some people would like to read our learning center viewpoints. We have that available for more extensive discussion on the pricing study and what it showed.

Finally, people can also confirm this information through a trade confirmation. This is now post straight. So in the Fidelity case, you can see here to the left, we're showing a train ticket and it looks similar to the bid request slide that Steve showed earlier. So in fidelity.com, if we're going to make a trade, you can see here we post the price that the one bond here purchased, \$1 the bond. The markup is 0.1% and that gives you the final cost before you click Trade.

Equally and similarly, post rate to the right, the trade confirmation now shows this information. And this was something that actually is a regulatory requirement for broker dealers to display. So even if they're not showing you the cost pre-trade, you should be able to find it in the trade confirmation as we do here. You can see again another example where the markup is \$1 per bond and the percentage of the price that 1%.

So I hope you found that interesting. We've covered quite a lot here today in the whole sphere of bond pricing. We started with a look at the bond market itself and the conditions that cause the pricing to be fairly unique in bonds versus, say, the stock market. Steve took us through a lot of different examples and illustrations of the difference in the corporate bond market versus the municipal bond market, our depth of book display where liquidity is deep, and

the use of tools like the bid request, or when there's not liquidity but you wish to get a price, we can help you then with the bid request process.

And then finally, just looking at the bond cost because ultimately, we feel it's very important. Allowing us to bring you the best price, which equates to the best yield for you as an investor. And obviously with bonds, most of our clients are looking to lock in that yield when they purchase a bond. So getting that yield up as high as possible for the same security makes a lot of sense where you can. Hence things like that for book and hence our approach to bond pricing at very good value dollar for bond.

Finally, for those who aren't familiar, our bond offering is located on fidelity.com under the News and Research tab at the very top. If you scroll down from that dropdown, it would show fixed income, bonds, and CDs. And if you've been interested in anything we've shown today, hopefully so, and wish to discuss it further or have any help in navigating the site, in making trades, we please invite you and encourage you to contact us.

You can see here top right; we have our number for our fixed income specialists 800-544-5372. They are available from 8:00 AM to 8 PM Eastern time and again they're very seasoned professionals in the bond world and can help you not only discuss what we've talked about today, but also navigate other alternative products as well, like mutual funds, and ETFs, and so forth.

So with that, again, we appreciate your time today. I think we have some time for some questions. So let me take a look at what we've got. And thank you everyone for submitting questions. It's really interesting to see them. Steve, I think we have quite a few here asking about yields. So again, as we said the counterpoint price and distinguishing yield to steel to maturity and so forth. Do you want to just help us through that and we can get started on this topic?

Stephen Traugott: Absolutely. So when you look at fidelity.com you're going to see, as Richard mentioned, a couple of different yields available. So you have a yield to worst, and yield to maturity, and then you also have your yield to call. So when we look at those different numbers, the yield to worst can either be a yield to call or a yield to maturity depending upon whether the bond is trading at a premium or a discount. And it's going to be the lower of those two numbers, whether it's yield to call or yield to maturity.

Now, in this case, when we look at the Johnson & Johnson bond, for example, it's got to call a few months before its maturity. But being that it's at a discount, the yield to worst is going to be the same as the yield to maturity. So a 3.698. Yield to maturity, 3.698.

Now, if the bond was trading at a premium, then your yield to worst is going to end up being, your yield is going to be your yield to call because it's going to be the price that you're going to get to that point if you only held it to that call. And then the yield to maturity would be higher because the longer, basically, the longer you hold the bond, the more you're able to make up for the fact that you paid a premium for it initially. So the more coupon payments you receive and whatnot will help make up for the premium paid on the original purchase.

So three different numbers, really the one when you're investing to think about I think is that yield to worst. I mean, that's the number that you're going to be getting if it goes to either call or the maturity. If it doesn't get called, let's say, you can get that yield to maturity on a callable bond, which potentially could be a little bit higher. Also, or you could get, if you have a callable bond at a premium, there's the opportunity where you're going to have your yield to worst or yield to call being the same.

So three different numbers, the yield to worst is going to be the one that you're going to see in your trade. Take it. You're going to see that as a yield to

worst on your confirm. We also provide that yield to maturity on your confirm as well. But those are kind of the different ways to distinguish those numbers.

Richard Carter: Thanks, Steve. That's great. Let me just, I was just trying to find this slide. Obviously, these two numbers were the same here. The yield to us was the same as the maturity, but maybe in this one those was the same.

Stephen Traugott: Unfortunately, with the move up in yields, you see a lot more bonds at a discount right now. So the yields to worst and yield to maturity are going to end up being the same on a lot of those when they're at a discount.

