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James Moore and Rene Martel Discuss Long-Duration Overlay Strategies



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Dr. Moore is an Executive Vice President, leads the global Liability-Driven Investments product management team, and is PIMCO's pension strategist. He joined PIMCO in 2003 from Morgan Stanley where he was in the Corporate Derivative and Asset Liability Strategy groups. At Morgan Stanley Dr. Moore was responsible for asset-liability, strategic risk management and capital structure advisory work for key clients in the Americas and Pacific Rim. Previously, he was associated with Enhance Reinsurance, the Wharton Financial Institutions Center and William M. Mercer Co. While at Wharton, Dr. Moore taught courses in investments and employee benefit plan design and finance. He has thirteen years of investment experience and holds bachelor's degrees in applied mathematics and economics from Brown University and a PhD from The Wharton School of the University of Pennsylvania with concentrations in finance, insurance and risk management.

Mr. Martel is a Vice President and Product Manager for Liability-Driven Investments: Long Duration and Pension Products. He joined PIMCO in 2006 from Mercer Investment Consulting where he was a Senior Associate. While at Mercer Investment Consulting in Montreal, Mr. Martel was mainly responsible for conducting asset liability modeling and recommending risk management strategies for pension plan sponsors. He also advised institutional clients on asset allocation, investment policy and investment managers selection. Previously, Mr. Martel was in the actuarial practice of Mercer Human Resource Consulting where he advised pension plan sponsors on funding, accounting and plan design matters. He has six years of experience in the pension and investment industry and holds a bachelor degree in actuarial science from Laval University. Mr. Martel also holds the Associate of the Society of Actuaries (ASA) designation and is a CFA charterholder.

The trend toward liability-driven investing has increased demand for strategies that can help to hedge long-duration liabilities. In the interview below, Jim Moore and Rene Martel discuss the pros and cons of long-duration overlays as a strategy that may improve the match between assets and liabilities without significantly disrupting a pension plan's overall asset allocation strategy.

Q: Many pension plans are considering long-duration overlays as a tool for hedging long-duration liabilities. What is an overlay and how can it potentially resolve some of the problems that pension plans face?

Moore: An overlay is a way for pension plans to get long-duration exposure synthetically with futures or interest rate swaps. Effectively, the plan can pay a benchmark financing rate in exchange for exposure to long-duration bonds referenced in Treasury futures contracts or at points along the swap curve.

Overlays are becoming popular with pensions, where liabilities involve future cash-flows that have a natural correlation with long-duration investments. Taking on long-duration exposure enables the plan sponsor to better match the interest rate sensitivity of long-term cash-flows. Specifically, the overlay helps to reduce the tracking error

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between assets and liabilities. When interest rates move up, the present value of liabilities will go down, and so will the value of the overlay. Likewise, when rates go down, the present value of the liabilities rises and so does the value of the overlay.

The goal of a long-duration overlay is not necessarily to move the tracking error of the portfolio to zero, but simply to help move the tracking error into a desired range. Exact matching (also known as cash-flow matching) may look like the most desirable option, but transaction cost, the lack of exactly matching fixed interest instruments and the 'locking up' of cash make this a less optimal solution. For many plans, hedging interest rate risk is the first step in getting assets and liabilities better attuned.

Martel: A major benefit of overlays is that they require a low amount of capital up front, and so there is very little disruption to a pension plan's existing asset allocation. Using overlays, plan sponsors can reduce the duration mismatch relative to liabilities with no significant need to reduce the expected return on assets. On the other hand, the reduction in expected surplus volatility achieved by implementing an interest rate overlay will generally be smaller than what could be realized by increasing the fixed-income allocation. This is because plans using interest rate overlays usually maintain large allocations to asset classes exhibiting low correlation to liabilities, like equities or alternatives. The decision to use either an overlay, the physical market, or a combination of both to reduce tracking error to liabilities becomes a question of trade-off between expected return and the targeted reduction in risk.

