Executive Summary

In the face of the growth in FX futures trading, Greenwich Associates set out to examine and assess the potential economic benefits of utilizing futures as an alternative to trading in the OTC markets.

To do so, we employed a proprietary quantitative model to analyze the costs associated with trading FX over-the-counter (OTC) against comparable FX futures. The model calculates the cost of opening, maintaining and closing out a position. To validate key inputs into the model and gather feedback on current demand and pricing, we spoke with FX traders on the buy and sell side.

The results show that FX investors can find significant cost savings (upward of 75% in some cases) by trading futures rather than executing a trade in the OTC markets. For those entities subject to Basel III costs, switching to futures from OTC trades could garner even greater savings.

Pure costs savings are not the only reason to consider FX futures. As sell-side dealers become more selective in the clients that they prioritize, some buy-side traders may find liquidity more difficult to access. Others may find that they are getting de-prioritized and receiving fewer services from particular counterparties. As a result, adding the option to trade in a futures environment could help mitigate the effects of shifting sell-side behavior.

Even with these potential cost savings, a switch to futures might not make sense for some FX market participants that trade only infrequently and at relatively small volumes. And for some investors, there may be lingering skepticism about the available liquidity in an exchange-traded environment, even though recent statistics show that average daily volume (ADV) in FX futures equals or exceeds the volume on a major spot exchange.

The results of our analysis prove that even before considering the potentially punitive effects that regulations have on trading costs, trading FX futures can have clear economic benefits. For that reason, we expect FX futures to continue to gain traction as an alternative to OTC trading.
With over $5 trillion of volume transacted on any given day, FX is far and away the largest and most liquid financial market in the world. Participants in this market range from asset managers with AUMs measured in the trillions to large multinational corporates to individuals making a few speculative trades per year. Therefore, any structural changes to the market, whether driven by competitive forces or regulatory pressures, could have a wide range of consequences.

In many different asset classes, the introduction and adoption of futures has had a material impact on investors’ trading habits. However, changing investor behavior is not as simple as introducing a new product and expecting change overnight. Instead, inertia is often the name of the game, and overcoming it requires both education and demonstrable economic incentives.

Pressures of Basel III and Uncleared Margin Requirements

Many of the most actively traded FX instruments—swaps and forwards—received exemptions from the more onerous regulatory requirements placed on other types of derivatives (mandatory clearing, exchange of initial margin). But the foreign exchange market has been impacted by Basel III capital requirements and uncleared margin requirements, including the exchange of variation margin (VM) on deliverable swaps and forwards in the EU (as of January 2018), as well as initial margin (IM) and VM on both NDFs and OTC FX options. Although no FX clearing mandate is expected to materialize in any jurisdiction, cost pressures are most likely to serve as the catalyst in lieu of a regulatory mandate.

There have been countless papers written about the impact of regulatory changes on trading behavior. As part of this study, over 50% of buy- and sell-side participants told us that they have analyzed in detail the impact of uncleared margin requirements on FX trading. Forty-two percent examined the role that Basel III would play in impacting the cost of trading FX. Not surprisingly, nearly all sell-side firms and market makers have thoroughly examined these changes. These firms are undoubtedly a primary source of information for their buy-side clients.
For those buy-side investors who have looked at the impact of uncleared margin requirements, about two-thirds were not definitively planning to change their product usage. This makes sense, as the vast majority of the buy side has not been impacted by UMR at this stage, nor have they seen significant costs passed through. This will likely change as costs begin to be passed through and UMR rolls out beyond the major dealers.

The Benefits of FX Futures

Given the growth of FX futures trading, we wanted to examine the potential economic benefits of replacing OTC trades with futures. We are not alone: When asked whether they have considered utilizing futures as a replacement for FX, 1 in 2 buy-siders said they had.

In the following pages, we will examine some of the benefits of using FX futures versus similar OTC transactions.
Inputs and Assumptions Made

We tested a number of scenarios to understand how the all-in-funding rate, bid-ask spread, trade size ($1M, $5M, $10M), holding period (30–120 days), and how an investor exited a position at the end of the holding period (close out vs. roll) impacted the cost of trading in the OTC and futures markets. A number of other variables were kept constant, as they were captured via our interview process, while other sourced numbers are common to the marketplace.

