The Asia Pacific FX Markets: **Opportunities for Growth**

Content

01 Foreword

Asia Pacific is comprised of diverse currency markets that are shaped by various and, at times, competing forces, from global regulation to local capital controls.

The objective of this study is to examine the structure and development of the foreign exchange (FX) market across the region, including the roles of different market participants, methods of execution and the regulatory environment. It aims to illustrate the changes in regional FX markets over the past decade and shed light on their future direction.

The report has been jointly written by KPMG and the Global FX Division (GFXD) of the Global Financial Markets Association (GFMA). All the statistics used in the report are based on a combination of data from the Bank for International Settlements (BIS) Triennial Central Bank Survey of Foreign Exchange Market Activity from 2004 to 2016; desktop research from publicly available sources; internal resources of the GFMA and KPMG; and multiple interviews with market participants, including members of the GFXD.

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EXECUTIVE SUMMARY

CURRENT

Market Conditions
- Increased local currency activity
- Liquidity more concentrated
- Volatility more extreme and harder to predict
- Reduced risk appetite
- Greater use of algos for orders
- Greater fragmentation

Electronic Execution & Technology
- Asia playing catch-up
- Active marketing by SDPs and MDPs
- Driven by best ex, cost reduction & STP

Market Participants
- Opportunities for local/regional banks
- Growing influence of NBLPs
- International/local interdependency
- FDI & institutional investor inflows

Regulatory Environment
- Diverse & complex
- Inconsistent application
- Challenges for strategy & technology
- Uncertainty over extraterritorial impact

Asian FX Markets

FUTURE TRENDS

Market Conditions
- Continued adoption of algos
- Further concentration of liquidity

Electronic Execution & Technology
- Capacity for further growth
- Big data analytics & machine learning to influence execution capability, drive platform development
- SDPs will need to evolve
- New technology likely to alter roles of current market participants, drive the formulation of new alliances
- Distributed ledger capability to drive efficiency over longer term (5-15 years)

Market Participants
- NBLPs will increase influence across the region
- Changing business models and alliances

Regulatory Environment
- Greater cross-border co-operation required
- Potential for multiple global liquidity pools
- Developed market regulation has unintended consequences across emerging markets

OUTCOMES

- RMB internationalisation likely to shape global markets over the next decade
- Opportunities to develop greater price discovery, improve market access and efficiency in onshore markets will benefit local economies
- Access to local markets and ability to incorporate new technologies will differentiate market participants
- Market participants will need to innovate and leverage new services to create capital efficiencies
- Access likely to remain restricted in certain markets
- Conduct requirements will continue to help shape business models
- Higher levels of cross-border regulatory equivalence but not full harmonisation, hence possible bifurcation

03
KEY FINDINGS

This study has identified the following key conclusions, which can be divided into current and emerging trends, and likely future outcomes or implications for regional FX markets.

(a) Market conditions

Current and emerging trends

In line with the region's rapid development, average daily FX volumes traded in Asia have climbed 20 percent since 2013 to US$1.16 trillion. This regional market growth, since 2013, has been supported by a 28 percent increase in swap volumes to US$608 billion and a 52 percent increase in forwards volumes to US$193 billion.

The Japanese yen (JPY), despite volumes having recently fallen back from their 2013-14 Bank of Japan (BoJ) quantitative-easing (QE) peak, continues to dominate overall regional trade, with volumes rising 172 percent since 2004. Whilst JPY's dominance continues, the renminbi (RMB) has become the eighth most actively traded currency in the world and the most traded non-G10 currency. This has been driven, in part, by the Chinese authorities' encouragement since 2009 to use the currency to settle current account transactions and for cross-border trade invoicing. However, the recent priority for the Chinese authorities has been stability and the strengthening of existing capital controls over the internationalisation of the RMB which may impact short term future growth.

Given the widespread currency restrictions across the region a number of currencies are non-deliverable. Four of the top five globally traded non-deliverable forward (NDF) currencies – the Korean Won (KRW), Indian Rupee (INR), onshore Chinese Yuan (CNY) and Taiwan Dollar (TWD) – are from Asia and in most cases have higher volumes than their onshore deliverable equivalents.

Despite the increase in volume traded in the region there has been a fall in the number of reporting dealers[1] in most jurisdictions indicating that liquidity is becoming more concentrated across a smaller number of banks.

