

Perspectives Podcast

“Jim Costello Explains it All (About Commercial Real Estate)”

Transcript, 7 March, 2024

Adam Bass ([00:03](#)):

This is MSCI Perspectives, bringing to light insights and analysis that help global investors tackle today's challenges. I'm your host, Adam Bass and today is March 7th, 2024. Jim Costello, one of our guests for last week's episode is one of the industry's most sought after speakers on commercial real estate and with very good reason. Unfortunately for the sake of the episode as a whole, we did have to cut larger portions of my conversation with Jim than we otherwise would've liked to. Today in this bonus episode of Perspectives, we pick up the pieces from the cutting room floor and present the interview in full. I'll see you on the other side.

Jim Costello ([00:55](#)):

Hi, I am Jim Costello here with MSCI. I take a look at the commercial real estate world and tell stories about performance for clients.

Adam Bass ([01:03](#)):

Jim, welcome back to the program.

Jim Costello ([01:05](#)):

Thank you.

Adam Bass ([01:07](#)):

So speaking of stories around commercial real estate, the major story right now in a lot of places is around the lending market and more specifically around instability risk and in the office segment, the office market. So we'd love to just dive right in and get your take on that.

Jim Costello ([01:28](#)):

Yeah, it's been a question in the broad universe, people are finally paying attention to things that we've known in the commercial real estate sector for a while. People outside of our sector are suddenly paying attention. When you have people paying attention to your sector that normally don't, that's not always a healthy thing, but it's also led to a number of late nights for me putting stuff together, helping people think about what's happening and about the risks they face.

Adam Bass ([02:00](#)):

So let's start with what you've been working on, what you see as the actual risks that are going on and then I would love to hear why is it not healthy to have people focused?

Jim Costello ([02:13](#)):

Sure. Well, the actual issue is that there is a repricing event underway. And when I say underway, that can sound funny to some of our MSCI clients and other asset classes or the clients who are focused on other asset classes, well price changes and it's just like overnight right and wrong. It's a slow moving thing. Commercial property is an opaque asset class. You don't have pricing instantly, it's not like selling soybeans in Chicago. It's a long process of buyers and sellers kicking the tires, thinking about what they'd be willing to do, thinking about

what kind of financing they can find, and that's a moving target as well. The process of selling a building in many markets can be up to 20 weeks, sometimes even longer. It's a different kind of asset class. And we've seen prices sliding for offices in particular and that's led to a lot of concerns because how much further is this going to go down and what kind of problems can this create for financial institutions?

(03:22):

These are the questions people are struggling with. But the challenge is that people are often... If I'm a fund manager and I've got maybe a 5% exposure to commercial real estate, I see headlines in the Wall Street Journal or Financial Times talking about problems in the office market and there's sort of a guilt by association with everything else. Office prices are falling and there are some price declines for other asset classes, but they're nowhere near as severe as what we've seen in the office market. Industrial properties for instance, prices are actually growing still. So there's this view that office buildings are commercial real estate or rather that all commercial real estate acts like offices and that's not the case. So the problems that this decline we're seeing in the office market that the problems there don't necessarily expand to the whole asset class.

Adam Bass (04:26):

And so there are problems within the office sector but are they as bad as what we're reading about in the press?

Jim Costello (04:33):

I love the members of the press, but sometimes the stories that are more challenging can be more fun frankly to write about. But some of the problems that are out there are easy to see and you can just look at some buildings and see that at 5:00 at night if the lights aren't on, that's not a healthy sign, that the people are not using the space. If you look at what the leasing professionals, they do a lot of surveys on a regular basis to figure out how much space is available on the market, they're reporting them and many office markets around the country, some record high levels of office availability. And if you have more space available, you're generating less income. And if it's generating less income, that next buyer is not going to be willing to pay as much as someone paid for it back in 2015 to 2019 when offices were at record high price levels. So there are some challenges that come about as that leasing market behavior changes and how that then flows through to how investors are pricing that income.

Adam Bass (05:45):

So let's explore a little bit some of those other segments. You mentioned industrial, but what does the landscape look like right now?

