

Total Cost Analysis of Interest-Rate Swaps vs. Futures



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Executive Summary

Based on conversations with over 40 market participants and the use of quantitative modeling, Greenwich Associates believes that over the medium and long term, futures products will gain traction at the expense of more standardized cleared swaps. The model identifies generally favorable liquidity cost dynamics for futures in many cases, while at the same time the regulatory headwinds impacting the swaps market will not die down. In fact, impending derivatives regulations in Europe in tandem with global capital rules will only make trading swaps more costly as time goes on.

While these findings are quite telling, the real-world details of the quantitative total-cost analysis are complex. Firm type, strategy, basis-risk tolerance, and the type of liquidity provided by the chosen

instrument must all be taken into account. So while the calculations on their own show futures to be cheaper than cleared swaps in nearly every case, our explanation for the market's current state and expectations for the future are more nuanced.

As such, we equally believe that swaps—both cleared and bilateral—will continue to have their place, and those markets will continue to be robust, albeit on a smaller scale than before the crisis. Many market participants are willing to pay up for customization that the swaps market allows.

Ultimately, cost pressures on traditional investment managers will lead them to the most cost-efficient methods of expressing views on interest rates.

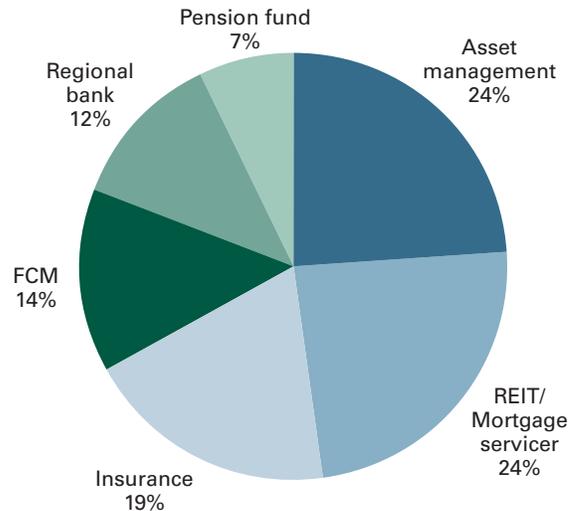
Research Methodology

The core of this study is based on a proprietary quantitative model designed to analyze the variation in costs associated with trading various interest-rate futures products as compared to comparable cleared swaps. The model calculates the cost of opening a position, maintaining that position and then closing out that position. The costs of each are encompassed in four cost buckets:

- **Liquidity:** Defined broadly as the bid-ask spread for the given instrument
- **Initial Margin and Funding Costs:** Includes the amount of initial margin that must be posted by product and the cost of funding that initial margin
- **FCM Fees:** Execution fees, clearing fees and capital usage fees charged by the futures commission merchant
- **CCP Fees:** Exchange, execution and clearing fees charged by the relevant clearinghouse

In an effort to validate the model, determine the correct inputs and define the most realistic scenarios, Greenwich Associates conducted a total of 42 telephone interviews between September and December 2014 with portfolio managers, traders, and other interest-rate trading experts. With responses relatively consistent across the respondent base, we felt this sample size sufficiently reflected the market's views. The interviews were conducted in two distinct phases, during which we validated both our assumptions and our methodology.

Respondent Profile by Investor Type



Note: Based on 42 respondents.

Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

Study participants provided average bid-ask spreads for various cleared-swap trades, the frequency at which they execute futures at the mid-point, FCM clearing fees, the amount of initial margin they currently finance, and several other quantitative and qualitative data points. These results were used to create several scenarios aimed at identifying where futures provide a valid (and in some cases obvious) alternative to cleared swaps and where current trading habits are best left intact.

Introduction

Why the Time Was Right to Revisit This Analysis

Investors need sufficient economic incentive to change their habits. From the time the Dodd-Frank Act was still a bill, the interest-rate derivatives market expected swaps market regulations would incentivize banks and investors to shun the swaps market in favor of cleared futures. Fees were lower, margin rates were lower and the infrastructure was well established and better understood.

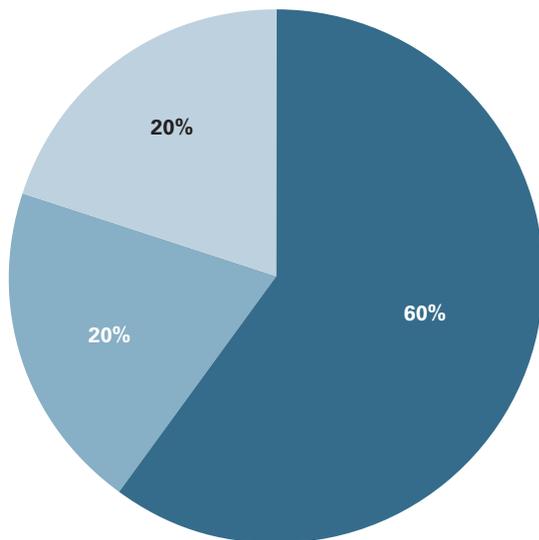
Countless studies were conducted in the following years, focused mostly on new swap futures contracts, to examine what this cost differential would look like in the real world. In fact, nearly two-thirds of the participants in this study told us that they have analyzed in detail whether or not to move away from swaps towards futures in light of higher cost and margin levels. Futures commission merchants (FCMs)

and independent researchers also conducted deep research on these new costs in an effort to educate the market on this major market structure change.