Richard Carter: Right. And what about the yield to sink for a bonus question here. Do we have that? If it's not some taken into the yield to worst consideration?

Correct. So that's not taken into account because it's not guaranteed that you're going to have bonds redeemed as part of the sinking fund. It depends on what the quantity is of the sinking fund that the issuer has put in the original official statement. It is however, you can look up and find out what the amount that an issuer will be thinking every year.

But there's no guarantee that your bonds, they usually run, it's known as a lottery process, and certain dealers are going to have a certain number of bonds depending, and then certain customers will have a particular number of bonds depending upon how many are being sunk at a given time by the issuer. So that number is available. If there is a sinking fund, we will show that to you so you're aware of it. So something to consider as well if you're looking at a bond with the sinking fund

Richard Carter: Thanks, Steve. And I think it's fair to say not many, I mean, compared to call schedule or call ability, not many bonds have sinking funds, right?

Stephen Traugott: Correct. You won't see it as often as you would see bonds, what they call, just a regular scheduled call date.

Richard Carter: Great. OK. Another question here was, can you elaborate a bit on fidelity and specifically, I think some of our customers have heard of Fidelity Capital Markets, Fidelity offering its own bonds and how do we position our bonds vis a vis the other bonds that you spoke about in that chart with all the different dealers and so forth, Steve? How do we actually, if you like pledge to our customers that we're giving them the best price we possibly can?

Stephen Traugott: Sure. So Fidelity Capital Markets is an arm of Fidelity Investments as a whole. There are individual bond trading partner, I would say, and Fidelity Capital Markets does hold an inventory. Now, I want to say at last time we kind of did a check, it probably is less than a couple percent of the overall inventory that's shown on fidelity.com. Is actually from Fidelity Capital Markets the majority is going to be through the other aggregators and direct connects that we have.

But if Fidelity Capital Markets is showing a bond, they are in the same competitive landscape that all the other dealers are in. So it doesn't matter whether Fidelity's price, it would fall in the depth of book wherever it happens to fall when we show it on fidelity.com. So if they're not the best price, we are going to show another dealer's price above theirs.

And so it's up to the responsibility of that trader to decide, well, do I want to provide a better price and have my bond be purchased potentially before someone else, or do I want to keep my price at a level that's just a little bit higher than somebody else? So no matter what the quantity is or anything like that, it's Fidelity Capital Markets is always in the same type of competitive landscape that all the other dealers are in to try and show the best price.

Richard Carter: Yeah, that actually does lead to another question, doesn't it? This is why do we have a depth of book at all, right? Why wouldn't a trader who's down in the depth say, I want to get up to a price where people are going to be trading with me, right?

Stephen Traugott: Yeah, so there could be another, it could be a number of factors that lead to that. So it could depend on where, as a dealer, where did I where did I purchase the bonds? So if I purchase the bonds at a little bit higher price and I may have to try and make a profit by keeping my price a little bit higher when I sell it. That's a possibility.

It could be just where they see the market for those particular bonds. Some of it can depend on the quantity and how many they own and making sure they cover trading costs. So if they only own, say, a small quantity, one or two, and they purchase them, they may need to price it a little higher to make sure that they cover the trading costs that they're going to incur when they do the trade. But yeah, there could be a number of different factors. The market, how many bonds they own, the quantity, where they purchased the bond. I mean, all of those factors into where they eventually show them.

Richard Carter: And then, I think we have time for one more, Steve. But customer here asking about we just expand a bit about pricing for round lots versus odd lots. Maybe we just need to explain what those are first, right, and then talk about the pricing factor involved here.

Stephen Traugott: Sure. So round lots and odd lots can vary somewhat depending on the product. And institutionally, if you're, say, trading treasuries, a round lot maybe consider it as much as like \$1,000,000 worth, or a \$1,000,000, or million bonds, or 1,000 bonds. So it's that kind of round number. Usually when you start looking at say corporate municipal bonds, round lots or probably around 100 bonds. Anything less than that is considered an odd lot number of bonds.

Now, as far as pricing goes between the two, it can vary. Like anything else, as I kind of mentioned earlier, some of it the pricing is going to depend upon, well, where did the trader buy them, the market that's going on, is it moving? Those types of things. How long have they own them?

But usually when you look at, say, 100, 250, 500,000,000 bonds, those types of things in corporate, you may have a little bit more flexibility with dealers. We do allow customers in situations like that to enter orders, say, that's a little bit lower than what the price is that's showing online. We call that an advanced limit order. It allows a customer to try and get a little bit better price if they are looking for a larger number of bonds.

