FX FUTURES | FX OPTIONS | FX LINK | CLEARED OTC FX
INTRODUCING: FX CASH AND EBS MARKETS

The FX Report

Special Edition: Focused on solving market challenges

PUBLISHED: Q2 2020

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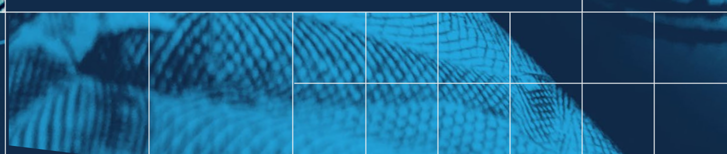


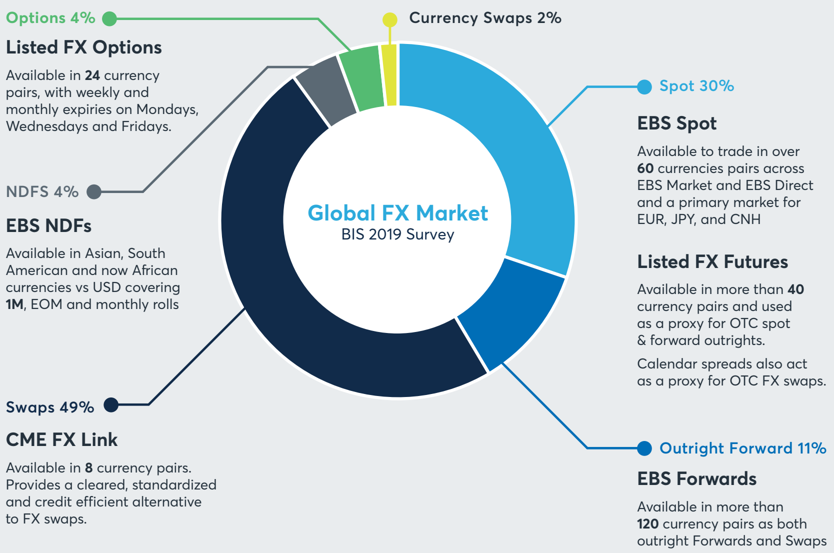
Need to know: The role of our markets

At CME Group, we are working to provide all market participants with the liquidity they need, the products they want, via the platforms they choose – every day, in every market condition.

Whether its through the Central Limit Order Book on **CME FX**, or **EBS Market**, or bilaterally through **EBS Direct** and **EBS Institutional** – our goal is to provide the tools, analytics and access to efficiencies participants require, from credit, to capital and demonstrable best execution.

Now, whichever instrument you trade, you can do so with the certainty of CME Group.

CME cash and listed FX products offer absolute and additional liquidity to bilaterally traded FX swaps, options, spot, forwards and NDFs.



Data: Percentages according to 2019 BIS Triennial Survey, based on foreign exchange turnover

Expirations or availability of currencies may only be available on certain currencies or platforms

More than a product: A source of reliability in market stress

Q1 2020: Average Daily volume

$102bn traded in Futures and Options

$98bn traded on EBS

$249.9bn in Open Interest, a 7.4% increase YoY in Futures & Options

Need to know: In the markets

The FX Report: Special Edition – Paul Houston, MD FX Products

Over the last quarter we have witnessed the extremes of an all-time low in the JPM G7 vol-index in January to heightened volatility in late March which drove the index to a 10-year peak of 15% on March 19th. As a result, the FX marketplace saw a significant increase in activity, as did all of the FX platforms at CME Group.

This edition of The FX Report not only reports on activity in CME Listed FX Markets but for the first time introduces our EBS FX offerings across spot, forwards and NDFs – available across EBS Market, EBS Direct and EBS Institutional. Many of the features in this edition aim to highlight how CME FX Products can be used to mitigate risk during these unprecedented times. This includes an overview of the credit and capital efficiencies of Listed FX Futures; a spot light on FX Link which allows participants to move exposures between OTC and Listed FX markets; developments in our Listed FX Options offering for managing event risk, and the margin offsets available within our G7 and emerging market FX futures offering and against other Listed Commodity Products – as participants assess risk across their total portfolio. We've also included a guide to education materials, resources, tools and exchange definitions you may need to help navigate our Listed markets.

There is also a focus upon how CME Listed FX futures are being used by the buy side, and by 7orca Asset Management, as well as a piece on EBS Institutional, which offers analytics, workflow solutions and choice of execution methods for the buy side community to optimize their costs and maximize efficiencies when trading OTC FX.

As we move past the quarter, the overall market is witnessing a drop in activity, with a reduction in volumes and risk appetite. Many of our customers are working from home or at contingency sites and it is remarkable how well the marketplace has adapted to this shock. We at CME Group would like to wish everyone and their families well during these challenging times.

Market Commentary – Erik Norland, Senior Economist

Although currency markets didn't experience extreme volatility in the manner that the equity, fixed income and commodity markets did, in Q1 2020, the coronavirus pandemic produced significant movements in many currency pairs. The hardest hit currencies were ones whose nations rely on commodity exports. The Australian dollar plunged nearly 13% versus the US dollar (USD). The Brazilian real fell 23% and the Russian rouble, 21%. The Canadian dollar dropped 8%. These currencies responded to steep declines in the value of various commodities, including a nearly two thirds drop in the price of petrol, and 20%+ fall in industrial metals' prices.