Of those investors that told Greenwich Associates they have analyzed this problem, 60% decided not to change their current product mix until more information becomes available. We believe that time is nearly upon us. Given the increase in available data and additional regulatory clarity, we've taken a fresh, quantitative look at the swaps vs. futures debate analyzing both explicit and implicit costs that must be taken into account when deciding the direction forward.

It also is important to note that our research does not compare cleared swaps with only swap futures, as that would only tell a small part of the story. We instead compare cleared swaps with all interest-rate-related futures products, primarily Eurodollar and U.S. Treasury futures, to create a clearer picture of the available alternatives.

Results of Cost Analysis Conducted by Investors



- We should continue with our current mix of swaps and futures
- We should begin to trade more futures
- Results were inconclusive at this time, and we will revisit in the future

Note: Based on 25 respondents.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

The Impact of Duration, Margin Rates and Liquidity

Our quantitative analysis found futures to be a cheaper alternative to swaps across the board. The savings brought by using futures rather than cleared swaps grew as the duration of the trade grew. A 30-year exposure expressed with deliverable swap futures or U.S. Treasury futures for example, brought about a bigger savings over a comparable cleared swap than did a 2-year exposure expressed with Eurodollar futures.

Conversely, futures showed larger savings as the holding period decreased. So a futures position held for 6 months brought with it a greater savings over cleared swaps than one held for 2 years, regardless of the trade's duration. This was in large part due to the cost of rolling futures into the front-month contract.

The cost of initial margin (IM) and the cost of crossing the bid-ask spread (i.e., liquidity) are the biggest components to the total cost of trading both cleared swaps and futures.

Higher initial margin rates for swaps (calculated using 5-day value at risk (VaR) rather than 1–2 day VaR for futures) have been at the center of the swaps vs. futures cost comparison since new swaps regulations were proposed. Our research found this cost will rise along with interest rates and as investors come off the sideline, leaving less cash on hand to post. Furthermore, running IM charges applied by FCMs to swaps positions add additional costs not found in the current futures market.

Despite the gap in initial margin rates between cleared swaps and futures, the cost of crossing the bid-ask spread to put a position on, maintain that position and ultimately exit the position is the largest single contributor to trading costs. As liquid products tend to have tighter bid-ask spreads, swap futures in particular will see a drastic reduction in the total cost of trading given the above mentioned cost benefits as liquidity increases. Conversely, for those investors whose scale and trading style nets them tighter spreads in the swaps market, the cost differential between swaps and futures is somewhat tighter.

Weighing All the Factors

While these findings are quite telling, understanding the real-world details of each comparison is equally critical. Firm type, strategy, basis-risk tolerance and the type of liquidity provided by the chosen instrument must all be taken into account. So while the quantitative findings on their own show futures

to be cheaper than cleared swaps in nearly every case, our explanation for the market's current state and expectations for the future are more nuanced.

For instance, while CME's interest-rate futures volumes have seen significant growth in the past year, with volume in Q4 2014 up 40% year-over-year, it is difficult to prove causation with increased trading costs for swaps. Swaps volume measured by trade count has seen slower growth over the same period, up 35%, but with the market's focus on the Fed massively impacting market volumes, disentangling the cost pressures from macroeconomic drivers is difficult if not impossible.

The role of bespoke swaps in the marketplace is also important to note. Despite the automation and standardization that are hallmarks of the equities market, investors continue to utilize bespoke OTC equity derivatives for a variety of strategies. This will continue to be true in the interest-rate market as well, even as more rates exposure is expressed through futures and other exchange-traded instruments over time. But the untapped savings that can be had today via product selection changes should not be ignored.

Throughout the rest of this paper we will explain in detail the scenarios analyzed in our quantitative analysis, the results of our qualitative research, implicit factors that must be understood, where interest-rate futures are more likely to take liquidity from cleared swaps, and our expectations for the future growth of futures and cleared swaps in the coming year.