[1] BIS reporting dealers are typically large commercial and investment banks that are active in the local markets and regularly trade through electronic platforms

A series of recent events has resulted in periods of extreme volatility and price spikes increasing the randomness in volatility that has been exacerbated by the following structural changes in the FX market:

- the impact of prudential regulation on banks' ability to warehouse risk
- the increased cost of continuing to participate in the market
- the competitive edge some institutions have gained through enhancing the sophistication of their platforms
- the growing influence of Non Bank Liquidity Providers (NBLPs)

An apparent outcome of this combination of structural changes is that during periods of price stability there is ample liquidity, but when there are events resulting in extreme volatility the liquidity disappears.

Outlook

- Liquidity is likely to concentrate further among fewer institutions in the years ahead.
- Despite its rapid recent growth China's FX market is still disproportionately small as a percentage of GDP and primarily domestic, pointing to a clear opportunity for the market to develop further.
- The ongoing internationalisation of the RMB is set to be a major force shaping the global financial system over the next decade. It will make China's financial markets deeper and more liquid and have significant implications for international investment trends and global asset prices. The challenge for China will be furthering this internationalisation while ensuring stability, given the likely disruptions to the exchange rate and capital flows.

(b) Market participants

Current and emerging trends

The banking segment of the market is still largely split among:

- International banks that serve an extended group of international and regional clients, but have limited local currency offerings
- Regional banks that compete with international banks for cross-border flows in the region but struggle to provide competitive G10 currency liquidity
- Local banks that dominate domestic currency liquidity and the onshore client base. This can be due to local currency restrictions in some jurisdictions.

These divisions are more nuanced than they may initially appear. Relationships are often symbiotic, with international banks partnering with local entities that act as distributors for products and provide access to local liquidity. These partnerships also act as a crucial secondary market for local banks looking to recycle risks and exposures in the G10 market.

The role of the institutional investor has become more significant with the flow of capital into the region's markets rising. Forwards traded by financial institutions (FIs) in the region have more than doubled since 2013 as investors look to hedge the regional component of their portfolios.

NBLPs in Asia are becoming more significant in liquid G3 currencies where they can use their developed market strategies. However, their penetration into local currencies has so far been limited by a lack of access to the local markets and because local currency trading has traditionally been relationship based, voice executed and subject to higher levels of volatility.

Outlook

- Given the rising costs of compliance, the continued development of electronic platforms and the investment required in new technologies, only a small number of banks together with NBLPs will be in a position to act as liquidity providers.
- NBLPs will play a key role in liquid spot currencies and will grow their offering in more liquid local currencies and NDFs. Some may become niche players in certain products, asset classes or markets in response to buy-side demand.
- Local institutions may find the cost of operating beyond their traditional client base uneconomical and may be limited to being the main providers of liquidity in their domestic currencies.

(c) Electronic execution and technology

Current and emerging trends

Electronic trading has gained ground in Asia in recent years, with providers playing catch up with the developed markets and widening their product offerings and client coverage. Secondary FX venues are generally managed out of London and New York so have not had the same focus to onboard regional market participants. High-frequency traders (HFTs) and NBLPs have historically preferred markets where liquidity is deeper and where they have access to a multitude of secondary venues, which make emerging markets less attractive.

Banks have actively migrated voice-executed trades onto their single-dealer platforms (SDPs) to drive cost reductions and improve efficiency. Multi-dealer platforms (MDPs) have gained popularity by providing access to multiple counterparties, enabling investors to satisfy client best execution requirements.

The primary trading venues are still popular with banks in the region due to the fact that flows tend to gravitate towards them in the less liquid and more volatile conditions of the Asia time zone. In addition, almost all of the central limit order book (CLOB)/interbank offshore renminbi (CNH) volume is now captive on these venues.

There has been significant investment and progress in the ability to quote NDFs. As a consequence, NBLPs are starting to look at building their trading capabilities in more liquid local currencies and NDFs.

Outlook

- Regional e-trading volumes will continue to match those in developed markets, driven by changes in regulation, increased surveillance requirements, cost pressures and best execution obligations.
- Advances in areas like big data analytics and machine learning have the potential to produce a paradigm shift for the FX industry. On the one hand technology driven transformation can help the traditional market participants drive greater internalisation and generate greater efficiencies, while on the other it can eliminate some market distinctions, enabling technology firms with low overheads to compete with the traditional participants.
- International banks will migrate more order types to algo execution on their SDPs to improve surveillance and eliminate potential conflicts of interest.

