Transcript

>> You're listening to All The Credit, a monthly podcast series brought to you by PGIM Fixed Income, an active global fixed income investment manager. And now your host, senior portfolio manager, Mike Collins.

>> Hello, welcome to episode 12 of All The Credit, PGIM Fixed Income's monthly podcast. I'm Mike Collins, just one of the many investment professionals at PGIM Fixed Income, and your host of All The Credit. We all operate in a global marketplace, and at PGIM Fixed Income we certainly operate in a global bond market. In fact, many of our strategic views on the bond market over the years are driven by global factors and trends, including potential growth rates around the world, fiscal and monetary policies across dozens of different countries, global inflationary trends, and for sure, global supply and demand for fixed income securities. We opened our European office in London 15 years ago to support our growing client base in the region, and importantly, access, research and invest in fixed income opportunities across Europe, the Middle East and Africa, or the EMEA region. One of our guests today in fact was the first PGIM Fixed Income employee in our London office 15 years ago, which has grown steadily to nearly 100 colleagues today. In this podcast, we will highlight our London team and capabilities and discuss our outlook for the European and global leverage finance market, including the market for collateralized loan obligations or CLOs. I'm excited to introduce our two guests, Jonathan Butler, was the man who unlocked the doors 15 years ago in our London office, is one of PGIM Fixed Income's original investment professionals there. Jonathan is the head of European leveraged finance, and co-heads our global high yield strategies at PGIM Fixed Income. Mr. Butler has been integral in developing our business in the U.K. and across Europe. Asha Narayan has worked on the leveraged loan market for 15 years and has been managing and trading high yield bonds and leveraged loans at PGIM Fixed Income for about four years now and is currently a CLO portfolio manager. Jonathan, Asha and I are here to give you all the credit. Welcome Jonathan and Asha.

>> Thank you very much, Mike, we're obviously glad to be here today and obviously we can tell a few stories about sort of, well certainly my time over the last 15 years at PGIM, what's been happening in the markets, and obviously everything that you would like to know.

>> Yes and thank you so much for inviting me to join the podcast as well Mike, we're really excited to just discuss the European market in more detail, and then also share our views on both the high yield and the CLO space, so thank you.

>> All right. Well, I want our audience to get to know each of you better, but also understand, you know, the vibe of our London office, how you two interact with your colleagues in Newark, New Jersey, and how you interact with each other. You know, Jonathan I know when you started 15 years ago, I was actually still a member of the high yield portfolio management team, and you and I worked very closely together on a daily basis on many things. What's it been like, you know, to walk into an empty office 15 years ago, and watch it grow to the very successful and integral large team that it is today?

>> It's, I mean, it's obviously something to be very proud of and as we've seen the business grow steadily and successfully, I think that everyone that's been involved in our European project, which on a standalone basis is now a large fixed income manager in Europe, in its own right, then it's something for all of us to be very proud of.

>> Yeah and tell us where we are today. I know you've built this really big, successful, leveraged finance business in Europe, and where do we stand?

>> Yeah, I mean across the European leveraged finance portfolio, so looking at sort of, both high yield bonds and leveraged loans, and across currency as well, we're probably invested in over sort of $25 billion equivalent of leveraged finance issuers, so high yield issuers, loan issuers, often these can be the same companies as well, issuing both loans and bonds. But that probably makes us one of the very largest investors in European leveraged finance now. We might not be the largest in leveraged loans, we're certainly one of the larger ones in high yield, but when you put those two franchises together, and we're one of the only investors that is sort of active, well very active in both markets, it definitely makes us a significant presence in Europe, and one of the larger, more experienced investors across the sort of investment grade credit space.

>> Yeah, we also have a large collateralized loan, or CLO business, both in the U.S. and in Europe. So, Asha let's turn to you and talk a little bit about that. I remember when you first joined four years ago, you were really managing and trading high yield bonds and loans, and I had the pleasure of interacting with you on a daily basis in our daily high yield call. So, what brought you to PGIM Fixed Income? Tell our listeners a little bit about your background and what your impressions of PGIM Fixed Income have been.