Scenario Analysis

Most Common Trading Scenarios

Cleared swaps and exchange-traded futures both have their place in the interest-rate derivatives market. To determine which product is best in which situation we considered a number of variables including different investment strategies, hedging needs, clients, durations, trade sizes, fees incurred, margin availability, and bid-ask spreads paid to enter and exit a trade. Utilizing the results of our market interviews, we determined the most common scenarios that would provide a detailed understanding of the costs associated with both cleared swaps and futures trades and the impact those costs have on the underlying investment. Those scenarios contained the following inputs:

- **Bid-ask spread:** average spread reported by trade size, trade duration and firm type
- **Trade size:** \$50m, \$100m, \$250m
- **Trade duration:** 2y, 5y, 10y, 30y
- **Holding period:** 60 days, 1y, 2y, 5y, 10y
- **Percentage of initial margin financed:** 0% (current state), 30% (expected future state)

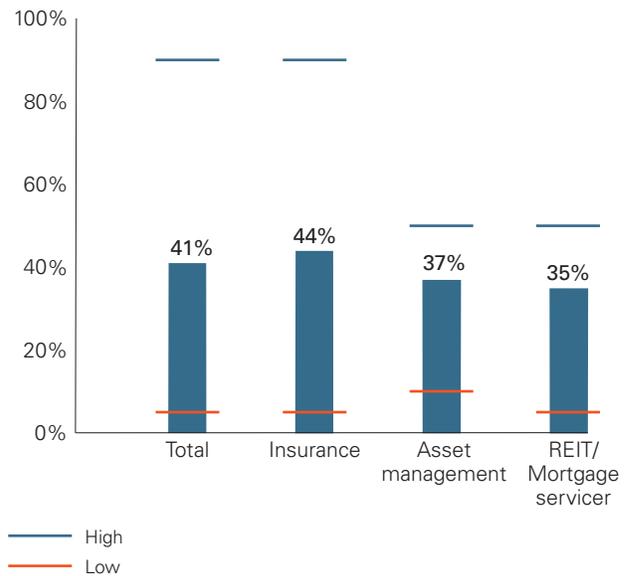
Additional Inputs and Assumptions Made

While the above variables were adjusted to understand their impact on the total cost of the trade, a number of other variables were kept constant. Many of these constants were validated via our interview process, while other sourced numbers are common to the entire marketplace.

Validated via Interviews

- **FCM clearing fees:** The average swaps clearing fee is about \$300 per ticket. A wide range of \$150 to \$700 per ticket was reported.
- **Executing futures at mid:** Interviewees reported executing futures at mid 41% of the time on average, with outliers of 5% and 90%.

Proportion of Time Respondents Execute Futures at Mid



Note: Based on 19 total respondents. Total includes 2 regional banks and 1 pension fund.

Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

- **Running IM charge:** The reported average was 22 bps for cleared swaps, with a range of 4–40 bps. None reported for futures.
- **Futures execution and clearing fees:** These fees were largely standard at \$0.25 per contract for execution and \$0.50 for clearing

Market Standards

- **CME IM rates for swaps and futures:** as of Q4 2014.
- **Futures bid-ask spreads:** We utilized standard tick sizes taking into account the percentage of time investors executed at mid.
- **SEF execution fees:** While individual SEF models vary, the average cost per trade is \$10.
- **Clearinghouse clearing fees:** as of Q4 2014.

Accounting for Compression and Duration Adjustments

We also investigated whether we should include the cost of trade compression for cleared-swaps trades to the model. Our interviews revealed that only one-fifth of investors are routinely compressing their swaps portfolios.

Unnecessary line items are a major contributor to FCM capital requirements and leverage-ratio calculations, however. Cleared swaps are off-the-run the day after they are initially created, resulting in a long list of trades, particularly for a more active fund. Conversely, front-month futures contracts remain on-the-run until expiration, keeping most positions naturally compressed. Looking at gross rather than net positions, clients that keep on compressible trades are likely to be hit with additional capital charges over time.

We fully expect this to drive clients to compress their portfolios more frequently or move to more standard products that do not require explicit, routine compression. That said, the cost of compression would not be a decisive factor for trading swaps over futures in the near-term, so the model excludes this cost.

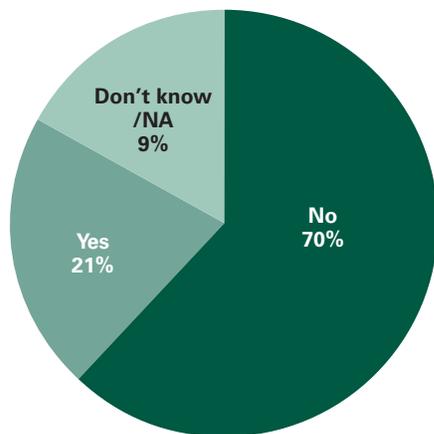
The last critical input into the analysis was the cost of rolling futures positions and similarly adjusting

the duration of an open swaps position. Calculating the cost of rolling a futures position is quite straight forward. For every three months a position is held, the total notional amount must be sold and the front-month rebought. For both that sell and buy, the investor must pay the bid-ask spread and execution/clearing fees.

While swaps do not incur roll costs, half of our study participants adjust for duration throughout the life of a swaps contract. This was particularly prevalent with asset managers, who made up 70% of those adjusting for duration.