As I mentioned earlier, there's a certain trading costs that go along with each trade that a trader does. So if you spread those trading costs amongst a larger number of bonds, there could be a little bit more price flexibility to it. If they're only trading one or two bonds and they need to cover costs, they need to build that cost into the price of the bond that they're showing. So it also depend on the dealer. I mean, some dealers are looking to get rid of an odd lot here and there because it's just a couple of bonds and they may be willing to give a better price. It's very situational.

Richard Carter: So, I mean, the depth of book as shown here is an example of that sometimes really the best price is for small quantities, right?

Stephen Traugott: Exactly. I mean, in this case, we see here with the Johnson & Johnson, I mean, you can buy two bonds and get a best price. I mean two bonds is going to be basically the security minimum for this particular CUSIPS. And then if you wanted 500, you could split it up amongst the top two or three positions. But if you wanted to buy them all, you're going to pay a little bit more for those 500. So yeah, it does. It does kind of vary depending upon the situation in the dealer.

Richard Carter: Yeah. Great. OK. Well, thanks a lot. That's fantastic.

END OF AUDIO FILE

¹Minimum mark-up or mark-down of \$19.95 applies if traded with a Fidelity representative. For U.S. Treasury purchases traded with a Fidelity representative, a flat charge of \$19.95 per trade applies. A \$250 maximum applies to all trades, reduced to a \$50 maximum for bonds maturing in one year or less. Rates are for U.S. dollar-denominated bonds; additional fees and minimums apply for non-dollar bond trades. Other conditions may apply; see [Fidelity.com/commissions](https://www.fidelity.com/commissions) for details. Please note that mark-ups and mark-downs may affect the total cost of the transaction and the total, or "effective," yield of your investment. The offering broker, which may be our affiliate, National Financial Services LLC, may separately mark-up or mark-down the price of the security and may realize a trading profit or loss on the transaction.

²Fidelity commissioned Corporate Insight to study bond pricing, available online, for self-directed retail investors from three brokers (Merrill Lynch, Morgan Stanley, and Wells Fargo) that offer corporate and municipal bonds for comparison to Fidelity's standard online pricing. The study compared online bond prices for more than 27,000 municipal and corporate inventory matches from February 4 through March 7, 2022. It compared municipal and corporate inventories offered online in varying quantities. The study found that, on average, the three online bond brokers were asking \$15.14 more per bond. Corporate Insight determined the average price differential by calculating the difference between the prices of matching corporate and municipal bond inventory at Fidelity, including Fidelity's \$1 per bond mark-up for online trades vs. the prices offered online for the same bonds from the three brokers, then averaging the differences of the financial services firms. The analysis included investment grade corporate and municipal bonds only.

Past performance is no guarantee of future results.

In general, the bond market is volatile, and fixed income securities carry interest rate risk. (As interest rates rise, bond prices usually fall, and vice versa. This effect is usually more pronounced for longer term securities.) Fixed income securities also carry inflation risk, liquidity risk, call risk, and credit and default risks for both issuers and counterparties. Any fixed income security sold or redeemed prior to maturity may be subject to loss.

Interest income earned from tax-exempt municipal securities generally is exempt from federal income tax and may also be exempt from state and local income taxes if the investor is a resident in the state of issuance. A portion of the income received may be subject to federal and state income taxes, including the federal alternative minimum tax. In addition, investors may be subject to tax on amounts recognized in connection with the sale of municipal bonds, including capital gains and "market discount" taxed at ordinary income rates. "Market discount" arises when a bond is purchased on the secondary market for a price that is less than its stated redemption price by more than a statutory amount. Before making any investment, investors should review the official statement for the relevant offering for additional tax and other considerations.

The tax information contained herein is general in nature, is provided for informational purposes only, and should not be construed as legal or tax advice. Fidelity does not provide legal or tax advice. Fidelity cannot guarantee that such information is accurate, complete, or timely. Laws of a particular state or laws that may be applicable to a particular situation may have an impact on the applicability, accuracy, or completeness of such information. Always consult an attorney or tax professional regarding your specific legal or tax situation.

References to individual securities are for illustrative purposes only and should not be construed as investment advice.

Views expressed are as of the date indicated and may change based on market and other conditions. Unless otherwise noted, the opinions provided are those of the speakers, and not necessarily those of Fidelity Investments.

Fidelity Brokerage Services LLC, Member NYSE, SIPC, 900 Salem Street, Smithfield, RI 02917

1039693.1.0