- Banks that have been actively developing and marketing their SDPs will be able to take advantage of big data analytics generated from client behaviour, and machine learning to drive greater internalisation and efficiencies. In order to maintain relevance, SDPs will need to evolve to allow clients access to other liquidity providers.

- Banks that have invested heavily in proprietary systems will struggle to upgrade to new technologies without significant new investment that not all will be able to afford. Those that are able to pay the 'cost of entry' will need to focus on building partnerships to develop utility platforms and/or better leverage third party systems, while others may be faced with a decision to change business models or develop new alliances.

(d) Regulation

Current and emerging trends

The regional regulatory environment has been driven both by the global post-financial crisis agenda and efforts to protect local economies while ensuring stability as markets grow. It is diverse and complex, presenting challenges to global and regional banks as well as multinationals that seek to implement standard strategies and technology models across the region.

Despite the market and prudential regulatory agenda being agreed at the global level, there are often inconsistencies in local interpretation that can create an uneven playing field. However, there is evidence that national regulators, in the region and beyond, have started to consult on a more consistent regulatory approach.

Given the role of international banks in providing liquidity to regional market participants, there is a need for awareness of the extraterritorial consequences of regulation implemented in markets like the US and EU. These can lead to a fragmentation of the FX market and create multiple liquidity pools.

Outlook

- The most significant near-term drivers of change will include the implementation of the Global FX Code of Conduct (GCC), the extraterritorial impact of the Markets in Financial Instruments Directive II (MiFID II)/ Markets in Financial Instruments Regulation (MiFIR), and prudential regulation such as the Fundamental Review of the Trading Book (FRTB), which could impact the liquidity of some Asian currencies.

- Despite greater dialogue and cooperation amongst regulators via the Financial Stability Board (FSB) and regional forums, a more harmonised regional regulatory framework is seen as unlikely to emerge in the near-term. This lack of harmonisation will continue to act as a dampener to the expansion of the regional FX market. One solution is the greater adoption of substituted compliance or equivalency in order to mitigate the impact of differences between regulation at the national level.

04

INTRODUCTION: Changing Market Landscape

The most recent triennial survey by the BIS showed a contraction in global FX trading activity for the first time since 2001, with Asian currency trading volumes also slipping. This is attributable to several factors, including:

- The slowdown of global trade from its 2013 peak
- US dollar appreciation which has reduced the reported value of volumes in other currencies
- Bouts of risk aversion prompted by shifts in monetary and macroeconomic policies in developed markets that have impacted active fund management and activity

However, the average daily FX volumes traded in the region have climbed 20 percent since 2013, to US$1.16 trillion. This growth is broad-based and has been driven by:

- An 18 percent uptick in the volume traded between reporting dealers, which, partly due to the smaller presence of NBLPs, account for 56 percent of volume in the region compared to 42 percent globally
- A 28 percent increase in swap volumes to US$608 billion, of which 65 percent was traded cross-border and 67 percent between dealers
- A 52 percent rise in forwards volumes to US$193 billion, with 59 percent traded by other financial institutions – up from 41 percent in 2013

Figure 1: FX average daily volumes (ADV) by counterparty [2]