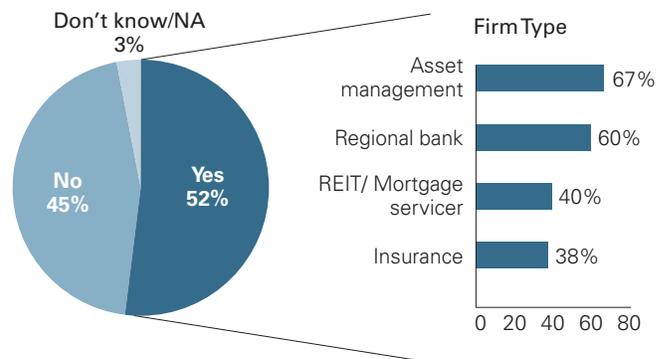
In short, a 10-year swap put on today is a 9-year swap one year later. To maintain the portfolio manager's intended 10-year exposure, the trader must put on a new trade, whether a swap or a future, to bring the portfolio's duration back up to 10 years. As none of the investors we spoke with had a firm grip on the cost of this maintenance exercise, we tested each scenario both for those who adjust for duration and for those that do not. For the former scenario, our model assumes a buy every three months of the total notional amount of the swap. While this may slightly overstate the cost of duration adjustment, it ensures we're capturing this additional maintenance cost that is critical to understanding the total cost of doing the trade.

Do You Regularly Compress Your Cleared Swaps Portfolio?

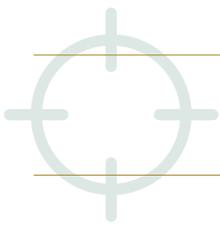


Note: Based on 33 respondents.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

Do You Adjust for Duration Throughout the Life of a Swap Contract?



Note: Based on 33 total respondents. Total includes 1 pension fund.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study



Results/Future Expectations

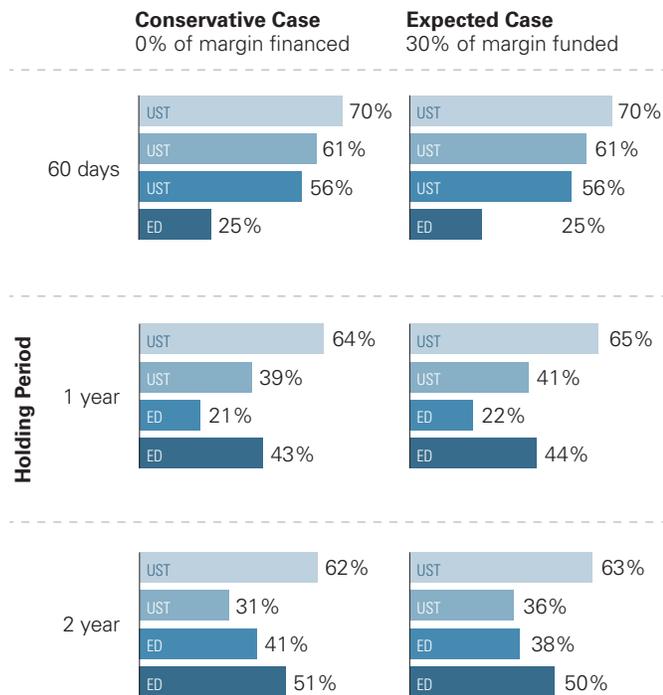
Taking into account the results of our interviews and the data provided by those participating investors and FCMs, our quantitative model showed futures to be the cheapest alternative in nearly every scenario analyzed with liquidity costs as the largest contributor to the gap. U.S. Treasuries and Eurodollar futures in particular showed the greatest cost savings compared to cleared swaps.

But the current paradox still looms large: Why, if futures are so much cheaper than swaps, has the

market not yet made a major shift? Over the last few pages we've provided quite a bit of background information helpful in understanding the answer to that question. As firm believers of pictures being worth a thousand words, we created the following chart to provide the best explanation.

The easiest transition to futures from cleared swaps, taking into account basis risk and liquidity, is Eurodollar futures for short duration, short holding period trades. However, the biggest cost gap we see in this scenario is just over \$10,000, which equates to less than a basis point. While a basis point could serve to chop one-third off of the bid-ask spread, its contribution to the total cost is negligible. Furthermore,

Percentage Saved by Using Futures in Place of Swaps



■ 30-year tenor ■ 10-year tenor ■ 5-year tenor ■ 2-year tenor

- Assumes a trade size of \$100m, and utilizes the average bid/ask spreads for swaps collected in the interviews.
- Percentages shown represent the price difference between the cost of doing a trade with the cheapest future among UST futures, DSFs, and Eurodollar future bundles, compared to the cost of doing an equivalent trade with the swap.
- Assumes 41% of futures execute at mid.

Note: Collected in the interviews with asset managers.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

TCA Model Results: Scenario Analysis

Trade Size of \$100m, 30% of Margin Financed



- Cleared IRS, \$1,000 FCM clearing
- Cleared IRS
- DSF
- U.S. Treasury future

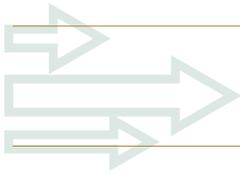
The average holding period for cleared IRS for asset management firms is 19 months. Utilizes the average bid-ask spreads for swaps collected in the interviews. Assumes 41% of futures execute at mid.