>> Sure. So when -- so my background is mostly really on the sales side, I started my career at J.P. Morgan, and then I spent the bulk of my career at Deutsche Bank in the leveraged loan space, both in capital markets and also selling leveraged loans. And that's when I did get to know PGIM, because PGIM was actually one of my clients. So, I was selling leveraged loans and high yield bonds to PGIM. And I could see actually just how the business, especially in Europe, was growing at quite a fast rate, and was becoming more and more significant both in high yield, but also in the CLO space. So, as Jonathan mentioned, we're, you know, one of the largest investors in the European market now at this stage, and I did see that trajectory and that growth, and I really liked the team as well, and the approach, and a long-term view that the firm was already taking in terms of the trajectory that it really wants to go into. So that's what really attracted me. I knew the team very well just through my existing role, and then I had the opportunity to also fly out to Newark and meet the broader team as well. I met yourself and many other of our senior colleagues as well and, I really liked the culture of the firm. I think there's a very high level of professionalism, but also an openness and really a teamwork environment and approach to everything that we're doing. And I found that it was very easy to reach out to anybody for questions, or for help, and at the same time we're obviously managing, you know, a very large base of assets across multiple different strategies as well so, that's sort of been -- that was my first impressions and they were confirmed when I joined as well.

>> Yeah, I mean, I certainly have taken our culture to heart, and really believe in a very collegial team-based approach here. And, you know, as a really global -- fully integrated global firm I really believe we are, right? And we all work really closely together. We see each other almost every day on the video screen now --

>> Yeah.

>> -- not in person, and so I think it's a real testament to your team there and our team in New Jersey to really interact with each other closely, so I'm glad you have a positive impression of that, it's really important. Jonathan let's dive into now your outlook on the European and global leveraged finance market for 2021. I know you just put out a blog on PGIM Fixed Income's blog called The Bond Blog, called Five Factors Supporting an Allocation to European High Yield. And I know you have a pretty positive outlook right now in the market, why don't you go through some of the key tenets of that?

>> Yeah, sure. And it's really, I guess, stunning from the amount of stimulus that we're seeing in the global economies and this is, I mean, obviously we're seeing in the U.S. part, across the Euro zone and probably even more strongly, also the U.K. but really most advanced economic economies and geographies. And we're seeing relatively low default rates, in Europe I'd say much lower than we'd have expected, but that's coming from the quantity of easing that we've seen around the world. And then also the fiscal easing that we've been seeing. And obviously different countries have sort of adopted different levels of fiscal easing, but when we look at what's happening in Europe, we're seeing all European nations are doing some form of direct lending to companies. And so, this is actually causing default rates to be much, much lower in this downturn compared to others. So, the default rate for European high yield bonds last year was only 3.3%. It was way below where the rating agencies were expecting, it was below where all of the sell side research firms were expecting. But what's interesting, when you looked at things on a bottom-up basis, when you actually looked at what liquidity was available to these companies, from state lending, and that was often only a liable plus 50 basis point loan, through to what was available in the capital markets in the form of either new bond issues, new loan issues, it really meant the default rates were likely to stay low. And all of that QE and stimulus is still there today and supporting businesses. Furlough schemes also means that companies are getting direct support on their P&L, where governments are paying to send people home. And they're supporting those companies rather than having to face one-off costs to redundancies so that when the company then restarts again post lockdowns, they're then going to incur new employment costs, so using government subsidies to keep your workforce paid and subsidizing those companies. So, you look at that regime, companies are being supported, so you're seeing less stress than otherwise in a normal recession. There is plenty of stimulus still there, and although we're in a period of economic low right now, and in Europe here, we're all in lockdown, you're not allowed out of your house, only for essential reasons, it's a pretty tough winter. But economically we can see how things are improving and getting brighter, and that's not just springtime. We're starting to see vaccinations in the U.K. we have over four million of population now vaccinated, so we're sort of high single digit percentage level, but it's obviously the most at risk. And so, as you, sort of, bring all of that together, we really do see 2021 as the year of recovery, and so with that we expect to see the markets continue to perform. Now, we've obviously seen a really strong recovery since April last year in the markets, obviously really good sort of recovery further in November when we had all the vaccine news, and that really has continued. So we actually are having to start to lower our outlooks a little where we've really been at, sort of, maximum risk and, sort of, maximum return outlook, but with some of the returns we've had, although remaining still pretty positive, we obviously feel that we've seen a good part of the rally as well so far.