Although not reliant on commodity exports, the Mexican peso also plunged 21% versus the USD, closely tracking the performance of the US equity market. Over 70% of Mexican exports head to the US and Canada and these exports are overwhelmingly manufactured goods. The shuttering of US factories and reduced consumer demand for manufactured goods took its toll.

Dollar funding issues created a great deal of volatility in the yen and in European currencies in mid-to-late March. The euro, the Swiss franc and the Japanese yen all fell as much as 6-8% versus the dollar between the 9th and 19th of March. Meanwhile, the pound slid 12% to its lowest point versus the US dollar since 1985. Following these developments, the US Federal Reserve provided extraordinary liquidity to foreign banks in need of US dollars and by the end of the quarter nearly every currency paired its losses versus the USD.

In the market: Focus on credit

Stress in the global FX marketplace has created credit challenges for some participants. As a result, demand is increasing to understand what products CME can offer to mitigate this.

Listed FX futures can offer greater credit and capital efficiency than OTC markets. Access is provided via the FCM network, of which there are over 50 supporting CME FX markets, with counterparty risk mitigated by facing the CME clearing house as the central counterparty. This central counterparty model allows netting of exposures – credit, margin and cashflows – which in turn optimizes capital costs as well as operational risk. In addition, the residual exposure attracts a much lower counterparty risk weighting for risk weighted asset calculations; a cost that can be relevant on a direct or indirect basis for some OTC FX transactions.

CME FX Link is another means of optimizing exposures between OTC FX and Listed FX Markets. FX Link is an anonymous, all-to-all, credit agnostic central limit order book for FX swaps, enabling users to trade a spread between OTC spot FX and CME listed FX Futures. The product has a number of applications, most commonly it is used by (a) participants looking to optimise exposures between OTC FX and Listed FX for greater capital and credit efficiencies (b) participants looking to trade FX swaps on a central limit order book and (c) similarly, customers wishing to trade OTC Spot and roll their position into a further dated cleared FX future.

In early March, FX Link achieved four single day volume records, peaking on March 10 when over 77K contracts traded, marking the first time the product has traded over $8bn notional. This activity helped illustrate the value of FX Link and the diverse use cases of the product to the marketplace.

Spotlight on FX Link: Active Credit solution

The Spread

- FX Link is a spread between OTC FX spot and FX Futures, traded electronically on CME's central limit order book
- At any one time there are spreads available between OTC FX spot and at least the front three futures expiries in eight currency pairs
- Trading the spread results in a buy/sell of OTC FX spot versus a sell/buy of FX Futures. This spread is unique, yet leverages existing workflows in the OTC spot and listed FX marketplaces.

Credit and capital efficiencies

- The OTC spot leg is supported by a network of eight global credit counterparties, the far leg is a cleared FX Future facing the CME Clearing House, as the central counterparty (CCP) – freeing up bilateral credit lines and reducing counterparty risk
- As well as the reduced Basel III capital charges from netting against a CCP – the residual exposures attract a lower RWA risk weighting of 2% and lower leverage ratio add-ons.

Operational efficiency

- The T+2 OTC spot leg can clear against eight global bank credit counterparties – easily accessible for banks using their existing interbank workflows and also for buyside firms using existing FX Prime Brokerage processes and messaging protocols.
- The Listed FX Futures leg will clear like any other Listed FX Future and form part of that open interest.

Active currencies:

EUR/USD, GBP/USD, AUD/USD, NZD/USD, USD/JPY, USD/CAD, USD/CHF, and USD/MXN

Pricing structure:

1/10th of a standard futures tick size: **cmegroup.com/fxl_pricing_guide**

Spotlight on FX Link: Explore potential yield enhancement opportunities

CME FX Link, as the only central limit order book for FX swaps, offers a unique firm price to the marketplace. This tradeable price can also be used by market participants to calculate implied interest rate differentials across the eight currency pairs, in order to identify any yield enhancement opportunities.

To provide greater visibility to the marketplace, CME is launching a new tool which, as well as showing the current FX Link currency yield differential, the FX futures price and the implied spot rate, will offer an historical view and display the implied interest rate differentials driven by these components – which traders can use to identify potential areas of underperformance or investment opportunities.

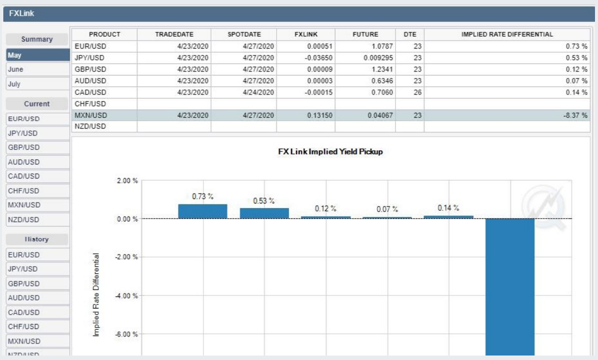
This tool uses the firm and transparent pricing from FX Link – and the activity of market makers managing OTC and listed FX inventory, FX swap traders, and buyside firms rolling OTC swap positions into futures to create the market intelligence displayed in this new tool.

