

Sam Priyadarshi



By Will Acworth and Joanne Morrison

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SAM PRIYADARSHI TRADES A LOT OF FUTURES. As the head of fixed income derivatives at Vanguard, he oversees portfolio risk management and trading for the fund manager's fixed income business. Last year his team of five people was responsible for more than \$650 billion in trading, and more than 70% of that amount was interest rate futures listed on exchanges like the Chicago Board of Trade and Eurex.

In an interview with *MarketVoice*, Priyadarshi explains that liquidity is one of the main reasons why Vanguard is such a heavy user of the interest rate futures markets. Deep liquidity allows funds like Vanguard to execute large trades with relatively little impact on price. He adds that even when the financial markets panic, such as during the "flash rally" of October 2014, the Treasury futures market remains highly liquid.

Priyadarshi's desk also handles trading in Treasury notes and bonds, and he observes a noticeable contrast in the liquidity available in the two markets. Since 2012, the value of trading in cash Treasuries has gone down while the value of Treasury futures has gone up. Vanguard estimates the value of trading in Treasury futures, measured on a DV01 basis, is now around 60% of the combined cash and futures market, and 70% in the 10 year equivalent. Priyadarshi sees this trend as indicating that market participants are moving toward greater use of futures to express their views on the rates market.

Vanguard also likes the fact that futures markets offer anonymity, instant execution and efficiency. More than 90% of the \$650 billion that goes through Priyadarshi's team is done electronically, and approximately 50% of the electronic trading passes through algorithmic trading tools. That helps Vanguard reduce its operational costs and scale up its trading without increasing the head count on its trading desk. It also helps Vanguard quantify its transaction costs in a very precise way, which helps improve how it executes its trades.

Vanguard is now seeking to apply the same approach in the swap markets. Over the last two years, Priyadarshi's desk has shifted much of its interest rates swaps trading into market agreed coupon swaps, known as MAC swaps, which have a standardized structure well-suited for electronic trading and margin efficiency. Priyadarshi also has embraced the introduction of swap execution facilities. He says he prefers to trade on SEFs because of the benefits of electronic trading. He adds that some of the central limit order books available on SEFs have become a meaningful source of liquidity, especially for MAC swaps.

Priyadarshi is based in the company's offices in Valley Forge, Pa., a suburb of Philadelphia. In addition to managing the fund's fixed income derivatives trading, he oversees the research and execution of overlay strategies and participates in the company's technology steering committee and market structure committee. Prior to joining Vanguard in 2009, he worked at the Lincoln Financial Group for 12 years, where he was vice president, derivatives and was responsible for hedging insurance products and portfolios.

INTERVIEW

MV: Can you give us an overall picture of the group that you oversee? How many people are there on the team and what are their responsibilities?

PRIYADARSHI: My team is responsible for global portfolio risk management as well as fixed income derivatives trading across all Vanguard fixed income funds. Besides myself, there are three members here in the U.S. and one trader in London. Portfolio risk management essentially involves hedging key rate duration and convexity with different cash and derivatives instruments. For instance, we manage the global portfolio risk across active fixed-income funds totaling over \$115 billion in assets under management. We also do the currency hedging of non-dollar assets and local currency hedged share classes. We are also responsible for a portfolio of U.S. Treasuries totaling about \$15 billion across 11 different fixed-income funds.

MV: Approximately how much trading does your team do in a year?

PRIYADARSHI: My team is responsible for the trading of over \$650 billion in cash and derivatives. By cash I am referring to U.S. Treasury notes and bonds, and derivatives includes interest rate futures, options, swaps, swaptions, and cross-currency swaps. A large part of that \$650 billion, more than 70%, is in futures and options.

MV: Just five people are handling more than \$650 billion in trading? How do you accomplish so much trading with such a small team?

PRIYADARSHI: We have moved entirely to electronic execution for all futures, swaps, and Treasuries. The creation and staging of orders, the aggressing on the trade – almost all of that is done electronically. Then, when the trade is executed, all of the fill information comes back into our order management system. So our workflow is very heavily electronic. Very little manual entry or correction is needed. That's how we accomplish so much with so few.

There are certain types of trades where we continue to use manual trading. Block trades in futures, for example. But about 95% of our trading overall is electronic. Of that, I would say that 50% is done through algorithmic trading.

MV: Can you take a moment to explain why Vanguard is trading these derivatives? Are they meant to be sources of return for the portfolios, or are they being used for more of a tactical type of purpose?

PRIYADARSHI: We trade derivatives for two distinct sets of reasons. The first category is for portfolio risk management. For example, we use FX forwards, futures, options, swaps and cash Treasury notes to manage the duration and currency risk of active portfolios in relation to the funds' benchmarks. We do that hedging throughout the day. We also use these products to hedge large subscriptions or redemptions. Suppose a fund gets a large subscription, say \$100 million. It's very difficult to buy the cash bonds such as corporate bonds or asset-backed securities or emerging market bonds at that exact 4 p.m. time that the net asset value is determined. So we buy futures or receive swaps or buy Treasuries at that time, and over the next few days, the portfolio is realigned to the target allocation. Conversely, when there are redemptions, we sell futures or pay in swaps or sell Treasuries. The different sector specialists, the portfolio managers and the traders can then transact over the next few days. That way, they can time the trades better and get better prices.