>> Yeah, it's interesting you mentioned the European high yield default rate in 2020, which was a, you know, brutal global recessionary year, was only, you know, just about 3% and contrast to the U.S. high yield market it was more than double that, it was about 8% for the year, what are some of the other reasons? I know you generally have less, less energy, less COVID-sensitive sectors in the Europe --

>> Yeah, absolutely. So, energy tends to be a U.S. dollar revenue industry, and when it comes to high yield, nearly all the issuance in the energy sector is in the U.S. high yield markets. And U.S. energy represented nearly half of the U.S. defaults last year so, that's a big driver just in one sector of the default differentiation. But also, Europe is actually a higher quality high yield market, and that might sound a bit of an oxymoron but, we have more BB issuers in Europe so, over 70% of the European issuance base is BB. So, with that credit quality, it's rational to expect the defaults would be lower in a crisis from a better rated market. We also have fewer CCCs, and so again that's supported the lower default rate. And we actually expect defaults this year in 2021 to remain low. So, we've done our own bottom up analysis of all of the issuers in the European indices, and obviously in our portfolios, and we're constructive on the default rate for this year as well.

>> And you expect it to be lower than the U.S. high yield of four. I think we have a 4% expectation for this year in U.S. and maybe 2% for 2022, what is it for the European --

>> Yeah, and well for Europe this year we're kind of two to 3%, I don't want to put a hard number on it but, I think if we manage to get these vaccines out there and the economies open sooner, and if the markets stay resilient, then I think liquidity is sort of there for businesses that are struggling right now, and then probably towards the lower end of that range.

>> Yeah. And as many of our listeners will recall, we do a scoring system every week where we actually score every asset class within the global bond market on a zero to 10 basis; so, 10 we love it, zero we hate it, five we're neutral. So where are you right now on the European?

>> Yeah so we've been a nine for a long time but, well normally we have our desk head calls on a Monday but because of the bank holiday in the U.S. yesterday it's today, and we're actually taking our score down to an eight now, so eight out of 10, so still pretty constructive, but we're one notch lower.

>> Okay and Asha your expertise is really in the leveraged loan market, would you differentiate the outlook for loans for this year going forward? Or do you also expect a pretty optimistic returns scenario?

>> We're expecting a pretty optimistic return scenario as well and I mean, in the credit space there is a strong correlation to what's happening in high yields, you know, also feeding into loans and also to CLO liabilities. But, you know, in the loan space I would say, you know, a large percentage of the activity is really sponsor driven, and the sponsor community has a lot of dry powder to put to work. And even the beginning of this year we've just seen so much more M&A activity in terms of, you know, leveraged buyouts sort of changing hands potentially, and it’s only the 19th of January. So, I think a lot of M&A activity that was sort of postponed last year, is going to take pace this year. It's also going to mean the technicals in the loan space will remain very strong, so we're expecting some quite large repayments to come through, things that should have probably repaid last year potentially, they're now going to happen here, you know, in this current market environment, and at the same time you do have a very decent environment for CLO creation as well. So, there's a very strong pipeline of new CLO warehouses in the market that are continuing to ramp, so you have that technical that's going to support loans in the long term. And then, similar to what Jonathan was saying in terms of the liquidity that's been made available to businesses, it's been incredible. If you look at the leverage buyout space, they've had funding from governments, a lot of sponsors have also -- were very quick to react actually, to provide funding, either, mostly in the form of additional debt but also in the form of equity when needed. And then, you know, as mentioned, each European country also came out with state aid as well, across the board, and we were quite pleasantly surprised at the amount of support. So, very similar, low default rates, a very healthy risk, you know, environment for credit products.