Gain transparency, stay up-to-date, monitor the market:

- **Follow** market information on FX swap pricing and daily changes, delayed only by 10 minutes
- **View** implied interest rate differentials for eight currency pairs as they develop
- **Identify** potential yield enhancement, then capitalize on the opportunity using FX Link

CME FX new tool: Calculating market dynamics, creating market intelligence.

Contact fxteam@cmegroup.com if you would like to be part of our testing with the marketplace to maximize the value of this tool.



PRODUCT	TRADEDATE	SPOTDATE	FXLINK	FUTURE	DTE	IMPLIED RATE DIFFERENTIAL
EUR/USD	4/23/2020	4/27/2020	0.00051	1.0787	23	0.73 %
JPY/USD	4/23/2020	4/27/2020	-0.03650	0.009295	23	0.53 %
GBP/USD	4/23/2020	4/27/2020	0.00009	1.2341	23	0.12 %
AUD/USD	4/23/2020	4/27/2020	0.00003	0.6346	23	0.07 %
CAD/USD	4/23/2020	4/24/2020	-0.00015	0.7060	26	0.14 %
CHF/USD						
MXN/USD	4/23/2020	4/27/2020	0.13150	0.04067	23	-8.37 %
NZD/USD						

Liquidity profile:

- EUR*: 0.17 Ticks wide in regular trading hours (rth)
- $250mm+ deep in the top 5 levels of the order book during rth: cmegroup.com/fxl_volume

More information:

Visit **cmegroup.com/fxlink** for more use cases and how to get connected.

In the market: Focus on event risk

From 27-year lows in volatility, to current volatility, participants are exploring how to respond to the unprecedented events in the marketplace and are increasingly turning to our suite of FX options to manage risk along the term structure – with volume reaching $10bn each day in early March – attracted by the efficiencies of electronic trading and best-execution features of all-to-all matching.

Introducing more choice: On February 24, we expanded our options to include Monday expirations.

- Available on EUR/USD, JPY/USD, GBP/USD, AUD/USD and CAD/USD
- Fulfils demand for additional maturities in the front end
- Enables cost-efficient management of weekend events and portfolio risks such as time decay
- Market adoption is growing, with over 5,000 in open interest reached in first week.

Now, participants have more choice along the term structure, more transparency on the volatility surface, and making it an attractive solution for these markets, across multiple expirations.

Monday → Wednesday → Friday → Monthly → Quarterly

For all of the trading codes across Bloomberg | CQG | Fidessa | Refinitiv | Globex

Visit cmegroup.com/fxocodes

More to volume than volatility: Listed FX options prove to be a useful proxy for OTC FX options

As cost, transparency and the phases of Uncleared Margin Rules continue to be central to all participants' decision making, more participants are exploring the option of adding listed FX Options to their portfolio, recognizing it as a useful proxy, and as an additional source of liquidity, with potentially compelling capital and cost efficiencies.

Read our full paper exploring these trends and themes – and how different market participants are using our expirations to manage event risk. cmegroup.com/fxocurve

In the market: Focus on frontier risk

As markets around the world are impacted by the consequences of COVID-19, participation in our Emerging Market suite of currencies remains active, as traders turn to FX futures for the firm pricing available on our Central Limit Order Book along with the security of CME clearing for greater certainty.

From Peso to Real, Ruble to Rand Futures:

Average open interest is increasing in Q1

$6.5bn in MXN | **$1.1bn** in BRL | **$1.8bn** in RUB | **$579m** in ZAR

Trading volumes remain buoyant in Q1

$1.84bn in MXN | **$261m** in BRL | **$238m** in RUB | **$119m** in ZAR

Data: As of end of Q1 2020

Similarly, as every asset class reacts to risk, some participants are benefitting from the margin offsets available at CME Group – especially with emerging market currencies and commodities.

That's why we've built a new cross-correlation tool which details any and all offsets available across any product at any time, to help participants reduce the cost of trading.

MARGIN CREDITS																	
ENERGY		FX															
WTI	BRENT	EUR/USD	GBP/USD	JPY/USD	AUD/USD	CAD/USD	MXN/USD	NZD/USD	CHF/USD	BRL/USD	RUB/USD	SIR/USD	RMB/USD	ZAR/USD	NOK/USD	SEK/USD	USD/CNH
		20%		20%				30%									
					45%										55%	55%	40%
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		52%	25%	25%	66%	50%		---	35%					40%		35%	
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					35%					25%		---	30%	25%			

cmegroup.com/tools-information/quikstrike/cross-correlation-fx.html

Please Note: Cross product margin credit values in cells are indicative only and are subject to change. For official listing of CME Group cross-product margin credits, please visit: https://www.cmegroup.com/clearing/margins/inters.html#pageNumber=1

In the market: Focus on risk diversification

As the market works to address liquidity, execution, and regulatory challenges, there is a growing trend by the Asset Manager community to adopt exchange-traded FX, with more firms enquiring how to address these market challenges as they emerge and grow.

Motivated in part by their need to fulfil fiduciary responsibilities and to address regulatory headwinds, institutional Asset Managers have been increasing their adoption of listed FX futures and options. Over the past five years, this trend has picked up pace as Managers have increasingly chosen to augment their FX trading activities with listed FX derivatives in order to diversify their risk, reduce counterparty credit exposure, mitigate UMR impacts, and/or to access over $102bn of additional daily liquidity.