Note: Utilizes the average bid/ask spreads for swaps collected in the interviews.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

for those market participants that do not adjust their swap trades for duration, cleared swaps in this category can, in fact, be modestly cheaper.

Conversely, the biggest cost savings opportunity presents itself in long-duration trades with longer holding periods. UST futures and DSFs provide the greatest cost savings on a percentage basis. The maximum savings in this scenario is over \$100,000, or 10bps, which is a very meaningful savings, particularly in this low rate environment. Furthermore, while liquidity in the DSF contracts is still growing, UST futures have enough liquidity to execute even the largest block trades.

Adoption of UST futures in lieu of cleared swaps is held back by the basis risk discussed earlier in the report. While the total cost savings of using UST futures instead of a comparable cleared interest-rate swap is 10 bps, the swap spread, which acts as proxy metric for basis risk, is roughly twice that. As such, traders and portfolio managers who understand and would like to capture the cost savings provided by futures must also determine how to adjust their positions to account for the basis risk. Interestingly, current 30-year swap spreads are negative, meaning U.S. Treasury rates are higher than swap rates, which could drive some portfolio managers to favor long-dated U.S. Treasury futures.



Factors Driving Change

This story is far from over, however. While our model showed us the current state of play, it also allowed us to adjust for a variety of scenarios that could tip the needle in either direction.

Macroeconomic Impacts: Rates, Volatility, Investable Assets

Evolving regulations have had an arguably outsized impact on market dynamics over the past five years. With the first round of trading and clearing mandates now behind us in the U.S., the future will see macroeconomic and normal market influences drive client behavior at least as much as regulatory change.

With regard to interest-rate derivatives product selection, central bank policy is and will remain front and center in the discussion. Broadly speaking, when the U.S. Federal Reserve finally decides to raise benchmark rates, market volumes and volatility are likely to rise. With clients trading more, costs associated with those trades and the resulting positions will grow on an absolute basis, causing them to bubble up the list of business expenses to one that has a more material impact on returns.

At the same time, institutional investors will more fully invest the assets in their funds as market uncertainty calms slightly and rising interest rates provide new opportunities for alpha. More “risk on” portfolios, in turn, have less eligible collateral on hand, increasing the need for collateral transformation/financing when posting initial margin with the clearinghouse. Per our model, this move from 0% of initial margin financed to 30% financed has a material impact on the total cost of trading cleared swaps. An implicit opportunity cost will also come in to play further impacting the total cost of the trade, as the assets posted as initial margin will see returns lower than those possible if those same assets were invested in higher-yielding investments.

Regulatory Impacts, Expected Fee Increases

On the regulatory front, the impacts of Dodd-Frank are now taking a backseat to those stemming from Basel III and related local regulations. In short, the increasing cost of capital for banks will ultimately result in higher clearing fees, particularly for swaps. While both futures and swaps exposures are subject to similar treatment under the SLR, the less standardized nature of many swaps results in the expectation that each incremental swap transaction will be net additive to bank exposures if compression techniques are not used, while the more standardized nature of futures contracts allows for greater degree of natural netting and therefore a lower net increase in expected exposure (on average) from incremental futures transaction volumes.

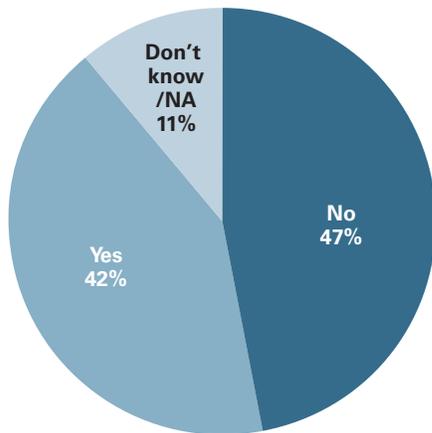
Just north of 40% of our study participants have already been warned of a fee increase by their FCMs. The hardest hit investors will be those infrequent

Understanding FCM Clearing Fees

An FCM would need to hold \$15 million of balance sheet for a client with a \$1 billion, 30-year interest-rate swap position (or 1.5%). Capital rules tell us that contracts with a duration of five years or greater require 5% of capital to be held against the balance sheet requirement—in this case \$750,000.

With that sorted, FCMs now need to make the trade profitable for their business to succeed. Assuming a return on capital of 15%, the trade would need to generate a profit of \$112,000 post-tax which equates to roughly \$160,000 pre-tax. Lastly, to guarantee a 25% profit margin the FCM would ultimately need to generate \$642,000 in revenue (or 6 bps) per year on the aforementioned trade. This could cause clearing fees to move from the current average of \$300/ticket up closer to \$1,000/ticket, a sentiment echoed by Citibank in a research note released late in 2014.