>> So, Jonathan, how are -- you manage our European high yield portfolios with PGIM Fixed Income, but also our global high yield portfolios, how are you positioned from a risk standpoint in the European ones? And in the global context, how are you thinking about the allocation between European high yield bonds and U.S. high yield where are you overweight and underweight, et cetera?

>> So, well we're in Europe, and we'll start here with us, then I'll talk about globally a little bit. But I mean as we've already discussed, we're constructing on the outlook the European high yield. We're in this really low interest rate environment, in Europe it's hard to sort of see how we get out of this really low interest rate environment and, you look at sort of where bonds are today, sort of German bonds and when you get a negative return if you invest in bonds. And so for a European investor,

you really have to work out, sort of, where you're comfortable investing, and if you look at the European IG index, the spread on that index, you're going, in round numbers, 80 basis points. But if you have a negative 70 on bonds, your total return is pretty low. So, we know that many investors are having to, sort of, reengage in this hunt for yield, and that makes us quite constructive on the outlook for European high yield. There's more inefficiency in the European high yield markets than there is in the U.S. as well, and the market tends to be less followed. And so, when we look at that we find that European Bs are often at a higher spread than where we see, for instance, U.S. Bs. And in the BB part of the market, we actually see a lot of, what we suspect is IG money, looking for some of the safer fallen angel credit, so some fallen angels in Europe, those BBs can be tight compared to U.S. BBs. So it tends to position us to prefer those B names, then we do a lot of bottom up fundamental analysis on, sort of, which of the growing survivors in that part of the universe, and they tend to be our preferred investments, and that's led to some really solid track records through time from this bottom up credit investing. So, that's where we're invested again in today, but where do we see the sort of medium to long term winners in that, sort of, least efficient part of the market, and that's what, sort of, drives our alpha, and is where we, sort of, take our risk positions. And when we look at that compared to the U.S. and from global portfolios, we're actually geographically overweight to Europe, and part of that's the low default expectation. But then when it turns into, sort of, how much risk we take in Europe, we actually dial up the risk not just of Europe as well. So, not only are we geographically overweight, but when you look at it on a risk adjustment basis, we actually have an even greater proportion on that into Europe. So, we're sort of comfortable with the steps the European governments and European Commission are taking to handle this crisis, and as a result we feel that for the high yield companies within Europe, this is actually a pretty robust time to be investing.

>> Asha, let's turn to you. Describe your current role in a little more detail with regard to our CLO business.

>> Sure. So, my current role is working as a CLO portfolio manager. I look at the CLOs on a day-to-day basis in terms of working with sector portfolio managers and managing the types of credits we want to get into the firms, but also working within the constraints of the CLO vehicles because there's many tests that we need to work with. So it's a role where I work very closely with our CLO analysts, and I also work with the sector PMs on the credit side, to cover a perfect harmony of getting the right credits into our fund, within the constraints that we have for the CLOs.

>> So is -- for the edification of our listeners, we have really two parts of the CLO market that we're deeply involved in at PGIM Fixed Income. The one is the one you're describing, where we actually manage the loans, the collateral for CLOs that we effectively help issue and we manage lots, in fact dozens of CLOs under the Dryden brand, but we also invest in other managers, CLO security, CLO tranches, on behalf of our third-party clients. So, Jonathan why don't you, kind of, describe a little bit about the first part, that CLO business, which has really been kind of a gem within PGIM Fixed Income, and something that has really grown dramatically?

>> Yeah, well, I mean we setup the European CLO platform before I arrived at PGIM. So, the U.S. platform was setup in 2000, and I think the first Dryden bond was issued in 2001. We're now working on projects that will take us up into the two-year BIM project throughout '88 and '89, and I think the U.S. will soon be working on Dryden what I guess will be '90. So, yeah, we've done very well, I guess we've been one of the more prolific global issuers, and all of that has been organic. So we haven't been making acquisitions, it's, you know, a homegrown franchise and is a very successful thing, we have good long term track records, both in Europe and the U.S. and we're obviously seen as one of the more tried and tested managers out there. So, it's been a great franchise for us, is one of our core skills within PGIM Fixed Income and is obviously something that we continue to plan to do in the future as well.