By employing long-duration overlays, pension plans are essentially putting leverage on the portfolio. If the plan has a 50/50 stocks and bonds portfolio and implements an overlay to match its interest rate risk, that's analogous to putting the entire allocation into a duration-matched bond portfolio and using equity futures to get risk exposure. In either case, there is leverage – with more market exposure than the dollar value of plan assets – and the issue is how the plan will manage that leverage and how it fits within the sponsor's circumstances, objectives and resources.

Q: How are you seeing pension plans approach overlays and how quickly are they being adopted?

Moore: At this stage, about 75% of plans who are making changes are just now moving to standard physical long bond portfolios to boost duration. Maybe 10% or 15% of the plans we are talking to are seriously considering implementing more extensive overlay strategies. Of course, the nature of the overlay, the magnitude of desired interest rate exposure, and the overall game plan varies from sponsor to sponsor. So most pension plans are essentially going through the learning curve at this point.

Duration overlays with significant leverage should generally be viewed as temporary solutions that will get the plan to a point where the portfolio itself can cover more of the interest rate exposure, or where the funding status is improved enough to employ more permanent solutions. The idea would be to eventually have the duration exposure covered by cash bonds to reduce overall plan risk. Plans really need to think through their goals, and what it will mean to manage an overlay on an ongoing basis across multiple yield curve environments.

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For most pension plans, offsetting the interest rate exposure of liabilities is only one piece of the puzzle. The idea is to think harder about diversification in the risk asset portions of the portfolio and concentrate on ways to reduce overall risk. Overlays reduce interest rate risk, but they are simply a step in the process of reducing overall risk. Ultimately, diversification of all risk exposure is where plans will get the most bang for their buck if they are viewing the pension plan on a standalone basis.

Martel: Overlays are often only one of many steps in the march towards surplus risk reduction. Initially, most plan sponsors will extend duration of the existing fixed-income allocation in the cash bond market. This is a very simple approach that does not introduce leverage or any of the operational complexity of overlays, and allows the sponsors to “dip their toes in the water”. It also provides an opportunity to get the internal staff more attuned to the idea that every investment decision will now be taken in the context of the plan’s liabilities. At a certain point, plan sponsors will realize that with 50% of assets in fixed income, there’s only so much asset-liability mismatch risk that can be covered through the physical bond market (especially when the plan is relatively young and liabilities stretch out far into the future). Then they start thinking about how much they really need to cover, and that is when you see more and more plans looking at overlays as a way to edge out some remaining interest rate risk.

At that stage when they’re concentrating almost solely on interest rate risk, most sponsors are surprised that they will rarely achieve an expected tracking error to liabilities below 10% when they match liabilities duration with an overlay while maintaining a high allocation to equities or other asset classes with low correlation to their liabilities. This is because the contribution to tracking error from non-correlated risk assets like stocks overshadows the correlated contribution from the interest rate risk mismatch. Still, underfunded plans are usually not really willing to immediately forgo the equity risk premium because of its historical outperformance. As Jim was saying, once the funding ratio improves, plans that are not comfortable with risk levels can start looking at solutions with bigger allocations in fixed income, or more diversification within the risk asset portfolio. In the end, improvement in funding allows the plan to dial down risk.

Q: What are the administrative costs and risks associated with implementing a long-duration overlay?

Moore: Overlays have a number of administrative considerations, mostly related to maintaining liquidity to cover potential losses on swaps and futures positions when interest rates rise. Of course, the point of the overlay is that any losses in those positions should be offset by a concurrent change in the present value of liabilities. But in the short term, the plan cannot monetize changes in the present value of its liabilities, even though it will need short-term liquidity to pay any cash-flows owed on the futures or swaps positions. So a plan will always need to know where the liquidity to pay the obligations will come from.