FCM Warned of Upcoming Fee Increase



Note: Based on 34 respondents.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

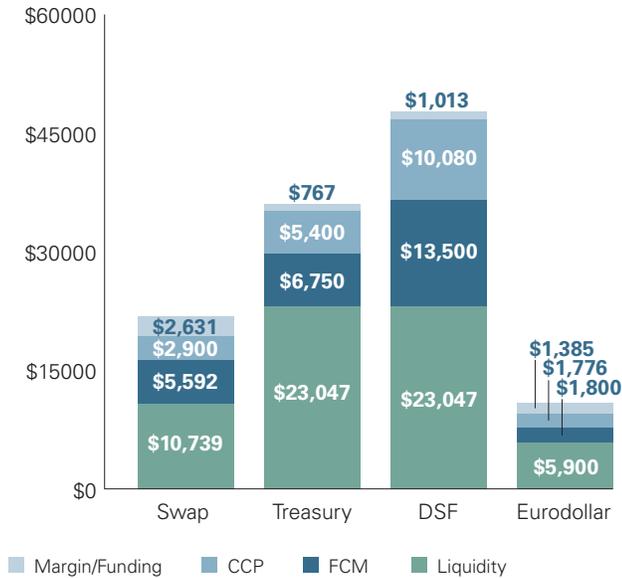
traders taking long-duration directional bets, such as some insurance companies and pension funds. Clients that fit this profile require FCMs to keep large amounts of capital set aside, yet generate limited clearing-fee revenue. The combination will be unsustainable over time if FCMs raise rates.

Despite their natural netting benefits, futures are not immune to new supplementary leverage ratio (SLR) calculations either, which are based on pure notional outstanding and, therefore, do not directly advantage futures over swaps. Capital usage charges are not currently passed on to clients by their FCMs, however, so there has been no cost impact to date.

Total Cost Analysis for \$100 m

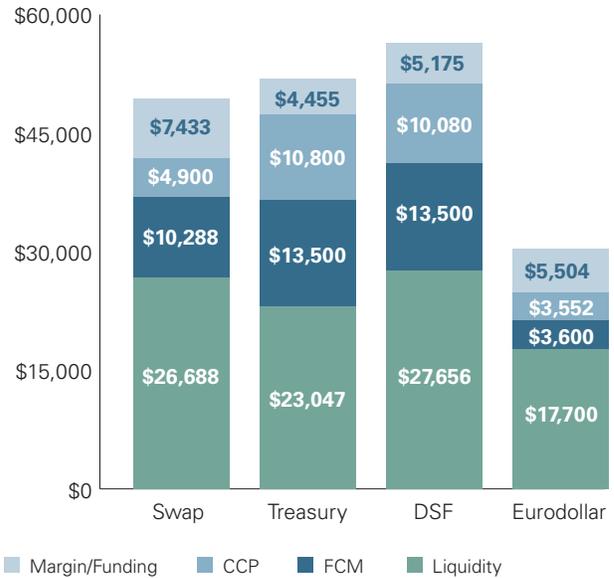
Asset Management—30% of Margin Financed

2-Year Position Held for 2 Years



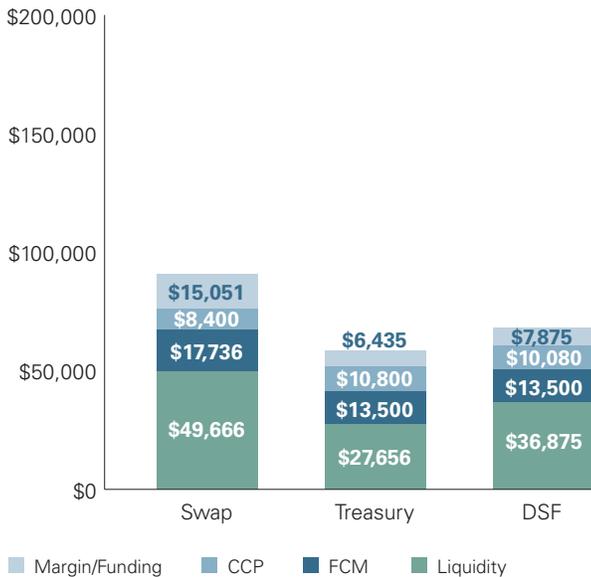
Note: Utilizes the average bid-ask spreads for swaps collected in the interviews.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