>> Okay so Asha how do you, when you're picking a loan for one of these CLOs that we are managing, versus picking a loan for a total return portfolio, how do you differentiate, how do you think about that?

>> So, I think, maybe people do assume that it'd be a different approach, but we actually look at the CLOs also as total return vehicles. We do have to manage for the various CLO tests that are part of the vehicle initial term, but our approach in the long term really is, is to look at sort of the distributions, and then the net asset value of the fund at the end of the life of a vehicle, which is very similar to what we're doing on total return vehicle, so it's not that different really. The ultimate repayment in the long term is kind of, you know, what we're really looking for, and we really are aiming to drive long term investor returns. So, yes there are tests that we need to work with on the CLO side, and we have a very well, you know, a very big team of CLO analysts who can actually look at the various tests, and obviously a very large team of credit analysts as well, so that we can really optimize the CLO, but the long-term goal is the same as a total returned one. So, the approach is actually not that different.

>> What distinguishes PGIM Fixed Income in your mind as a CLO manager?

>> I mean for me, I mean, I saw this sitting on the sales side, and now that I'm part of the fund as well I see this even more but, and Jonathan mentioned it too, we are one of the few investors that are truly looking both at the high yield market and the loan market, and therefore we are able to pick the best relative value trades in each of those markets. And you just have a much broader opportunity set. So, you know, this was especially advantageous, you know, this last year, and this year as well, where, you know, it was quite difficult. CCCs were quite high, the worth in the portfolios was also quite high, and we had to find ways to create more value in the transactions. And if we were only looking at the loan market, it would have been quite difficult. Difficult in terms of just the sheer breadth of names, and then also the liquidity as well. So, we were able to actually buy a lot of BB bond risk, even though it was low coupon and unsecured, and actually buy those into the CLOs, and we saw a very nice appreciation as the markets obviously rallied, and we were able to actually reduce some of our CCC exposures at the same time. So, just having that access to both markets, it just makes -- it's the main differentiator of PGIM.

>> Yeah.

>> I would also say -- sorry, go for it John.

>> I was going to say, I think there's different technical of playing between the loan the market and the high yield market, so although they're very similar companies, sometimes the same companies, you might find the retail investors in high yield liquidating portfolios, driving down the price of bonds, while CLOs being sort of, generally a more bond hold type of investor base, you find that those loans are not really reacting the same way. So, it does create sort of technical arbitrage opportunities, and then obviously with significant economic disruption that we saw in 2020, we're able to, obviously sell assets that we deem to be rich, and obviously buy into assets rather cheap. And whether that's in a loan or a bond, we've designed our vehicles to be agnostic to the product, and obviously take advantage of what gives us the best risk adjustment returns, and that's something that we've been consistently able to do, not just in 2020 but, in [inaudible] and some sort of economic shop and is one of the key strengths of the platform.

>> Yeah, that relative value assessment between bonds and loans, between the Europe and U.S. high yield markets, I know is something, even when you joined 15 years ago Jonathan, we worked very closely on to make sure that we were really finding value from the bottom up, as you said agnostic to the underlying vehicle, we want the best total return we can get. And that's true for our CLO portfolios as well as our total return portfolio. So, Asha within the total returns side where we're

buying other manager's tranches, what types of tranches do we generally favor and what's our outlook for that particular market?

>> So, again we're positive on that market too, and I work quite closely with the team that's investing in that space, and I would say for them the sweet spot really still remains sort of the AAA and AA space. And the main reason is to more tightening that we can see that could take place in that space. If you look at where investment grade yields are on the European side, and the U.S., the spreads on AAAs just seems like an outlier. And we have seen some tightening, so you are in sort of the mid '90s range right now, so we have seen tightening but there's definitely scope for more tightening there when you compare to other asset classes that particular product.