Jim Costello (05:53):

Yeah, I'll talk a little bit about industrial because kind of the easiest one to start with, think about what we all went through in the pandemic. We were stuck at home for a long time. Some people stayed home, but that's another issue. But we were stuck at home and we had to spend and so we had to have daily necessities and we were ordering stuff online like crazy. E-commerce sales as a sheer of total consumer spending surged. Our clients at Prologis, they did a study and they determined that for every dollar spent online versus in store, it requires three times as much industrial space just to store the flow of goods and storage space for all those goods that are not sitting on store shelves or in the back warehouse of a Target in a suburban mall.

(06:50):

So that led to a surge in demand and that demand is tapering to some degree, but still there's a move towards more digitization of the economy, more consumer goods flowing through in an online context versus in-store. There still is some growth there and with that demand, then you have a healthier income story and even with a rise in interest rates last year that has led to higher mortgage rates and a more challenging financing environment for assets. There's enough income growth for the industrial sector to largely offset that. The more challenging stuff becomes the retail sector. Retail had been a dirty word for many investors over the last 10 to 20 years. That growth in e-commerce activity, that clearly took away some element of demand. You're not

going to see a lot of bookstores, you're not going to see a lot of record stores anymore. There are a few record stores to see, but that's more the niche stuff where it's kind of bougie.

Adam Bass (08:03):

Records are coming back a little bit. I will say that, I've seen it more, but please go on.

Jim Costello (08:09):

But anything that's kind of a commodity where I'm buying it, I know the quality of the good, I know that if I buy it in one store versus in another I'm getting the same thing, that's just lends itself to online shopping. And so all those kinds of stores have largely gone away, so the income was challenged because of those issues. There was another problem that we faced in the United States though on retail, that we were just oversupplied on retail construction from the 80s to the 2000s. We built so much in the suburbs of the United States that there are just a big swath of empty neighborhood community center facilities that don't have as much of an economic need as in the past. And so the other parts of the world of the developed world had tighter planning restrictions, so you couldn't overbuild as easily, but the challenge with the retail sector is that you're dealing with a couple shocks here.

(09:24):

You're dealing with the elimination of older, less competitive space and it wasn't just the overbuilding that we saw. It was also stuff from the 60s and 70s in the industrial Midwest where the personal income that supported it locally went away. So you have that old and junky stuff being torn down and then you had some overbuilding in some of the recent booms. That's an issue that has led to even before the pandemic and all the focus recently on distressed real estate. There's always kind of a slow pace of a slow, steady, constant drip of distressed retail properties coming to market, but it's kind of turning around. That slow steady drip has taken a lot of that older, less efficient space out of the market and we're starting to see... If we look at just the total leaseable area for the retail market relative to the population of the United States, that number is finally starting to decline. Which means that you don't have the lower quality space dragging down some of the more productive retail assets.

(10:41):

If we look at from the MSCI US quarterly property index, these are mostly high quality institutionally managed retail assets, so it's kind of the best of the best. But those assets, they went through the pandemic income faltered because people weren't going to the store, but it's back up above and the levels seen in 2019, that's a healthy story. If you remove some of the older stuff in the marketplace and there's a little bit of consolidation, that can be a healthy thing for income. It doesn't mean the prices are any better because even if income is a little bit above where it was in 2019, it's now costing an awful lot more to finance and acquisition and you have a more expensive mortgage and so retail property prices are going to be challenged.

(11:31):

It's not the existential kind of challenge that some of these office buildings face. Retail did face that existential question 20, 30 years ago and the markets responded by slowly filtering some of those properties out to the bottom and having them removed from the market. And when I say removed from the market, I mean they're getting an appointment with a bulldozer and the land is repurposed for some other use.

Adam Bass (11:59):

Given what you said about some people stayed home especially, are we facing a similar glut in the office market as you're describing for retail now and that's slow drip perhaps? Has it even started already?

Jim Costello (12:15):

There's definitely an excess of office space out there at the moment. Again, the leasing professionals are showing some record high availabilities for space in the office market. Some of that space though is not going to... Some of that space though, is facing a different kind of demand. Not every office building is the same. The leasing professionals talk about how certain assets are still getting attention. There are people who need to be

around each other in the city. Every office worker has different needs for space and how they use it. Some office workers, their jobs depend on a high degree of social capital, visiting with clients, talking with their colleagues. There's a lot of stuff you can do on Zoom and Teams, but it's not a perfect substitute for sitting down in an office with somebody and looking them in their eyes and getting a sense of what they really think about something.