On days of big market moves, this activity is even more pronounced. As CME is the largest regulated venue for listed FX futures and options globally, volume can reach more than treble the average daily volume[1] as large players in the FX market turn to the CME for efficient transfer of risk.

Crucially, data shows that buy-side volume and open interest are now key drivers of that activity. Notably, 49% of all open interest in CME EUR/USD futures is now held by Asset Managers, reflecting a noteworthy migration to listed FX from, or in addition to, traditional bilateral OTC FX.

The shift to listed FX: Industry level trends and observations

Over the last 10+ years, overall assets under management ("AUM") have been steadily increasing in the asset management community. It is estimated that by 2025 AUM will rise from US$84.9 trillion in 2016 to US$145.4 trillion in 2025[2], and the greater weighting towards passive investment means cost pressures have never been more relevant.

Further themes surrounding conduct, best execution, compliance, fiduciary responsibility and connectivity have also come to the forefront for the Asset Management industry. As a result, there has never been more scrutiny on the selection of instruments, venues, methods and markets which are both acceptable and optimal for the execution of derivative transactions.

Collectively, more real and leveraged money managers are turning to listed FX derivatives as an efficient complement to their OTC FX trading activity, reflecting rising interest with these products, mechanisms and rules in line with their experiences and use of listed Equity and Interest Rates products.

Why Asset Managers are increasing their use of listed FX futures: Solving challenges

Central limit order book: Solves for firm liquidity and "best-execution" requirements

As 'last look' practices (which allow banks and liquidity providers optionality to cancel trades) have been challenged and the FX Global Code of Conduct has been embraced, more asset managers are encouraged by the clear rulebook, firm liquidity and absence of 'last look' in regulated marketplaces such as at CME[3]. CME Group's central limit orderbook is an all-to-all marketplace where all participants have access to the same price. Additionally, all trades are governed by venue rules, and full transparency enables any client to demonstrate they achieved 'best execution'.

Furthermore, studies have shown that Asset

1 *On December 12, 2019 - $282Bn was traded in a single day across all FX futures and options, treble the typical average annual daily volume*

2 *PWC Asset Managers 2020: A Brave New World*

3 *CME's FX futures CLOB promotes a robust, fair, liquid, open, and transparent market in which market participants can confidently and effectively transact at competitive prices that reflect available market information and, in a manner, that conforms to acceptable professional standards of industry behaviour.*

Managers are able to trade passively within the listed FX futures order book – meaning that they do not need to 'aggress' in to the order book by hitting the best bid or lifting the best offer. In a study conducted by Greenwich Associates[4] participants reported executing FX futures at mid, 35% of the time on average. As such, even the narrowest of spreads available in an aggregator may be avoided to further improve execution TCA.

Optimal execution: Solves for flexible execution with a variety of trading styles

Historically, one of the greatest impediments to large scale adoption of FX futures by traditional Asset Managers was the lack of flexibility in order execution. In the current ecosystem, most participants prefer the anonymity and scalability of executing electronically on CME's Globex platform, but buy-side clients can also utilize futures Blocks or Exchange for Physicals ("EFPs") to transact directly with their preferred liquidity provider(s) and thus leverage relationships and workflows from their bilateral OTC activity.

In addition, new products in the listed derivative marketplace have helped further connect the OTC and listed ecosystems. FX Link provides an automated bridge for clients wishing to trade in the OTC market and then transition that risk in to cleared futures. A prominent use case for FX Link is for buy-side customers who trade spot FX algorithmically and wish to roll their position forward – clients are now able to roll forward in to a listed FX future using the FX Link CLOB instead of transacting the roll bilaterally with the spot provider, conveniently accessing listed liquidity and the efficiencies of a centrally cleared model.

Confidence in compliance: Solves for Uncleared Margin Rules

Uncleared Margin Rules ("UMR") are encouraging many clients to reconsider direct and indirect costs involved in their OTC bilateral activity. FX FWDs, NDFs, Swaps and Options are all included in the Average Aggregate Notional Amount ("AANA") calculation to determine whether and when each client is directly impacted by UMR5. Once impacted, bilateral FX options and NDFs are then included within the ISDA SIMM calculation for the 2-way Initial Margin requirements under these new regulations.

Listed and cleared FX derivatives on the other hand are exempt from the AANA calculation and can potentially benefit from the netting of market positions against a central counterparty ("CCP"), portfolio offsets across asset classes and a reduced IM burden when compared to ISDA SIMM.

In summary: Conventional and new Asset Managers are leading the adoption of listed FX derivatives

The ever-evolving regulatory landscape, need to deliver cost and operational efficiencies and rising capital impacts on dealer banks trading OTC derivatives, point towards reinforcing the business case for asset managers to seriously consider moving portions of their FX trading activity to exchanges.

This paper contains three of the most prominent catalysts that are driving client adoption of listed FX futures, but other potential catalysts include the capital efficiencies for dealers (and ensuing potential for better pricing for the buyside) as well as operational efficiencies (including no need for bilateral credit lines or ISDA master agreements with multiple trading counterparts). Furthermore, product enhancements in the listed marketplace continue to make futures products ever more complementary to the OTC market and make it easier for institutional participants traditionally only familiar with OTC FX, to make the transition.