Validated via Interviews

- **Executing futures at mid**: Interviewees reported executing futures at mid 35% of the time on average, with outliers of 10% and 90%.
- **Proportion of IA posted to PB to facilitate OTC FX trades**: 3.5%, though some large institutions reported paying close to 0%.
- **Average platform cost per million paid for OTC FX execution**: $10, though some institutions reported amounts as low as $5 and some as high as $20.
- **Typical rejection rate**: 6%, with some institutions reporting close to 0%, while others reported up to 20%.
- **Bid-offer spread**: Interviewees reported spreads under 1 pip and up to 2–3 pips for trades under $20M.

Results of the Analysis

Taking into account the results of our interviews and the data provided by those participating investors and FCMs, our model shows futures to have a definitive place in a trader’s arsenal. In the majority of scenarios we tested, futures appear to be a cheaper alternative than executing a similar trade in the OTC markets. However, we understand that individual situations/scenarios may vary and actual savings may differ from those in the model.

Despite this, the question still exists: If executing a futures transaction is economically rational, why do we not yet see a significant change in behavior? Although a definitive economic benefit results from the lower cost of trading futures, some traders may not want to make major shifts to their behavior until they see benefits commensurate with the effort needed. Furthermore, many OTC FX trades are larger than the scenarios we tested below. However, we anticipate that as algo execution increases, the average trade size in FX will likely decrease, and the ability to achieve these savings will be greater.
The following chart illustrates a few examples with trade sizes ranging from $1 million to $10 million.

**COST SAVINGS FOR EXECUTING FUTURES VS OTC FX - 60 DAY HOLDING PERIOD**

<table>
<thead>
<tr>
<th></th>
<th>EURUSD</th>
<th>USDJPY</th>
<th>USDCAD</th>
<th>EURUSD</th>
<th>USDJPY</th>
<th>USDCAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1 million</td>
<td>-$153</td>
<td>-$168</td>
<td>-$130</td>
<td>77%</td>
<td>76%</td>
<td>64%</td>
</tr>
<tr>
<td>$5 million</td>
<td>-$646</td>
<td>-$588</td>
<td>-$255</td>
<td>64%</td>
<td>52%</td>
<td>24%</td>
</tr>
<tr>
<td>$10 million</td>
<td>-$1,120</td>
<td>-$916</td>
<td>-$300</td>
<td>53%</td>
<td>39%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Assumptions:
- Funding rate (all-in rate at which you can obtain funding): 0.3%
- Holding period: 60
- Exiting position at end of holding period (close out, roll): Roll
- Futures type: Quarterly

Source: Greenwich Associates 2017 FX Futures Trading Study

On a percentage basis, the savings are significant—upward of 75% in some cases. However, the actual dollar amount seems somewhat less impressive, totaling only a few hundred dollars in savings in certain cases. Even doubling the holding period from 60 to 120 days, we see that futures continue to yield a significant savings on a proportional basis versus comparable OTC transactions.

**COST SAVINGS FOR EXECUTING FUTURES VS OTC FX - 120 DAY HOLDING PERIOD**

<table>
<thead>
<tr>
<th></th>
<th>EURUSD</th>
<th>USDJPY</th>
<th>USDCAD</th>
<th>EURUSD</th>
<th>USDJPY</th>
<th>USDCAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1 million</td>
<td>-$143</td>
<td>-$164</td>
<td>-$117</td>
<td>63%</td>
<td>63%</td>
<td>47%</td>
</tr>
<tr>
<td>$5 million</td>
<td>-$639</td>
<td>-$607</td>
<td>-$228</td>
<td>54%</td>
<td>45%</td>
<td>17%</td>
</tr>
<tr>
<td>$10 million</td>
<td>-$1,206</td>
<td>-$1,053</td>
<td>-$348</td>
<td>47%</td>
<td>37%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Assumptions:
- Funding rate (all-in rate at which you can obtain funding): 0.3%
- Holding period: 120
- Exiting position at end of holding period (close out, roll): Roll
- Futures type: Quarterly

Source: Greenwich Associates 2017 FX Futures Trading Study

When projecting the costs for buy-side participants from the above table, we have calculated that if just 10% of the $513 billion in daily buy-side activity in EUR/USD, USD/JPY and USD/CAD were moved into futures, the total potential savings would be over $5 million per day or nearly $1.5 billion per year.
THE IMPACT OF BASEL III AND OTHER COSTS

For those entities subject to Basel III costs, futures can provide significant cost advantages over OTC FX—with futures, all counterparties face a central counterparty clearing house (CCP) directly.