5-Year Position Held for 2 Years



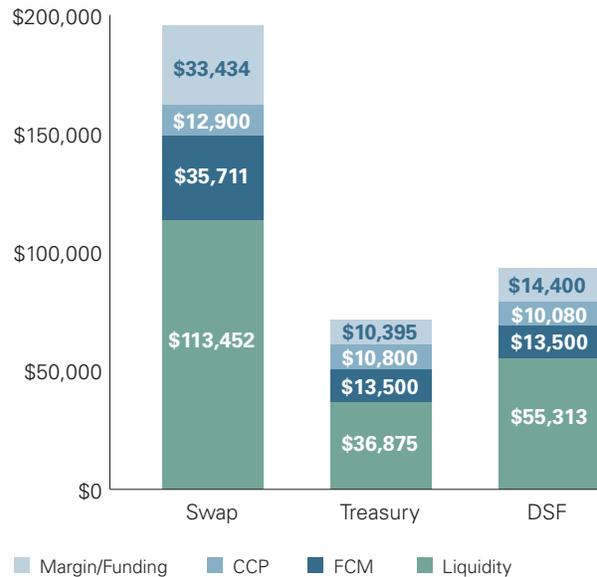
Note: Utilizes the average bid-ask spreads for swaps collected in the interviews.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

10-Year Position Held for 2 Years



Note: Utilizes the average bid-ask spreads for swaps collected in the interviews.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

30-Year Position Held for 2 Years



Note: Utilizes the average bid-ask spreads for swaps collected in the interviews.
Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

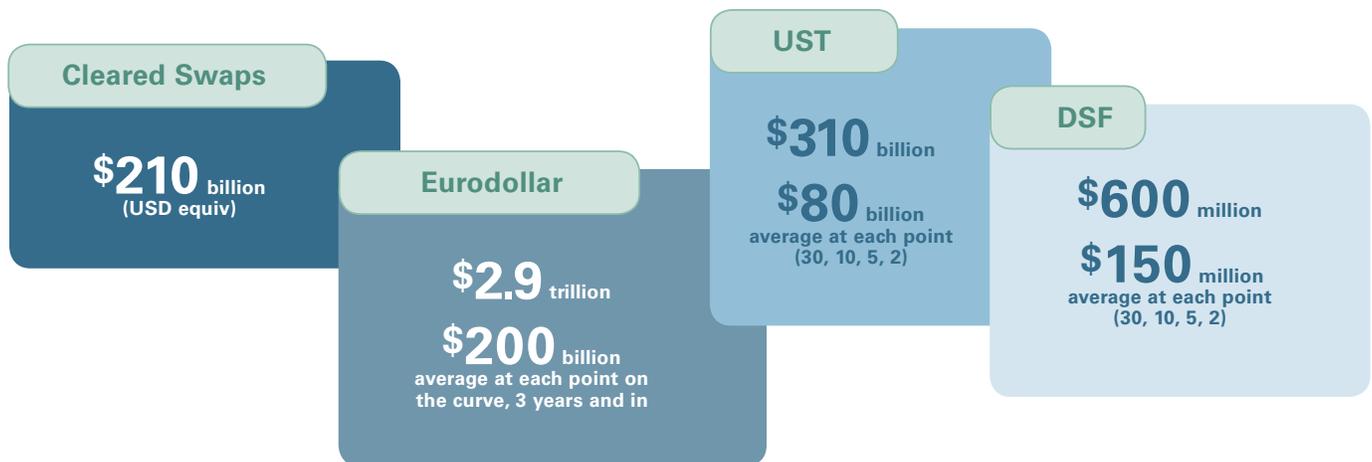


Understanding Current Roadblocks and Challenges

The top impediment cited to trading more futures in lieu of cleared swaps was a lack of liquidity for large trades in certain futures products. Many of the swaps investors we spoke with felt it was much easier to execute a large trade, in some cases upwards of \$1 billion in notional, in the swaps market than it would be in the futures market. It is difficult to completely refute this claim as liquidity is in the eye of the beholder; however, the data we have collected and reviewed for this analysis broadly refutes this concern in most cases.

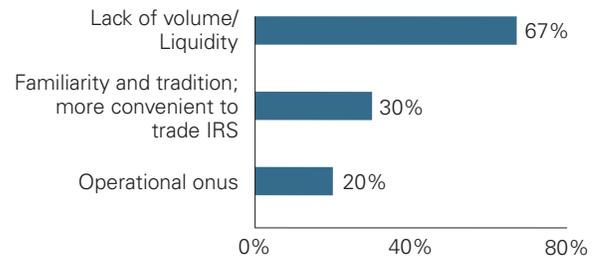
When asked to compare cleared swaps and futures, many on the buy side think only of swap futures rather than all interest-rate futures. Keeping that in mind, liquidity concerns with respect to swap futures are not surprising. While the average daily volume (ADV) of client-cleared swaps is roughly \$210 billion, CME Deliverable Swap Futures (DSF) average \$720 million daily across the curve (as of Q4 2014). And while this might make it possible to enter into certain DSF positions via the central limit order book or via block execution, investors remain concerned that they may have difficulty getting out of that position at the right price when the time comes.

Average Daily Volume



Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

Biggest Perceived Impediments to Using Futures in Place of Cleared Swaps



Note: Based on 30 respondents.