(13:29):

Those folks who really depend on that social capital element to their job, they're coming back into the cities, but that's not every job. Some jobs where it's more routine work, more filing and calculating, less of that social capital aspect, maybe they don't need to be around everybody else. I view this change of some of the workers staying home, to me in a way it's nothing new. This is what we've been seeing from the 1950s on in the United States. Back in the 1950s, a fellow I used to work with at MIT, he did a study and he showed that roughly half of the financial sector in the United States, the workers, were concentrated on the island of Manhattan. And that changed over the years, high-tech tools like fax machines, cheap long distance phone calling, it allowed the firms to move economic activity out of Manhattan, which is an expensive area, and it moved that activity to places like Charlotte and Tampa. And when they moved the economic activity there, that means eventually through attrition you hire local folks and you can hire them at a lower wage rate.

(14:47):

And in the end it made the average financial sector wage of Manhattan surge because you kept the big swinging in wallets, as Michael Lewis kind of might say, here in Manhattan. And so I see this as just a continuation of that thing that has been happening for a long time. One of the things that our clients have been asking us for a lot recently is information about offices in places like Monterrey, Mexico and in the Philippines. Why is that? Because they understand that back office activity that's being shifted to those areas, that in 30, 40 years earlier was being shifted to places like Charlotte and Tampa and they're trying to think about an investment strategy around that.

Adam Bass (15:35):

So it's not even necessarily that the total might be going away, but that it's moving literally.

Jim Costello (15:45):

Oh, I do think the total will be going away. This is the issue, it's a complicated thing. You have some workers who still have a degree of social capital, it makes sense for a firm to hire them in an expensive market, but they don't necessarily need to be in the office every day, they don't need to interact with everybody every day. And so where they do the work, might change. And so suddenly the footprint that you have in an office, you don't need as many dedicated desks, much more hoteling and firms might be able to manage with a smaller footprint. The office becomes a slightly different kind of place, a little bit more on the socialization, team building, collaboration, which talking with real estate people, that's a more expensive type of facility because you are sitting up not just a bunch of cheap cubicles and monitors, you're setting up nice furniture for lounge like atmosphere and that's a more expensive deal.

Adam Bass (16:53):

What I'd like to turn to now is the subject you've also spoken about on the program before and also written about quite recently, and that's the gap that still exists between buyers and sellers in terms of price. And volume was extremely low last year, I know you've mentioned before, but where are we right now? Especially when it looks like interest rates, while they may not be coming down as quickly as people would like, the Fed has indicated at least here in the US that they may not rise again, at least not soon. So I guess the question is where do we stand in terms of buyers and sellers right now?

Jim Costello (17:40):

This is something that's been on my mind a lot in a sense sort of the fight that is going on between my friends in the real estate industry that are focused on the REIT world and the public pricing of assets versus my friends

in the private asset world, the fund management world, buying a whole building on behalf of other investors. They tend to think of the value of the assets in different ways and sometimes they can get contentious at industry conferences where they'll sort of make fun of each other, so it's a fun thing to see. The pricing of assets in the REIT world is more immediate because you'll see a company, here's the composition of the assets that this company holds, and the public markets very quickly and efficiently factor in expectations for future financing costs, for future demand trends, and they'll ascribe a value to the share price and then you can back from the share price to what that means for the assets.

(18:47):

Then some people look at that and say that, "Oh, prices are down so much, we should see a tremendous decline in prices if we're going to jump in and buy an office asset today." The folks on the private world, hanging out at a cocktail event and talking with the owner of a couple office towers alone in Lower Manhattan, he was telling me that people were calling them up and offering them 30 cents in the dollar for some high quality office buildings he owns in Lower Manhattan. They're fully leased to high quality tenants who still need the space and are still coming into the office and it's kind of bond like income and people are bottom fishing trying to buy them for 30 cents in the dollar, and his attitude was, "Well, thank you. We're not looking to sell, but stay in touch. Maybe we can work together in the future on something."