>> Yeah, and I know in the U.S. AAA CLO market, those spreads are still well above 100 basis points, and they look really attractive to us, like you said, versus other investment grade type of bonds.

>> Yeah, and European AAAs they're roughly 100 basis points of credit space, maybe going slightly inside now, but the value of the liable floor with European AAAs is really strong, it's a zero liable floor, but because of the negative rates in Europe then, that obviously adds value to those CLOs as well.

>> And what about the mezzanine tranches, any of you on those? Asha?

>> I mean, I think that's, the mezzanine tranches you have to look at the portfolio in depth on a manageable and manager basis and see what's, especially now, you have COVID-affected names in CCCs, it's really looking -- doing a bottom up analysis on the manager and on the portfolio as well, as to where, sort of, the value breaks. It's, you know, a bit, obviously more high risk and more high return but, there's a lot of differentiation I would say across the CLO space in Europe, you know, the market's very broad and you have a lot of new managers as well, so it really just depends on the portfolio.

>> Yeah. I know, in general, in our total return, certainly the multi-sector portfolios I manage, we typically are not investing in the A, BBB, BB, B, these are kind of the mezzanine and lower rated tranches of these structures, because like you said, the risk is really, really high because you do have significant downside risk if you get more defaults in the underlying collateral. So --

>> That's right.

>> Yeah, so let's shift gears here, Jonathan, and talk about something we always mention, at least on these podcasts, is ESG, environmental, social, governance factors. You guys are really on the frontlines there in Europe, which is really the focus of many of our clients over there, you know, these ESG type of strategies and mandates, and Jonathan what have we done at PGIM Fixed Income to address these factors, and address our client's needs in this area?

>> Yeah and this is something that has been growing in momentum for many years now, and I guess back in 2014 we were getting ourselves ready to sign up to the PRI, but I mean luckily we then developed an ESG committee which the -- that committee sort of grew in stature, and I mean ultimately our COO, Mike Lillard, was chairing that committee, or co-chairing for a while, and it was a huge investment over the last few years involving many of the senior investment professionals of the firm, and ultimately led to the rollout of our own internal ESG team, and also our own internal ESG impact ratings. And this is where we felt that we weren't getting consistent quality from third party ESG raters, and the only way that we could do this to a standard that we really wanted, was to do this work ourselves. So, we now have an ESG team that supports research analysts, and for every issue and issuer that we analyze within PGIM Fixed Income, we have an ESG impact rating. So, I

think that that takes us to the forefront of the fixed investing world on ESG ratings, and how we integrate ESG into our investment process. So, it's something that we spent a lot of time on last year, a lot of long hours for all the investment professionals involved, but I think it has really, sort of, taken us forward. And in Europe there's increasing regulation around ESG. So, there is going to be ESG reporting requirements, and obviously in Europe we signed up to being carbon neutral by 2050, I mean that's less than 30 years away now. So we have a long way to travel, and the way that the EU commission is trying to drive that, is through the financial markets becoming more ESG cognizant, so I think this is something that we'll continue to build in momentum over the next 10 years, and we've really shaped our business for that.

>> So, Asha when you're picking securities, I mean you actually have to buy the individual loans and high yield bonds for our portfolios, how do those ESG impact scores come into play?

>> So we spent a lot of time during our credit discussions actually going through, both the E and, the S, and the G, and looking at the ratings, and debating the ratings between the analyst team, the sector portfolio managers, myself and Jonathan, and questionings. There are obviously existing ratings but, questioning whether those existing ratings have not been assessed by PGIM, where those ratings at those levels, and then also what's our real view on this, and how are things going to change and evolve going forward. And I would say that, there's def -- I mean the momentum on the ESG side has been very strong. Every client and investor meeting that we have, especially with European investors, it will be discussed to quite an extent, and you can actually see a pricing differential in terms of the cost of funds as well, between the names that are, you know, viewed as more ESG friendly.