Properly maintaining sources of liquidity is a key concern when implementing an overlay, and relies on a different set of challenges than plan sponsors are typically

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used to managing. Some plans deal with these internally, while others hire external managers to administer the overlay. Plans that opt to manage the overlay internally should consider such things as their ability to mark derivative positions to market and handle collateral flows. These are very important requirements because things like the value of derivatives contracts and the amount of required collateral can move around substantially in a volatile interest rate environment. Also, regardless of whether the overlay is managed in-house or externally, sponsors need contingency plans that take into account “what ifs?” In the case of a sharp backup in interest rates, there has to be a blueprint in place that defines how the pension plan will handle the situation, identifying contingent sources of liquidity – either through credit lines or within the asset portfolio – that would be needed to support the overlay.

The sponsor needs to identify what sources of liquidity it should have outside the plan, and what issues are associated if the source of the liquidity is inside the plan. For example, would contributions from a liquidity service outside of plan assets be treated as contributions to the plan, or is there some sort of mechanism that identifies it as only temporary support for the overlay strategy?

These risks are all manageable, but only if the implementation of the overlay is well thought out. Poor planning would mean that in times of market stress, the sponsor might have to liquidate crucial pieces of the plan’s asset portfolio in order to provide additional liquidity.

Q: Do you find that some plans are better equipped to handle all these administrative considerations? Is size an issue?

Martel: Size can be an issue. Bigger plans often have more in-house resources and better understanding of the issues associated with managing and supporting derivatives. Smaller plans might not have the right combination of staff, technology or other resources needed to efficiently implement an overlay.

The other dividing line between those plans that are equipped and those who aren’t is simply a matter of experience and discipline. We view the benefits of overlays as an “all things in moderation” type of situation. If a plan with a decent amount of liquidity is relatively prudent, cautious about how far it wants to extend duration, and realistic about its aims, it will be in a better position to successfully implement and manage the overlay. The ones that we worry about are those who buy into overlays as a magic bullet solution for pension plans that aren’t fully funded or are facing other risks.

Q: If pension plans aren’t all equipped to manage overlays on their own, what options are there when hiring outside managers?

Moore: Pension plans looking to implement overlays typically choose between a “bundled” approach and an “unbundled” approach. In a bundled approach, a single outside firm manages futures positions, collateral positions and other administrative considerations. In an “unbundled approach,” those various elements of the overlay are managed separately – either in-house or by multiple outside firms.

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One of the pros of the bundled approach is that the whole application resides in one place, and the plan can focus solely on the interest rate position. The duration and magnitude of the overlay can be fine-tuned based on what the plan needs, and the necessary adjustments on the administrative side are well defined. There is more operational simplicity and transparency with a bundled approach than there would be with multiple managers administering various pieces of the overlay.

Martel: One of the biggest advantages of a “bundled” approach is that the overlay manager has direct access to collateral and can monitor and adjust the liquidity of the collateral portfolio to keep administrative risks in check. In addition, the relative contribution to target duration of the overlay versus the physical bond portfolio can be adjusted from time to time to take advantage of relative value opportunities in the cash or swaps market. In an “unbundled” approach, the overlay manager may not have an insight into the collateral and liquidity that is being maintained. The manager of the overlay position will never be 100% assured that there is enough liquidity to meet outflow requirements, and this can lead to a scramble in times of market stress.

Q: You also mentioned that duration exposure in an overlay can come from swaps or futures. What are the differences between these two approaches?

Moore: One of the simplest ways to think about swaps versus futures is similar to how many people think about the trade-offs between mortgage-backed securities versus corporate credit in the Lehman Aggregate Bond Index.