MV: Why would you do that instead of just holding the money in cash?

PRIYADARSHI: Then you would have pricing risk. When our shareholders buy or sell the funds, it is at the 4 p.m. price. We hedge the cash flows with derivatives and Treasuries so there is no slippage between the price we are buying or selling and the price the shareholders are buying or selling.

Also in this category is month-end extension. On the last trading day of the month, all of our fixed income funds have their benchmarks extend, because new bonds come into the benchmark and the ones that have matured drop out. Typically the trading volume is very heavy, as much as five or six times our daily trading volume. So we make sure that the duration of the portfolio is extended on month-end, in keeping with the extension in the benchmarks. In other words, we are using futures, Treasuries and swaps to realign to the targeted level of risk.

The fifth item under this portfolio risk management category is tail risk hedging. We use derivatives to hedge against perceived catastrophic events.

Then, moving on to the second general category, we use derivatives for overlay strategies in the hope of generating additional returns. One set of overlays is tactical, based on technical analysis on movements in rates or inflation or credit. The second type is strategic overlays based on our senior management's fundamental macro outlook. The third type is relative value strategies. There are teams that make relative value decisions on the perceived movements in prices of combinations of cash and derivatives, or in different types of derivatives. We also employ volatility strategies. We have a strategic volatility trading team that makes tactical and strategic decisions on the level of volatility, implied and actual. Then we implement that decision using options and futures.

MV: All of those different people come to your team to execute their trades?

PRİYADARSHI: Correct. In most of these teams, one or several of my team members are part of the decision-making. And when the order comes to our desk, our desk is responsible for executing derivatives and cash.

MV: So what goes into the decision about which type of product should be traded? How do you decide whether to use futures or cash Treasuries or swaps?

PRİYADARSHI: It's not an easy question to answer, unfortunately. Typically, we find liquidity in futures to be attractive enough to transact in futures. The liquidity in futures is very deep for all the points on the curve.

On the short side, we are limited in our ability to use cash Treasuries. Funds are not allowed to leverage and not allowed to be short overnight. In other words, we can only short cash instruments if we hold them. So if I don't have a five-year Treasury note, I can use five-year Treasury note futures as a proxy.

But the converse is not true. If I have cash, I have the option of buying either five-year Treasuries or five-year Treasury note futures. At that point, I will make a determination whether I should use futures or Treasuries. Like I said, the liquidity in futures is very deep for all the points in the curve.

MV: What about other factors such as the cost of collateral? Is liquidity the overriding factor?

PRİYADARSHI: I think that is accurate, to an extent. We do care a lot about transaction costs and pricing and collateral. Typically, most of our funds hold high quality assets and it's not a problem to post exchange-eligible collateral. But there are certain funds that don't have U.S. Treasuries. For example, our municipal debt funds don't hold Treasuries because these are taxable securities. In those instances, we post municipal debt as collateral to our FCM [futures commission merchant], who will then post Treasuries on our behalf to the exchange.

MV: A lot of concern has been expressed about declining liquidity in certain parts of the fixed income markets. How has liquidity changed over time in the range of products that you trade?

PRİYADARSHI: In the cash market, what we find is that there is deep liquidity in on-the-run securities such as the recently issued two-year, three-year, five-year, seven-year, 10-year, and 30-year paper. But off-the-runs are not as liquid. We are careful when we are trading them because we have such large volumes of trading and the liquidity is not optimal.

In swaps, we have noticed that liquidity in benchmark swaps and market-agreed coupon swaps has increased, but the liquidity in bespoke or broken date swaps is not as high as it is in bench-

mark swaps or MAC swaps. We do very few broken date swaps now. We mostly trade market-agreed coupon swaps because we find deep liquidity and a lot of market participants, including dealers, in these swaps, and also because of the ease of trading in and out of positions. If you had to unwind nonstandard broken date swap, you would have to send an RFQ [request for quote] along with the terms of the swap. Whereas with MAC swaps, you just have to specify which contract you're trading, whether it's the front contract MAC contract or the back MAC contract.

In U.S. Treasury futures contracts, the liquidity has increased substantially. The CME recently introduced a new ultra 10-year contract in futures. That launch was very successful and open interest is now over 300,000 contracts. That is on the back of deep liquidity in the standard 10-year futures. Open interest is roughly three and a quarter million contracts, and average daily volume is very healthy.

In Europe, we find deep liquidity in Bund futures, decent liquidity in the Bobl and Schatz, but in Buxls, the liquidity is not very good. By liquidity, I mean the ability to transact in very large sizes. Typically, several thousand contracts.

MV: Looking at the whole of your trading, what proportion is cleared?

PRİYADARSHI: All of our interest rate swaps are cleared. All futures are obviously cleared. All of our index credit default swaps are cleared. The only product we trade that is not cleared is single name CDS, but that is a very low percentage of our trading volume. Pretty much everything except single-name CDS are centrally cleared.