>> And that's really an important component of ESG, the engagement that we employ when we talk to issuers, where the rubber meets the road is how much it costs them to raise money. And if it costs them too much, they will change their behavior over time, right? So that's a really important effort we have underway. And if any of our listeners want to learn more about our ESG efforts at PGIM Fixed Income, I actually interviewed Virginia Jackson who now runs our ESG team at PGIM Fixed Income, a couple podcasts ago. So, on All The Credit you can see that interview if you want to learn more about it. So, I'd like to take this time to really thank Jonathan and Asha for taking a lot of time out of their schedule to speak with us today, and work on this podcast, so thank you very much guys.

>> Thank you.

>> Thank you, it was a pleasure.

>> And for all of our listeners you can see all of our latest research on our website at pgimfixedincome.com. I mentioned The Bond Blog @ PGIM Fixed Income, and obviously our podcast, All The Credit. So, thank you everybody for tuning in, we'll talk to you next time.

>> We hope you enjoyed today's podcast. Subscribe to keep up with the latest episodes of All The Credit. For more information, insights and thought leadership, visit pgimfixedincome.com.

>> Do you have an idea for a podcast guest or a topic? Email us at fixedincome request@pgim.com. Or email your account manager or sales representative @pgimfixedincome.

>> This podcast is intended solely for professional investor news. Past performance is not a guarantee of future results. All investments involve risk, including the loss of capital. This material is not for distribution to any recipient located in any jurisdiction, such distribution is unlawful. This podcast includes the views and opinions of the authors and may not reflect

>> This episode of All The Credit was recorded on January 19th, 2021.

IMPORTANT INFORMATION

The podcast is intended for Professional Investors only. All investments involve risk, including the possible loss of capital. Past performance is not a guarantee or a reliable indicator of future results.

PGIM Fixed Income operates primarily through PGIM, Inc., a registered investment adviser under the U.S. Investment Advisers Act of 1940, as amended, and a Prudential Financial, Inc. ("PFI") company. Registration as a registered investment adviser does not imply a certain level or skill or training. PGIM Fixed Income is headquartered in Newark, New Jersey and also includes the following businesses globally: (i) the public fixed income unit within PGIM Limited, located in London; (ii) PGIM Japan Co., Ltd. ("PGIM Japan"), located in Tokyo; (iii) the public fixed income unit within PGIM (Singapore) Pte. Ltd., located in Singapore ("PGIM Singapore"); (iv) the public fixed income unit within PGIM (Hong Kong) Ltd. located in Hong Kong; and (v) PGIM Netherlands B.V., located in Amsterdam ("PGIM Netherlands"). PFI of the United States is not affiliated in any manner with Prudential plc, incorporated in the United Kingdom, or with Prudential Assurance Company, a subsidiary of M&G plc, incorporated in the United Kingdom. Prudential, PGIM, their respective logos and the Rock symbol are service marks of PFI and its related entities, registered in many jurisdictions worldwide.