In mortgages, investors get additional spread from selling the prepayment option – the right for the borrower to pay back the loan at any time. Essentially, mortgage-backed securities issued by agencies – Fannie Mae and Freddie Mac – have been rated triple-A rated and therefore should have no significant credit risk. So the additional spread is purely due to the optionality of the mortgage – the chance that it could get pre-paid before it matures. That optionality in mortgages is analogous to the futures market, where liquidity is maintained by offering multiple bonds deliverable against the contract. On a 10-year Treasury note future, for example, you can deliver anything from a seven-year note to the newly issued 10-year note. At any point in time there is a single “cheapest to deliver” for a given contract, but that changes with the shape of the curve and the direction that interest rates are moving. So with futures contracts, there is some amount of negative convexity – duration does not extend as much as pure cash bonds when rates fall or shrink as much when rates rise – essentially similar to the prepayment option in mortgages.

In the interest rate swaps market, the swap is actually a bilateral contract between the investor and a broker-dealer. This is similar to the world of corporate credit because you depend on the counterparty’s ability to make payments. There is no significant negative convexity with swaps, but swap rates may not move in tandem with Treasury rates, since there is always some degree of credit risk, which can fluctuate with the financial health of the counterparty, the prevailing market attitude toward credit, or other factors that may raise or lower the chance of a default.

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So when making the decision about whether to get long-duration exposure from swaps or Treasury futures at any given point in time, you have to look at the trade-offs between where swap spreads are and the negative convexity embedded in the futures market. There are two parts to this comparison. The first is simply to weigh how much one will compensate you versus the other. The second comparison is based on how much uncertainty or movement there will be in each. For futures, volatility in the underlying interest rate market or a shift in yield curve shape may change the cheapest to deliver security, and could alter the price sensitivity, or duration, of the contract. Similarly, whatever is happening in credit markets or the financial system can move swap spreads around over time.

Even after making these comparisons, it's not unambiguously better to do an overlay solely in swaps or solely in Treasury futures, given that relative pricing and preferences will change.

Martel: One other factor that can sometimes influence the "swaps versus futures" debate is that swaps are contracts that can be customized. When managers are trying to match risk factors of unique liabilities, it can be very useful to have a customizable instrument to achieve a given duration, curve exposure or convexity. Treasury futures contracts are more standardized.

The trade-off, of course, is that the further an investor goes with customization, the less liquid the instrument and pricing becomes an issue. "Plain vanilla" interest rate swaps – those with the most popular sizes and maturities – are probably one of the deepest and most liquid markets in the world, with volumes in the trillions of dollars and very tight bid-ask spreads. But if investors want to deal in more exotic or customized swaps, the pricing can become less transparent. If they move away from the most liquid points on the swaps curve and, as a hypothetical, want to do a 23-year swap, there is less liquidity and bid-ask spreads are going to be wider than if they aim for dedicated points on the curve like 10-years or 30-years. Nice round numbers corresponding to benchmark bond maturities tend to be the most liquid points on the curve.

Another advantage of swaps over futures is that they show better correlation with the discounting methodology used by most pension plans than Treasury futures. Liabilities are generally discounted using a Corporate AA curve or rate. Swap spreads have a high correlation to AA corporate spreads and therefore the sensitivity of the overlay and the liabilities to corporate spreads fluctuations should be better matched using swaps as opposed to Treasury futures, which do not have the same degree of credit characteristics.

Thank you Jim and Rene.

Past performance is not a guarantee or a reliable indicator of future results. Investing in the bond market is subject to certain risks including market, interest-rate, issuer, credit, and inflation risk. Mortgage-backed securities may be sensitive to changes in prevailing interest rates. When rates rise the value generally declines. There is no assurance that the private guarantors or insurers will meet their obligations. Derivatives and mortgage-related securities may involve certain costs and risks such as liquidity, interest rate, market, credit, management and the risk that a position could not be closed when most advantageous.

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Swaps are a type of derivative in which a privately negotiated agreement between two parties takes place to exchange or swap investment cash flows or assets at specified intervals in the future. There is no central exchange or market for swap transactions and therefore they are less liquid than exchange-traded instruments. Investing in derivatives could lose more than the amount invested.

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