Source: Greenwich Associates 2015 Total Cost Analysis of Interest-Rate Swaps vs. Futures Study

This concern is a legitimate one and is common for new products that have yet to build up enough liquidity to execute large trades. The case for swap futures includes interesting differences from standard new contract offerings, however. The average holding period for cleared swaps by our research participants was 1–2 years. With front-month futures expiring inside of three months, the risk of low liquidity upon position exit is mitigated by the ability to hold the position until expiry. For deliverable swap futures, the conversion of the contract into a cleared swap at

expiry should also provide some comfort to liquidity-weary investors. For Eris Standards futures which exist for the length of the contract duration, the position could be hedged with an offsetting interest-rate swap given the economic equivalence.

Looking beyond swap futures towards established products such as Eurodollar and U.S. Treasury futures, the liquidity argument becomes much more nuanced and in some cases breaks down altogether. Eurodollar futures are one of, if not the most liquid futures contracts in the world, with an ADV of nearly \$3 trillion across the curve.

Eurodollar futures, which track 3-month Libor, are mostly liquid at the short end of the curve. Volume starts to decline at 3 years and drops off significantly after 5 years. So for long-duration swap trades, Eurodollar liquidity isn't there. However, for swap trades with a duration of three years or less, the \$200 billion traded at each point on the Eurodollar curve each day equates to more than enough liquidity to get in and out of even the largest trades.

CME's U.S. Treasury futures complex trades an average of \$300 billion daily; 50% more in notional terms than the cleared-swaps market. These futures average about \$80 billion daily at each point on the curve, with the most activity in the 5- and 10-year buckets.

Resistance to U.S. Treasury futures as a swaps replacement is less about the volume traded however, and more about basis risk. Both cleared swaps and Eurodollar futures track Libor. U.S. Treasury futures track U.S. Treasury rates. This means replacing a cleared-swaps position with a comparable UST futures

position leaves the holder with basis risk equal to the swap spread. That said, with potential cost savings equaling nearly half of the bid-ask spread, basis-risk concerns could quickly diminish.

Moving Beyond the Comfort Zone

The buy side needs real economic incentives to change their trading habits. Those incentives need to be great enough to impact fund returns, and also overcome a swap trader's discomfort of operating in a particular product set. One-third of our respondents cited unfamiliarity as their biggest impediment to trading more futures. Portfolio managers must also overcome these long-held beliefs about strategy implementation with swaps, as their investment models are built around assumptions that are slowly starting to change.

Furthermore, investment managers long ago hired traders for their expertise in the bilateral swaps market. While trading and clearing mandates for swaps have already changed deeply entrenched processes, the buy-side trading desk is still trading the same product they were before. Although teaching a swaps trader to trade futures is not impossible, the change in mindset required is not lost on trading-desk heads. Futures traders speak a different language and follow different rules than swaps traders, despite their shared focus on the interest-rate market.

Operational Issues

Where clearing is involved, operational complexity can also arise. Due to their longer history and the vertical integration of execution and clearing, the post-trade processes for futures are currently simpler and more robust than for cleared swaps. But issues still arise for those firms that have historically traded only swaps and do not have a futures infrastructure in place.

We see this impediment as minimal and short-lived. As FCMs work to more tightly integrate their swaps and futures offerings, clients will find it much easier to begin trading one product when they're already trading the other. That's not to say no implementation work will be required, but given the increasing cost of trading certain swaps compared to equivalent futures, that upfront work would quickly pay for itself.

Eurdollar Future Average Daily Volume

(in USD billions)



Note: Data reflects every quarterly contract within the timeframe shown.
Source: CME Group 2014

Conclusion

Greenwich Associates believes that over the medium and long term, futures products will gain traction at the expense of more standardized cleared swaps. The model identifies generally favorable liquidity cost dynamics for futures in many cases, while at the same time the regulatory headwinds impacting the swaps market will not die down. In fact, impending derivatives regulations in Europe, in tandem with changes to RWA calculation requirements, will only make trading swaps more costly as time goes on.

More specifically, higher margin requirements for swaps will have a greater impact on the total cost of the trade in the coming years, as clients have less eligible collateral on hand. Furthermore, the liquidity cost gap between swaps and futures demonstrated in our quantitative analysis will likely widen as banks

find it more difficult to make money trading cleared swaps. As such, these cost pressures on traditional investment managers will ultimately lead them to the most cost-efficient methods of expressing views on interest rates.

We equally believe that swaps both cleared and bilateral will continue to have their place, and those markets will continue to be robust, albeit on a smaller scale than before the crisis. Many market participants are willing to pay up for customization that the swaps market allows, and our models show that the cost differentials will still allow those in this camp to continue on as is. While the value of some structured products created in the last decade can be debated, interest-rate swaps and their derivatives provide real value to investors and are at the core of retirement accounts and broadly held investment funds globally.

Andrew Awad specializes in custom research-based consulting, fixed-income, foreign exchange and commodities markets. Andrew also develops and markets new research and consulting products for the Firm. Kevin McPartland is the Head of Research for Market Structure and Technology at Greenwich Associates. He helps the Firm's clients navigate market structure changes driven by regulation, technology and behavior shifts.

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