The catalysts for change and adoption of listed FX futures noted above will be relevant to different degrees and at different times to each individual firm – but the growing number of customers, record volumes and record open interest in CME FX futures (as of February 18 2020), suggests that a wave of transition may now be well underway, and that it is being led by Asset Managers.

4

In the market: Focus on cash market workflows

As many asset managers are adding futures to their existing OTC strategies, EBS is working to ensure that managing existing OTC exposures is cost effective, liquid and as operationally efficient as possible.

Asset Managers are increasingly shifting to the fully electronic trading model, motivated by the benefits data-centric systems provide, in analyzing cost, selecting liquidity providers, choosing the right execution method and assessing trade performance, as they seek 'forensic' levels of TCA.

This trend also reflects a change in trading style, as the use of algos increase and many asset managers move from batch to intra-day trading, with increased demand for sophisticated tools to manage large orders, as managers work to utilize the market, post-MIFID, competitively.

Introducing EBS Institutional (EBSI): A dedicated trading platform for the buy side

In response to these dynamics, more Asset Managers are adopting the EBS Institutional platform, the first and unique total solution for FX execution, analysis and operational efficiency, built for the buy side.

Drives competitive execution

EBSI is built on kdb+, the leading big-data database which is capable of performing complex calculations faster than the average quote speed in the FX market, enabling managers to remain competitive for clients.

Provides real-time analysis

EBSI can deliver pre-trade Expected Cost Analysis (ECA) and Transaction Cost Analysis, all tools built within the platform, helping all managers fulfil 'fairness' and 'best execution', with compliance dashboards built in, for data-centric decision making along the trade's lifecycle.

Compares cost

EBSI has a suite of proprietary netting and execution methods (including netting methods from alternative platforms) and compares them – placing these distinct models side-by-side, enabling the manager to simply select the most cost effective for their trade, with the audit trail they need.

Simplifies work flow

EBSI is a total workflow solution, with the ability to have fully integrated STP into managers' existing OMS systems, with functionality that improves efficiency, such as the ability to auto execute orders to pre-determined criteria, and to employ pre-defined counterparty controls.

Delivers liquidity

EBSI connects to a network of liquidity providers – who are using our innovative API functionality – to provide competitive liquidity across currencies, across time zones, and across products.

For more information, or to see a demo of EBSI, please visit cmegroup.com/ebsi

In the market: Focus on why futures and forwards matter in currency overlay management

A discussion with 7orca, the Germany-based boutique investment manager, and CME Group

In April 2020, CME Group and 7orca collaborated to discuss why currency overlay managers are using futures, and why 7orca is using CME's listed FX products specifically, to gain the exposure and returns they require.

Introducing 7orca

7orca Asset Management AG is an established investment boutique managing more than EUR 2bn. The independent, quantitative asset manager offers institutional investors solutions to manage FX risks and capture volatility as an alternative source of return.

As a leading specialist in managing the FX risks of its institutional clients, 7orca uses both FX futures and FX OTC forwards.

This interview features:

- Phil Hermon, Executive Director for FX Products at CME Group, based in London.
- Holger Bang, CFA, Head of Portfolio Management at 7orca, based in Hamburg.

The discussion

Holger, 7orca is one of the few European currency overlay managers using both listed futures and OTC forwards to hedge FX risks. Based on your broad experience, how do these compare in terms of transparency?

7orca: Our standard set-up for all currency overlay mandates foresees the use of both FX futures and FX forwards as a hedging instrument.

> *"Our standard set-up for all currency overlay mandates foresees the use of both FX futures and FX forwards as a hedging instrument. "*
>
> **– 7orca**

Trading on the exchange ensures a high degree of confidence, as the market segment is regulated, and the processes for clearing and settlement are very well established. Furthermore, the central limit order book displays a high degree of price and volume information; any executed order is displayed post trade for all market participants, including price and volume information, thus ensuring a very high level of transparency. If traded as request for quotes, FX OTC forwards cannot quite keep up due to their bilateral character. Forwards that are concluded as part of an algorithm transaction also provide good transparency, as the details are broken down for each fill in real-time and in post-trade reports.

Are there any differences in firm liquidity when looking at these instruments?

7orca: FX futures probably provide the firmest liquidity. Once a lot is traded in the central limit order book the deal is concluded without last look. In the OTC forward segment, a last look is possible in volatile markets with certain liquidity providers. Yet, FX OTC forwards as a proven currency hedging instrument offer a very good liquidity level for G10 currencies. The same applies to FX futures – especially in currencies such as EUR/USD, with liquidity in the order book for other G10 currencies being comparatively lower. For emerging market currencies, however, whilst the futures liquidity can be useful in some pairs it is less established than in G10, and can be limited when traded against the Euro. In this case, we prefer hedging via OTC non-deliverable forwards. Obviously, it is always possible to provide OTC liquidity in futures via block trades. Currently, several of the major FX OTC houses offer this service.

> *"FX futures probably provide the firmest liquidity. Once a lot is traded in the central limit order book the deal is concluded without last look. "*
>
> **– 7orca**

In situations of market stress the picture can deviate largely. FX futures become even more appealing as, unlike FX OTC forwards, they do not bear counterparty risk to a financial institution. This feature is especially important in the current crisis situation, and we are discussing with some of our clients to switch from OTC forwards to futures to help mitigate their counterparty risk.