(19:39):

It's a polite way of saying take a hike, but that difference between the two. So the REIT world looks and says, "Oh, it's not valuable." But the current owner who has financing locked in, has tenants locked in, they don't have to sell. And so you have this disconnect underway where potential buyers want to price in every worst case scenario. Current owners, if they're lucky, they're like that manager I was talking about. If they're unlucky, maybe they've got a tenant that's weak, maybe they've got a loan maturity coming up, and so you are starting to see some of those folks who are unlucky make some moves and start to sell things, start to bring on partners for a preferred equity play to be able to get more capital into the building to refinance it, but you only do that if you think there's some sort of viability for the future of the asset.

(20:34):

A class B building, a class C building with a lot of problems and needs a lot of spending to be viable in the future, there we're starting to see an uptick in distress activity. Where the owner reaches out to the lender and says, "Listen, we've got a loan coming due. We know that we're not going to be able to refinance it at today's rates just given how little income we expect, we'll still be on the asset. Let's work with some brokerage professionals and get into a managed sale process where we can sell this thing and return as much of the loan to you as possible so that we don't want to fight this out like we did in the past."

(21:15):

Lawyers I talked to are actually a little bit disappointed about all this because in previous downturns, you'd have those distress situations and it would lead to a foreclosure process where they'd fight to try and keep the building, which also meant a lot of lawyers fees. This time through some of the owners who are unlucky in terms of the kind of buildings that they're holding, they're realizing that there's no point in fighting and in trying to hold on because it's just going to cost them a lot and leave them with nothing so why even engage the lawyer?

Adam Bass (21:51):

Okay, so for lawyers out there, 2024 real estate lawyers, 2024 may not be the best year for you. But real estate investors are sounding like maybe they're seeing some opportunity this year, what are they watching for?

Jim Costello (22:09):

There is opportunity here. Again, we were talking a bit about that buyer seller gap. It's wide. They have different expectations. It's wide as for the office markets narrowest through the industrial market. The industrial market, there still is investment happening. The pace of investment is higher. It was higher in the fourth quarter of 2023 than it was for the average fourth quarter from before the pandemic. And there's a seasonal pattern in commercial real estate sales, the fourth quarter is always the biggest quarter of the year.

People raise money, they put it to work throughout the year, but then by the end of the year they have to have it all deployed. So a lot of deals tend to get closed then. So the industrial market, it's not a better footing.

(22:57):

It's the office market where there's a problem. We haven't talked much about apartments yet, but the apartment sector, that too is highly liquid, less so than some points in the past, but still there's a lot of investor interest there because it's a more predictable income stream and there is for the performance characteristics of the asset, you're spending less on capital expenditure to keep it viable. That's one of the problems with the office market, for every dollar of income, you have to spend a lot on renovating it and managing the assets, the capital structure on the building on a regular basis, paying people an awful lot of money to bring tenants into the building, so it's a different financial structure and that has led to still a lot of investor interest in the apartment sector, plus the financing is a little bit easier. The mortgage costs because of the benefits of Fannie and Freddie are 50, 60 basis points lower than a typical commercial mortgage rate, and that helps.

Adam Bass (24:12):

So looking across the different segments, again, we talked about financing differences, but if I'm a developer, what am I looking at in terms of from the moment I think, "Yeah, I'm going to open a warehouse. I'm going to build an office." To when it literally gets off the ground and into the air? The differences in timeframes?

Jim Costello (24:41):

Developing can be one of the most profitable elements of commercial real estate. The uncertainty around that though can also be more extreme. If I start a project and I deliver it in the middle of a recession, I might not be able to hold onto it. There are stories like that here in New York of people who got started on office buildings before the financial crisis, before the pandemic, and then it looked great when they started. It looked like there was a lot of demand and then it was delivered into a period of no leasing demand and challenges in financing. Then what do you do with it?

(25:26):

In some cases, it's been stories of the developer ending up defaulting, but then there are other stories of that developer who gets going and they just hit the timing just right and they bring it to market just when everybody's looking for a lot of space and they knock it out of the park because if you're taking undeveloped or low density usage land and putting a lot of money into it and bringing into the modern economy, you're instantly generating much more rental income on that space than before, and you're creating a lot of value.

(26:03):

There are vast fortunes that have been made in that development world, but the risks around the construction, the uncertainty of when you deliver it, it's going to be a harder thing for something like the office market because it takes so long to build one of these big towers. Outside of my place in Brooklyn, an office tower started in 2018 and in 2020 they were pretty well long in the construction and then they had to stop because for a while, even those workers couldn't go to the job site, just all the lockdowns. By the end of the year, they had started up construction again, but then they're delivering it into a market where there was not the kind of demand that they saw before, and so the question is who knows what happens next with that building? Those are the kind of challenges that some sectors don't face.