In the OTC market, when calculating both risk-weighted assets (RWA) and total leverage exposure (TLE), the addition of non-netting counterparties can have a major impact, ratcheting up risk and associated capital requirements exponentially. Within futures, this is not a concern, as participants are facing a single counterparty: the CCP. The CCP model allows for maximal compression with a minimal amount of effort. In an OTC environment, having more than one counterparty generally results in some level of capitalization being necessary, even if risk is flat across counterparties. Furthermore, for those entities subject to G-SIB reporting and associated add-on charges, FX futures are not included in the requisite calculations.

For those constrained specifically by RWA calculations, when facing a qualifying CCP, only a 2% risk weight needs to be applied to QCCP exposures, while in OTC, there is a floor of 20%. Additionally, credit valuation adjustment (CVA) charges do not apply to centrally cleared transactions, allowing participants to reduce their requisite CVA charges by 100% if all FX products were cleared.

GRAPHIC BASEL III COSTS Pressures on Non-Cleared vs. Cleared Futures

<table>
<thead>
<tr>
<th>Cost Pressure</th>
<th>Non-Cleared</th>
<th>OTC Cleared/Futures</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-cleared margin rules</td>
<td>🔄</td>
<td>🔄</td>
<td>Non-cleared margins are higher than for cleared products/futures due to: a) HVAR/Span vs. ISDA SIMM b) Lack of central counterparty netting efficiencies</td>
</tr>
<tr>
<td>CVA</td>
<td>🔄</td>
<td>🔄</td>
<td>Regulations do not require CVA on centrally cleared trades</td>
</tr>
<tr>
<td>Liquidity coverage ratio</td>
<td>🔄</td>
<td>🔄</td>
<td>CCP netting efficiencies reduces requirements</td>
</tr>
<tr>
<td>Credit lines</td>
<td>🔄</td>
<td>🔄</td>
<td>Cleared exposures do not consume bilateral credit lines</td>
</tr>
</tbody>
</table>

Source: Greenwich Associates 2017 FX Futures Trading Study

Additional uncleared margin rules (UMR) components are still due to come into force in Europe after MIFID II defines deliverable OTC FX derivatives. There is expected to be a requirement to exchange variation margin on all linear deliverable OTC FX products (outside of spot) once MIFID II releases the classification of deliverable OTC FX products in 2018. This VM change will impact all participants that are captured under the uncleared margin rules and will do so once the definitions are released. There will not be a phase-in approach as there has been on the IM component of UMR. This will be the first time some buy-side institutions will have ever exchanged margin on FX.
Basel III May Drive Further Adoption

Even if there were no major shifts on the horizon from a regulatory/market-structure perspective, we can see from the preceding analysis that it makes economic sense to consider using FX futures.

However, we cannot ignore the costs imposed by Basel III. As the previous chart highlights, the potential impact of Basel III is enormous. Under the same scenarios as analyzed above, the costs of capital and LCR costs under Basel III have the potential to nearly double the total cost of trading OTC FX. In other words, if Basel III costs are taken into consideration, the savings by trading futures would double.

And it is not just the sell side that needs to familiarize themselves with Basel III costs. When we asked the buy side if their prime brokers had already begun to explicitly pass along Basel III charges, 1 in 5 mentioned that they had.

Understanding Hurdles to Futures Adoption

Although we have shown that there are many scenarios where futures are a logical choice versus an OTC trade, traders do not solely make decisions based on quantitative findings. Sometimes as important are qualitative perceptions.

When asked about the biggest roadblock to leveraging futures as an alternative to OTC FX, nearly two-thirds of study participants mentioned lack of liquidity as a key determining factor. They were not convinced that the amount of liquidity they have come to take for granted from their sell-side dealers would be there in the futures market.