Does the all-to-all nature of a futures marketplace, the ability to trade passively, and access to a range of liquidity providers provide tangible benefits compared to the OTC FX marketplace?

7orca: When comparing the all-to-all nature of the futures market to the more classic way of bilaterally trading forwards via single dealer platforms the biggest first order benefit is that the futures marketplace features numerous participants with different risk profiles compared to a relatively small number of the classical liquidity providers available in the bilateral market. In certain situations this offers a much needed liquidity diversification. However, this diversity can also be achieved by employing OTC forwards if such as advanced algorithms are employed, as they also make use of a variety of liquidity pools.

> *"In my view, the biggest advantage of FX futures is the ability to trade passively in the central limit order book of the exchange."*

Buy side investors normally act as market taker, hitting the respective side of each intended trade and paying the bid-ask spread. Trading FX futures on the exchange enables buy-side customers to act similarly to market makers and place orders passively. This offers an attractive potential of saving bid-ask spreads during trading. The probability of saving the spread increased considerably after the reduction of the minimum price increments for spread trades in several currencies at the CME. Trading futures enabled us to roll our positions on average below mid, saving our customers a decent amount of money.

> *"Trading futures enabled us to roll our positions on average below mid, saving our customers a decent amount of money."*
>
> **– 7orca**

Let's talk about costs. How do the all-in costs of FX futures compare to FX OTC forwards? In your opinion, do FX futures represent a cost-effective solution for more asset managers and real money clients to consider?

7orca: There is no straightforward answer to this question, as the choice of instrument always depends on the individual situation of the client and the regulatory framework or market environment he is operating in. Therefore, it is subject to a certain dynamic.

> *"This is also the reason why we at 7orca give our currency overlay clients access to both first class OTC brokers and FX futures and switch from one instrument to another, depending on the situation."*

Greenwich Associates published an interesting study, titled 'A Bright Future for FX Futures', that covers your question. The study addresses topics such as the percentage of trades that can probably be executed in FX futures at mid on average, the typical rejection rate and the size of the bid-offer spread. The results show that the use of FX futures can have advantages over OTC forwards. Especially the recent reduction of minimum price increments by the CME has made the use of futures more attractive.

On the other hand, it is important to take a closer look at the infrastructure costs of both products, such as charges in connection with the custodian or with the execution broker as well as for the in-house post-trade processes regarding reconciliation. It is hard to just compare like for like – futures offer some clients non-quantitative benefits such as minimizing counterparty risk, trading at a regulated marketplace, providing firm and transparent pricing without last look.

From a more general perspective, I think it makes sense for every asset manager to examine the subject in greater detail on the basis of his current situation.

For which mandates do you use futures today and which clients would you advise to consider futures?

7orca: As I mentioned before, the majority of our currency overlay mandates allow trading in FX futures and FX OTC forwards. That way, the benefits of FX futures and OTC forwards can be fully exploited at all times.

For smaller European mandates up to a certain size, which are mainly invested in USD, it generally makes sense to use only futures as a cost-effective hedging tool. Taking into account all costs, such as those for the collateral manager, the onboarding of several FX OTC brokers is comparatively more expensive than the use of FX futures.

> *"Larger clients as well as asset managers and real money firms benefit from access to additional and diverse liquidity in FX futures that complements the pricing and access they have in the bilateral OTC market."*

This situation is also reflected in the figures of the 'Commitment of Traders' report. It shows that there are now more large open interest holders in FX futures than ever before; 1,310 as of Feb 25 to be precise. Unsurprising, that within this growing ecosystem both asset management and institutional clients have grown from holding 31% in February 2017 to 49% in February 2020 of open interest in EUR/USD FX futures.

Does the mitigation of counterparty risk and freeing up of bilateral credit lines resonate with clients as a benefit of listed FX over OTC FX?

7orca: The issue of counterparty risk is definitely of great importance to some of our clients, especially in light of the current crisis. Although all hedges implemented with OTC forward positions are secured with variation margin, there are circumstances in which a short-term counterparty risk exists despite the collateralization, in particular if a hedge is rolled over to the next term.

This is the case if the hedged currency appreciates and results in the market value of the FX OTC transaction turning negative. Accordingly, the market value must be collateralized daily. At maturity of the OTC forward, the negative market value is paid out, with the collateral being transferred back only one day later.

> *"We are monitoring counterparty risk more closely than ever given the current corona virus pandemic, and should the situation lead to recognisable hardship for the banking sector we would shift all eligible mandates to FX futures. "*
>
> **– 7orca**

This is not the case when using FX futures. We are monitoring counterparty risk more closely than ever given the current corona virus pandemic, and should the situation lead to recognisable hardship for the banking sector we would shift all eligible mandates to FX futures.

Currently, however, we are not worried about our clients who use FX OTC. The release of credit lines is not a big issue for them, since as real money investors they have a very high credit rating and the availability of bilateral credit lines is therefore posing no problem.

Considering investors with stressed credit relationships or leveraged positions, the use of futures could be useful.

About 7orca: Investment Philosophy

7orca is an established quantitative and systematic asset manager. The company offers institutional investors strategies for managing currency risks and for tapping volatility as an alternative source of returns.