In the **United Kingdom**, information is issued by PGIM Limited with registered office: Grand Buildings, 1-3 Strand, Trafalgar Square, London, WC2N 5HR. PGIM Limited is authorised and regulated by the Financial Conduct Authority ("FCA") of the United Kingdom (Firm Reference Number 193418). In the **European Economic Area** ("EEA"), information is issued by PGIM Netherlands B.V., an entity authorised by the Autoriteit Financiële Markten ("AFM") in the Netherlands and operating on the basis of a European passport. In certain EEA countries, information is, where permitted, presented by PGIM Limited in reliance of provisions, exemptions or licenses available to PGIM Limited under temporary permission arrangements following the exit of the United Kingdom from the European Union. These materials are issued by PGIM Limited and/or PGIM Netherlands B.V. to persons who are professional clients as defined under the rules of the FCA and/or to persons who are professional clients as defined in the relevant local implementation of Directive 2014/65/EU (MiFID II). In certain countries in **Asia-Pacific**, information is presented by PGIM (Singapore) Pte. Ltd., a Singapore investment manager registered with and licensed by the Monetary Authority of Singapore. In **Japan**, information is presented by PGIM Japan Co. Ltd., registered investment adviser with the Japanese Financial Services Agency. In **South Korea**, information is presented by PGIM, Inc., which is licensed to provide discretionary investment management services directly to South Korean investors. In **Hong Kong**, information is provided by PGIM (Hong Kong) Limited, a regulated entity with the Securities & Futures Commission in Hong Kong to professional investors as defined in Section 1 of Part 1 of Schedule 1 (paragraph (a) to (i) of the Securities and Futures Ordinance (Cap.571). In **Australia**, this information is presented by PGIM (Australia) Pty Ltd ("PGIM Australia") for the general information of its "wholesale" customers (as defined in the Corporations Act 2001). PGIM Australia is a representative of PGIM Limited, which is exempt from the requirement to hold an Australian Financial Services License under the Australian Corporations Act 2001 in respect of financial services. PGIM Limited is exempt by virtue of its regulation by the FCA (Reg: 193418) under the laws of the United Kingdom and the application of ASIC Class Order 03/1099. The laws of the United Kingdom differ from Australian laws. In **South Africa**, PGIM, Inc. is an authorised financial services provider – FSP number 49012. In **Canada,** pursuant to the international adviser registration exemption in National Instrument 31-103, PGIM, Inc. is informing you of that: (1) PGIM, Inc. is not registered in Canada and is advising you in reliance upon an exemption from the adviser registration requirement under National Instrument 31-103; (2) PGIM, Inc.'s jurisdiction of residence is New Jersey, U.S.A.; (3) there may be difficulty enforcing legal rights against PGIM, Inc. because it is resident outside of Canada and all or substantially all of its assets may be situated outside of Canada; and (4) the name and address of the agent for service of process of PGIM, Inc. in the applicable Provinces of Canada are as follows: in **Québec:** Borden Ladner Gervais LLP, 1000 de La Gauchetière Street West, Suite 900 Montréal, QC H3B 5H4; in **British Columbia:** Borden Ladner Gervais LLP, 1200 Waterfront Centre, 200 Burrard Street, Vancouver, BC V7X 1T2; in **Ontario:** Borden Ladner Gervais LLP, 22 Adelaide Street West, Suite 3400, Toronto, ON M5H 4E3; in **Nova Scotia:** Cox & Palmer, Q.C., 1100 Purdy's Wharf Tower One, 1959 Upper Water Street, P.O. Box 2380 - Stn Central RPO, Halifax, NS B3J 3E5; in **Alberta:** Borden Ladner Gervais LLP, 530 Third Avenue S.W., Calgary, AB T2P R3.

These materials are for informational or educational purposes only. The information is not intended as investment advice and is not a recommendation about managing or investing assets. In providing these materials, PGIM is not acting as your fiduciary. Clients seeking information regarding their particular investment needs should contact their financial professional. These materials represent the views and opinions of the author(s) regarding the economic conditions, asset classes, securities, issuers or financial instruments referenced herein. Distribution of this information to any person other than the person to whom it was originally delivered and to such person's advisers is unauthorized, and any reproduction of these materials, in whole or in part, or the divulgence of any of the contents hereof, without prior consent of PGIM is prohibited. Certain information contained herein has been obtained from sources that PGIM believes to be reliable as of the date presented; however, PGIM cannot guarantee the accuracy of such information, assure its completeness, or warrant such information will not be changed. The information contained herein is current as of the date of issuance (or such earlier date as referenced herein) and is subject to change without notice. PGIM has no obligation to update any or all of such information; nor do we make any express or implied warranties or representations as to the completeness or accuracy or accept responsibility for errors. These materials are not intended as an offer or solicitation with respect to the purchase or sale of any security or other financial instrument or any investment management services and should not be used as the basis for any investment decision. No liability whatsoever is accepted for any loss (whether direct, indirect, or consequential) that may arise from any use of the information contained in or derived from this report. PGIM and its affiliates may make