(26:58):

The industrial sector, for instance, if you think about a big logistics facility out in New Jersey or eastern Pennsylvania, three to six months for a construction timeline, you have a very simple construction pattern of putting down some concrete bed. The tilt up concrete walls are assembled at a factory brought to the site and snapped together. I mean, I'm oversimplifying it, but it is a much shorter, easier construction process than one of these large assets that will last more than a hundred years. We have a record amount of industrial construction today, which is something that people haven't been paying too much attention to, but even with all that construction, it's not presenting the kind of risk that we've seen with other construction cycles.

(27:53):

Look at the 1980s, we saw the introduction of the highway systems in the United States, all the suburban areas opened up in the 60s and 70s, and then combined that with some tax policy changes that made construction very favorable, we saw a surge of construction in the suburbs in the 1980s. You had the infrastructure put in, then suddenly the money situation made it easy and we wildly overbuilt the amount of office space that was needed. Part of that was also just information and efficiencies. This is still an opaque asset class but back then, it was harder to get information just was out there.

(28:32):

It took a while for the appraisers to catch up to the fact that we have been overbuilding for years, and it took a while for values to start coming down, even though there was a lot of empty space. It took a while to change the behavior of the participants because of all the stickiness in terms of that information flow. In the industrial sector, it's a quicker back and forth because there's a shorter development timeline, and then today also if there's a little bit of a change in industrial demand, it's flowing through on a weekly basis now with some of the cell phone demand measures that people are putting together. So it's a very different construction risk than what we saw with the overdevelopment of office space in the 1980s.

Adam Bass (29:18):

Let's stick with the 80s and an example that you brought up when we were talking just a few days ago preparing for this. You mentioned Houston in particular in the 80s presents perhaps a lesson for today's investors. Can you talk a little bit about that?

Jim Costello (29:38):

Yeah, overdevelopment, it was an issue nationally in the period that preceded the S&L crisis. S&L, meaning Savings and Loan. It was a financial structure where these small banks were suddenly making loans on construction of properties in their cities that maybe they weren't needed as much, but they also had some fees are being generated and a local mandate to help drive growth. People were building more than was needed. The Houston example was one of the areas where it really got out of hand because you also had the volatility in the local economy that came from the energy market, and it kind of preceded some of the big building booms that we saw just ahead of the S&L crisis because they had years of stronger growth from the energy sector surging, and it led to a tremendous pace of over construction. You had vacancy rates getting up close to 30% of the space, was unutilized at the time, according to some of the surveys that the leasing professionals had done of the market at the time.

(30:57):

The sector and the office markets has changed a bit there. Other energy markets went to a similar volatile kind of structure. Calgary up in Canada, very similar to what Houston went through. Calgary has been kind of interesting recently though they've had the city, people talk a lot about converting office buildings to something else and we're going to see some of that, we've seen some of that in the past, it's wildly expensive to do that. Calgary is actually doing something interesting where they're trying to subsidize that conversion, trying to reduce the cost for the developer to actually make that transition, and they view it as a benefit for the city overall because for them, if suddenly you have some residential and you're downtown, instead of it just being an empty place at night, you've got some additional life there. You've got some additional taxpayers, you've got some people who are going to use restaurants and retail nearby. So that's the carry on benefit there.

Adam Bass (32:03):

Can you get a little more specific about what are the lessons for today's investors who may or may not have been working or maybe even alive in the 80s when this was going on? What can they take away from this?

Jim Costello (32:21):

Yeah, that's an interesting thing, thinking about different cycles. And we do have to think about cycles in the market, they're not like the one that we have just been through. That's almost an evergreen story I've been

writing throughout my career. Every time we head into a downturn in the market, I have a story that I just dust off and write. Again, don't think about this cycle like the last one, and in the run-up to the internet bust, I wrote that story. There were a lot of people trying to raise money saying that they were going to do the same kind of things, they were going to be like Sam Zell and buy up office buildings on the cheap because of the internet bust, and they'd be able to just make a fortune like that, but the conditions were vastly different.