7orca's investment approach is systematic and quantitative. The company's rule-based decision algorithms and risk management processes are implemented in a stringent and disciplined manner. Performance is transparent and traceable, ensuring a high level of consistency from its investment solutions. The company's services are aimed at institutional investors, with a maximum of individualization and client orientation.

In the conversation

Holger Bang, CFA, Head of Portfolio Management, 7orca

As Head of Portfolio Management, Holger Bang with his team are responsible for managing 7orca's investment strategies. He has over 15 years of expertise in currency management and quantitative asset management, gained at both German and global financial institutions.

Prior to the foundation of 7orca Asset Management AG in 2017, he served as Head of Overlay at Bank Berenberg and was responsible for assets under management of EUR 12bn.

Holger holds a Diploma in Economics and is a CFA Charterholder.

Phil Hermon, Executive Director, FX Products, CME Group

Phil Hermon serves as an Executive Director of FX Products at CME Group and is based out of London. He is responsible for the management, development and go-to-market initiatives of listed FX and OTC cleared FX products.

Before joining CME Group, Phil served in various roles across sales, client solutions, derivatives operations and relationship management at both Morgan Stanley and RBS.

Prior to his career in finance, Phil was a Captain in the Royal Tank Regiment within the British Army and holds a bachelor's degree in business studies from the University of Sheffield.

To discuss any of the themes detailed here, please contact fxteam@cmegroup.com

In our market: Focus on FX tools

See who participates in FX futures markets

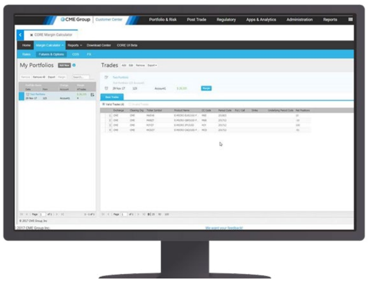
Analyze information by client segment including dealer, asset manager and leveraged market participant using The Commitments of Traders tool. The tool charts the CFTC's report on market open interest released each Friday afternoon based on positions held during the prior Tuesday.

Rolling FX futures with Pace of the Roll Tool

For open interest holders who prefer to carry positions in FX futures over time, the quarterly roll indicates the optimal liquidity period to roll a futures position forward from the expiring front month futures contract to the deferred month futures contract and therefore the Roll Tool can help analyse and plan their futures roll. These charts are updated and available on a daily basis during the roll period.

Calculate your margins with CME Core

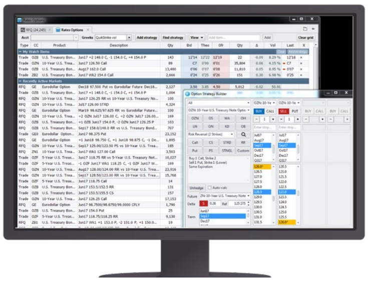
CME CORE is an interactive margin calculator that enables users to calculate and evaluate initial margin requirements for all CME Group products, and execute OTC efficiency analysis through additional analytics.



FX trading with CME Direct

CME Direct, is a fast, secure and highly-configurable trading front-end. Benefit from the deep liquidity and transparency of CME Group markets and uncover new trading opportunities.

To trade with CME Direct, you will need a relationship with a clearing FCM so contact you bank if you'd like to get connected.



FX data to help you simulate or back test your strategies

Our new self-service cloud solution allows you to quickly and more efficiently access CME FX historical data in a more integrated and streamlined process, providing you with the data you need almost instantaneously.

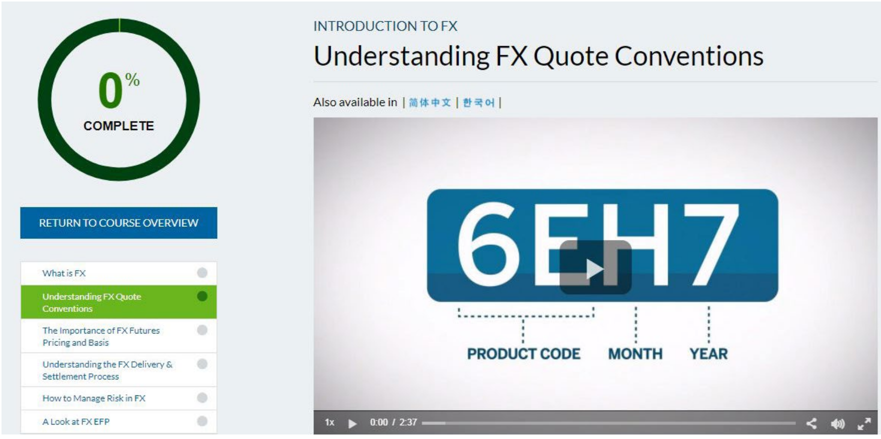
To access the full suite, visit cmegroup.com/fxtools

In our market: Focus on FX tools

The CME Institute: FX

Continue learning about the futures and options markets with a variety of courses designed to help you at each stage of your trading journey. Our courses are designed to help you deepen your knowledge and improve your understanding of our markets.

There are six dedicated courses on FX. Start watching and learning today.