MV: How has your trading of swaps changed over the last several years?

PRİYADARSHI: We now go to the SEFs [swap execution facilities] for trading MAC swaps. We prefer it because it's all electronic trading. We don't have to call the brokers. We can just send an order from our portfolio management system to the SEF, and we execute the swap on the SEF, and then it comes back into our portfolio management system within a minute. Previously, I would have to pick up the phone, talk to different brokers, and send the trade details to them. Then we would negotiate on the phone or on the electronic Bloomberg chat. It would take 30 minutes to execute five or six different swaps. Now it takes me a minute or two per swap. We can even do a basket of swaps, say five or six swaps, all at the same time in just a few minutes.

The other thing that I would like to mention is that the formation of liquidity is changing. As dealers' balance sheets have become constrained, we find that other non-dealer market participants are stepping in as market makers. For instance, market making for swaps is not just restricted to dealers any more. Previously, for clients to be able to transact swaps, they needed ISDA documents with a counterparty for trading bilaterally. Now, if I go on a SEF, I can trade with any dealer or nonbank dealer.

MV: Some asset managers have said that they would use SEFs more heavily if they could do post-trade allocations. Is that an issue for Vanguard?

PRIYADARSHI: We pre-allocate everything. When we create orders in our portfolio system, we already know what the allocations are. So when it goes to the SEF, the SEF knows the allocations. Like I said, we don't do much post-trade entry into the system. It's highly automated. It would be impossible to trade \$650 billion on the phone.

MV: You mentioned earlier that 50% of your orders pass through algorithmic trading systems. As you know, the whole area of algorithmic trading has stirred up a lot of controversy. What are your thoughts on the pros and cons of algos?

PRIYADARSHI: Let me talk about the pros first. First, we can use algos to scale up our capacity to trade. We are trading millions of contracts. We handle about 13,000 orders in a year with over 30,000 allocations. So it makes a lot of sense to use algos.

We also use algos to save on transaction costs. We look at transaction costs at the end of every day. We want to understand which algos work in which scenarios and why. If we lost money, was it because of the size of the order, or the timing, or some other reason? We use TCA [transaction cost analysis] to inform ourselves of how the algos are performing, and then make an intelligent choice on which algo to use.

MV: Are you ever worried the algos will go rogue?

PRIYADARSHI: Well, there obviously have to be risk controls. We have a very sophisticated set of controls for our trading, and we have intra-day reconciliation with our FCMs, so no untoward things should happen. But if other market participants don't have sufficient risk controls, or if they are not as judicious and careful in their use of algos, then they can create an erroneous order and that potentially can create disruption in the market.

MV: Given the election results, do you see any of these regulations changing? For example, what if SEF trading was not required?

PRIYADARSHI: The Dodd-Frank Act was passed by an act of Congress so it will require, again, a legislative effort to repeal it. The CFTC and the SEC have written the regulations, and the banks and asset managers and other market participants have already adapted to these regulations and have spent a lot of time, effort and money on complying with these regulations.

MV: What about MiFID II? How will that affect what you do in Europe?

PRIYADARSHI: Until all the implications of Brexit are made clear, our U.K.-domiciled funds will comply with the MiFID II regulations.

We have completely embraced electronic trading of swaps and futures so the electronic trading part should come easily because we have experience in the U.S. complying with the Dodd-Frank trading mandate. The MiFID II mandate for OTF and MTF trading, for example, we can adapt to that right now.

Best execution is required under MiFID II, but we are applying a global best execution standard across all our funds. Regardless of jurisdiction, we want to comply with the most stringent best execution requirement.

MV: Another area of regulatory attention is the degree of transparency in the cash Treasury market. As you know, the Treasury department and the Federal Reserve, are really looking at that. What are your thoughts on this issue?

PRIYADARSHI: In terms of public dissemination, first of all, we think the implementation should be done in phases. Second, we are in favor of delayed public dissemination. We think public dissemination on a delayed basis will help the market. On-the-run Treasuries are very liquid, so the delay could be a five-minute, or 10-minute or 15-minute delay. In the futures markets, it's real-time, literally in real-time, and blocks are within five minutes. So there is really no reason to not have a similar level of transparency. But for off-the-run Treasuries, consideration must be given to the dealers who are trying to make markets. Their ability to make markets depends on their ability to hedge transactions, and if they had to report in real-time, they would lose that ability.

MV: That's what they call the winner's curse, right?

PRIYADARSHI: Exactly. So we support a reasonable delay. We are very vocal on this issue of transparency because we believe market transparency benefits our shareholders in two ways. One is that price discovery is faster. Secondly, we think it attracts nonbank participants that are interested in market making.

MV: Do you think the transparency that has been available in the futures market has contributed to the fact that the futures market now offers so much liquidity?

PRIYADARSHI: I absolutely agree with that. We use the market depth information in the order book to inform our trading decisions, to form opinions on how we're going to trade them and which algorithms we're going to use. Market participants don't have that in the cash market. ■