(33:15):

There was a demand shock, it wasn't a supply shock. So a demand shock is quicker to work through and backfill than a supply shock because the supply shock, like Houston, you build these office buildings that are not needed and then you vastly oversupply, there's more volatility on that side on the supply side than the demand side. So that was an example. We had the Russian bond crisis, that was another area where I got to write this story. The global financial crisis, again, it was a different kind of downturn. What we're seeing in the downturn in crisis today, here too, it's a different type of downturn than the global financial crisis and some of the previous downturns, some of the outlets rhyme, but not all of them.

(34:04):

What is happening today, some of it's a financial driven one, and I think what we went through in the 1970s in some ways could be more applicable. And this is tricky because I wasn't working in the 70s, although my dad did sit me down in front of a apple to computer when I was in grade school and gave me a stack of property deeds for Illinois and is like, "Jimmy, this is called a spreadsheet. So you're going to take this county number here and you're going to put it in this cell and you're going to take this personal number here and put it in this cell." So he put me to work in this very early on.

(34:42):

But the 1970s is probably the most appropriate period of time because the 1970s was the last time that the Fed raised the fed funds rate at such a fantastic clip, where they hit the brakes that hard. And that changed the ability to finance properties, it changed how people were able to buy properties. But then for the office market, you've got the additional challenge of some obsolescence that didn't happen in the 70s, but then some element of retail changing. Another example I like to look at, 1950s in many urban areas, you had industrial space. Manhattan used to have a huge manufacturing employment base. It's now called SoHo, and it's been repurposed to high end retail and housing. It took decades for that to happen, but properties over the years, if the location is centrally located, then there's still some underlying land value and at some point somebody will figure out the value of it. It can take time though.

Adam Bass (35:56):

The last thing I want to ask you about, and then I promise I'll let you go. You've said again and again, and you just made the point right now in terms of how opaque this asset class can be, but you've talked about where the real work gets done at conferences and cocktail parties and dinners. So my question is what are you hearing at those conferences, cocktail parties and dinners lately?

Jim Costello (36:24):

One of the interesting things, all of these dislocations in the office market, there's money being raised now to get to work in that. Institutional money is going to be a little bit hesitant to jump in at first. They have to see somebody else getting a couple wins before they're willing to jump in, but we're starting to see a few wins. Last year, the biggest purchases of CBD office assets, the biggest purchasers rather not the individual sales. The biggest purchasers were private local developers, it's their own money, they're taking risk because they understand the building, they understand the city, they're committed to the city, they're buying where they live, they jumped in first. But then our friends in the REIT world are starting to see some of the REITs that are focused on CBD offices. Since October of last year, there's been some triple digit gains in their share prices.

(37:25):

Some of that just realization that some of the worst case scenarios may not play out for, and those REITs tend to have higher quality assets in those locations as well. But then if the cost of financing comes down in the year ahead with lower rates, maybe it works through better. Maybe it's not that worst case scenario. In that case,

people in the institutional world might follow. When I've been at conferences, that's what people talk about. There's people raising money, and it is funny, some of the people raising money are the same people that were buying assets before and maybe got ahead of their skis.

(38:04):

But they understand the assets that are there and which ones just have some good fundamentals and can actually attract a tenant in the future versus the ones that don't. So it's the same players, but they're getting ready to put money to work. I think still just driven by waiting to see how much more we get in terms of a price decline before they really go in hard. But there's a couple of funds that have been announced, billions of dollars focused on this issue in the institutional world.

Adam Bass (38:40):

That's all for this week. Joe and I, would like to thank Jim, and of course all of you for listening to this bonus episode of the program. If you have some time, please leave a rating or review. We would really love to hear from you. Until next time, I'm your host, Adam Bass, and this is MSCI Perspectives. Stay safe everyone.

About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process. To learn more, please visit www.msci.com.

This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the "Information") is the property of MSCI Inc. or its subsidiaries (collectively, "MSCI"), or MSCI's licensors, direct or indirect suppliers or any third party involved in making or compiling any Information (collectively, with MSCI, the "Information Providers") and is provided for informational purposes only. The Information may not be modified, reverse-engineered, reproduced or disseminated in whole or in part without prior written permission from MSCI. All rights in the Information are reserved by MSCI and/or its Information Providers.