To access the CME Institute, visit cmegroup.com/fx-quote-conventions

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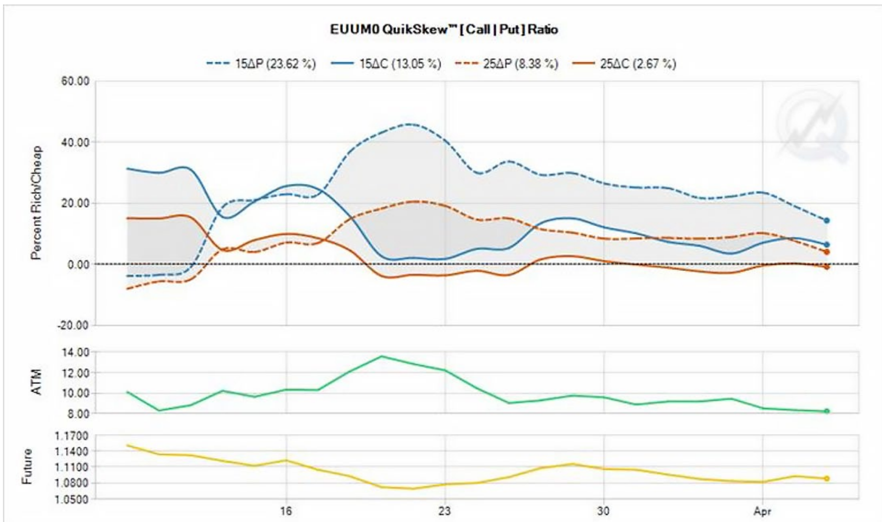

Focus on: QuikVol® Tool

Chart and analyze historical volatility data for CME FX options, with views into implied and actual volatility, skew, constant maturity, and implied volatility cones.

Like what you see? Access Complete Historical Volatility Datasets.
The QuikVol® datasets featured in this tool are available dating back to 2007 through CME DataMine.

cmegroup.com/tools-information/quikstrike/pricing-volatility-strategy-tools/quikvol-tool.html

Why not make your trading day a little bit easier:

Keep track of all your FX products in one place with **My Portfolio**
And, get access to real time notifications on price movements with **Price action alerts**

Sign up here to get started and learn more or visit cmegroup.com/subscribe

In our market: Focus on exchange definitions

CME Group has several measures in place to ensure that our markets continue to work in an efficient and orderly manner during volatile market conditions. By establishing price fluctuation limits specific to each product, the exchange can help restrict a market from moving too far or too fast in a specific period of time.

What are price limits:

Price limits represent the maximum price range permitted for a futures contract in each trading session. Price limits vary from product to product, as does what happens when a price limit is hit. Some markets may temporarily halt until price limits can be expanded or trading may be stopped for the day based on each exchange's rulebook (grain futures have daily hard limits, for example).

What are circuit breakers:

Circuit breakers are a series of price limits that, when reached, pause a market for a particular period of time for markets to reset. There are two kinds of circuit breakers in CME Group markets. *Traditional circuit breakers* are a series of price limits above and below a reference price (usually settlement) for certain CME Group products. Once a circuit breaker is triggered, the next level of circuit breaker comes into effect. Products with traditional circuit breakers, like equity markets, are divided into primary contracts and associated contracts.

- **Primary contracts:** The CME Global Command Center (GCC) designates the lead month for the primary contract.
- **Associated contracts:** When primary contracts trigger a circuit breaker event, all associated contracts follow the behavior of the primary contract. Associated contracts can also have their own circuit breaker events, but those events do not influence other contracts like primary contracts do.

Dynamic circuit breakers (DCBs)

are similar to traditional circuit breakers but move with the market throughout the day. Within a specific time interval, DCBs define an upper and lower limit of how far an instrument is allowed to move in a specific time interval, usually an hour.

Each product has its own assigned value used to calculate the circuit breaker level, typically a percentage of its previous settlement price.

What is velocity logic:

Velocity logic monitors potential significant price movements in extremely small time increments on CME Globex. It works in conjunction with price banding to preserve the integrity of our markets. Whereas price banding monitors futures price movements that would go too far, velocity logic monitors futures price movements that would go too far, too fast. It's calculated using the highest and lowest prices within a predetermined lookback window. If a velocity logic violation occurs, the futures market is temporarily suspended, as are all associated options markets.

What is price banding:

Price banding is a similar mechanism to price limits which rejects orders outside a given range, or band, to maintain orderly markets in futures and options markets whether there is high volatility or not. Bands are calculated dynamically for each product based on the last price, plus or minus a fixed value. If markets quickly move in one direction, the price bands dynamically adjust to accommodate new trading ranges.

Visit cmegroup.com/education/articles-and-reports/understanding-price-limits-and-circuit-breakers for complete information.

Get to know our full suite of FX products for managing risk and capturing opportunities across the trade lifecycle

Futures, Options, FX Link and OTC Clearing on CME FX

Spot, Forwards and NDFs on EBS

Connectivity with Traiana

Compression available with TriOptima

Risk Awards 2019 Winner | CME Exchange of the year

CME FX Link

FX Week e-FX Awards 2018 Winner — e-FX initiative of the year

Risk Awards 2019 Winner | CME Exchange innovation of the year

CME FX Options

FX Week e-FX Awards 2018 Winner — Best e-derivatives platform

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