In a market that sees ADV measured in the trillions of dollars, it is not surprising that liquidity concerns would be top of mind, considering ADV of FX Futures on CME is $82 billion (through September). However, as the following chart indicates, daily FX futures volumes are not significantly different from those traded in a major electronic spot market.
Furthermore, since 2009, the number of large, open interest holders in FX futures on CME has increased over 150% to over 1,113 in mid-September, with an open-interest record of 2,985,000 contracts on September 19, 2017.

Notes: The CFTC defines large open interest holders as having at least 400 open contracts in major foreign currency futures and at least 100 open contracts in other foreign currency futures. Source: CFTC
The Impact of Changes on the Sell Side

Outside of those factors that directly impact the futures market, the changing dynamics on the sell side may also create an incentive for the buy side to consider FX futures. As we wrote in *Seeking Profits in FX, Many Dealers Narrow Their Focus*, released earlier this year:

*Some of the world’s leading FX dealers are narrowing the scope of their coverage and focusing on specific products in which they see the best potential for profits. For example, some banks are shying away from G10 swaps in favor of G10 spot trades. Others are*
focusing their strategies on particular clients, often targeting their resources toward banks, hedge funds and other financials, or to retail aggregators. Finally, some banks are becoming much more discerning about the channels in which they compete for business. These banks are not just differentiating between high-touch, higher-margin trades and lower-margin electronic execution. They are also differentiating among different types of electronic venues.

For some buy-side traders, the end result of these shifts may mean that when they want to execute a trade, their dealers may be quoting them less aggressively than they have in the past. For others, they may find that they are getting de-prioritized and receiving fewer services from particular counterparties altogether. As a result, adding the option to trade in a futures environment could help mitigate the effects of shifting sell-side behavior.

The “Future” for FX Futures

We would be naïve to think FX futures will completely replace the bilateral market—OTC FX is and will continue to be a global and robust market. For many market participants, the ability to customize their exposure or tailor their strategies is worth the premium paid.

Furthermore, for some that may trade infrequently, incurring the operational costs to be able to trade in the futures market may not outweigh the benefits received. However, we expect that the shift to trading on exchanges will continue to gain steam and grow even more as a critical source of liquidity for FX traders.

Greenwich Associates believes that over the short and medium term, FX futures will continue to gain traction. The above analysis proves that, even before considering the potentially punitive effects that regulations have on trading costs, trading FX futures makes clear economic sense.

In addition, increased requirements for best execution and firm liquidity under regulations such as MiFID II should also have a net positive impact on FX futures.

Combined with the pressure that the sell side is facing to meet their capital and return requirements, we expect that the implicit and explicit cost of trading OTC FX will only continue to increase in the coming years. And, as liquidity in the futures markets continues to rise, trading FX on an exchange will be easier than ever.

We believe that over the short and medium term, FX futures will continue to gain traction.
Research Background

The basis for this report is a proprietary quantitative model designed to analyze the costs associated with trading FX over-the-counter with comparable FX futures. The model calculates the cost of opening a position, maintaining that position and then closing out that position. The costs are broadly defined in the following buckets:

- **Spread cost**: Defined as the bid-ask spread for the given instrument
- **Margin and funding costs**: Includes the amount of margin that must be posted by product and the cost of funding that margin
- **Intermediation fees**: Execution fees, clearing fees and capital usage fees charged by the futures commission merchant or prime broker
- **Platform/CCP fees**: Exchange, execution and clearing fees charged by the relevant clearinghouse or trading platform

In an effort to validate key inputs into the model and gather feedback on current demand for and consideration of trading FX futures, Greenwich Associates conducted a total of 51 telephone interviews between January and April 2017 with FX traders on the buy and sell side. Study participants provided average bid-ask spreads for FX trades of various sizes, the average platform costs paid for OTC FX execution, the proportion of their futures trades executed at the midpoint, 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 trading FX over-the-counter and where current trading habits are best left intact.

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## RESPONDENT PROFILE

- **Industry**: 51% Asset managers, 24% Hedge funds, 20% Sell side/Market makers, 6% Other buy side

- **Region**: 61% Americas, 25% Europe, 14% Asia

- **Size**: 48% Over $100B, 30% Under $10B, 21% $10B–100B

Note: May not total 100% due to rounding.