The Information may not be used to create derivative works or to verify or correct other data or information. For example (but without limitation), the Information may not be used to create indexes, databases, risk models, analytics, software, or in connection with the issuing, offering, sponsoring, managing or marketing of any securities, portfolios, financial products or other investment vehicles utilizing or based on, linked to, tracking or otherwise derived from the Information or any other MSCI data, information, products or services.

The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.

Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall any Information Provider have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.

Information containing any historical information, data or analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. Past performance does not guarantee future results.

The Information should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. All Information is impersonal and not tailored to the needs of any person, entity or group of persons.

None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), any security, financial product or other investment vehicle or any trading strategy.

It is not possible to invest directly in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI does not issue, sponsor, endorse, market, offer, review or otherwise express any opinion regarding any fund, ETF, derivative or other security, investment, financial product or trading strategy that is based on, linked to or seeks to provide an investment return related to the performance of any MSCI index (collectively, "Index Linked Investments"). MSCI makes no assurance that any Index Linked Investments will accurately track index performance or provide positive investment returns. MSCI Inc. is not an investment adviser or fiduciary and MSCI makes no representation regarding the advisability of investing in any Index Linked Investments.

Index returns do not represent the results of actual trading of investible assets/securities. MSCI maintains and calculates indexes, but does not manage actual assets. The calculation of indexes and index returns may deviate from the stated methodology. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the index or Index Linked Investments. The imposition of these fees and charges would cause the performance of an Index Linked Investment to be different than the MSCI index performance.

The Information may contain back tested data. Back-tested performance is not actual performance, but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.

Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Accordingly, constituents in MSCI equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. Inclusion of a security within an MSCI index is not a recommendation by MSCI to buy, sell, or hold such security, nor is it considered to be investment advice.

Data and information produced by various affiliates of MSCI Inc., including MSCI ESG Research LLC and Barra LLC, may be used in calculating certain MSCI indexes. More information can be found in the relevant index methodologies on www.msci.com.

MSCI receives compensation in connection with licensing its indexes to third parties. MSCI Inc.'s revenue includes fees based on assets in Index Linked Investments. Information can be found in MSCI Inc.'s company filings on the Investor Relations section of [msci.com](http://www.msci.com).

MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc. Neither MSCI nor any of its products or services recommends, endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies and MSCI's products or services are not a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such, provided that applicable products or services from MSCI ESG Research may constitute investment advice. MSCI ESG Research materials, including materials utilized in any MSCI ESG Indexes or other products, have not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body. MSCI ESG and climate ratings, research and data are produced by MSCI ESG Research LLC, a subsidiary of MSCI Inc. MSCI ESG Indexes, Analytics and Real Estate are products of MSCI Inc. that utilize information from MSCI ESG Research LLC. MSCI Indexes are administered by MSCI Limited (UK).

Please note that the issuers mentioned in MSCI ESG Research materials sometimes have commercial relationships with MSCI ESG Research and/or MSCI Inc. (collectively, "MSCI") and that these relationships create potential conflicts of interest. In some cases, the issuers or their affiliates purchase research or other products or services from one or more MSCI affiliates. In other cases, MSCI ESG Research rates financial products such as mutual funds or ETFs that are managed by MSCI's clients or their affiliates, or are based on MSCI Inc. Indexes. In addition, constituents in MSCI Inc. equity indexes include companies that subscribe to MSCI products or services. In some cases, MSCI clients pay fees based in whole or part on the assets they manage. MSCI ESG Research has taken a number of steps to mitigate potential conflicts of interest and safeguard the integrity and independence of its research and ratings. More information about these conflict mitigation measures is available in our Form ADV, available at <https://adviserinfo.sec.gov/firm/summary/169222>.

Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, IPD and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Global Market Intelligence. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and S&P Global Market Intelligence.

MIFID2/MIFIR notice: MSCI ESG Research LLC does not distribute or act as an intermediary for financial instruments or structured deposits, nor does it deal on its own account, provide execution services for others or manage client accounts. No MSCI ESG Research product or service supports, promotes or is intended to support or promote any such activity. MSCI ESG Research is an independent provider of ESG data.

Privacy notice: For information about how MSCI collects and uses personal data, please refer to our Privacy Notice at <https://www.msci.com/privacy-pledge>.