(a) Global

(b) Asia Region

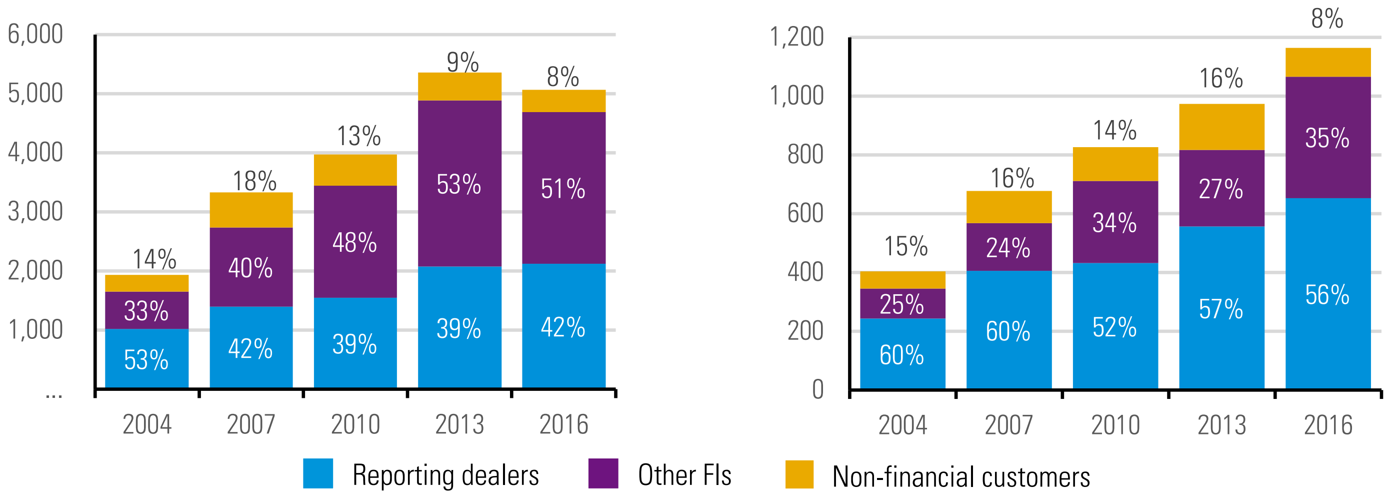
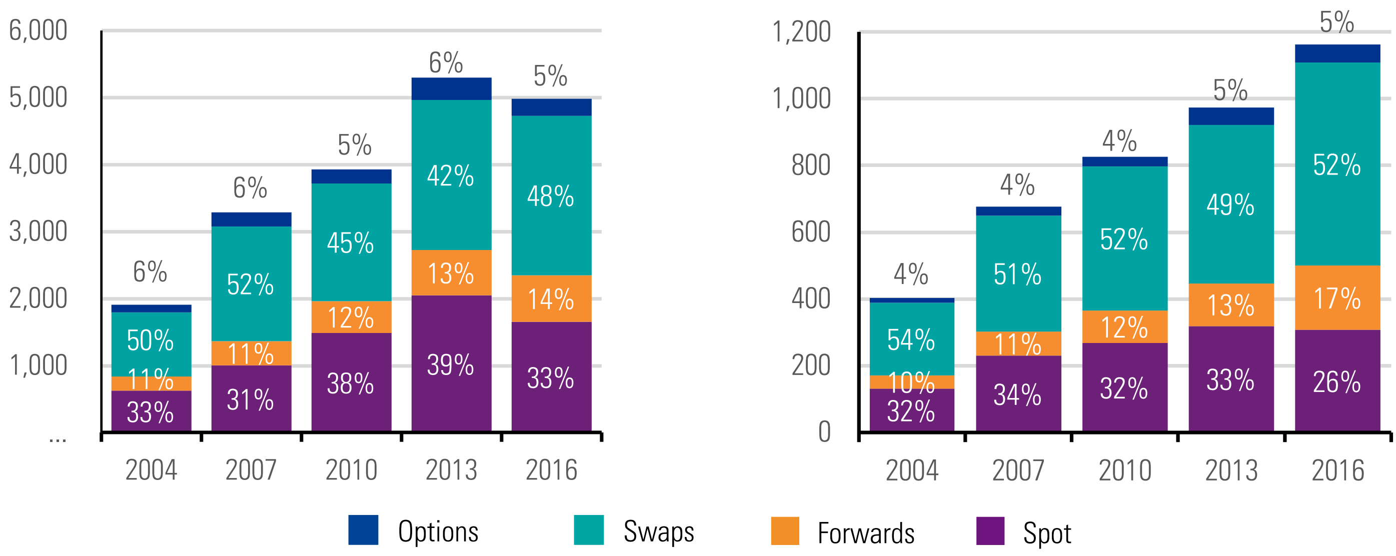


Figure 2: FX ADV by product [3]

(a) Global

(b) Asia Region



(a) Markets and Currencies

Asian FX markets can essentially be divided into two categories. The first is comprised of jurisdictions with large FX trading volumes, limited local regulatory restrictions, high cross-border activity and G10 currency volumes

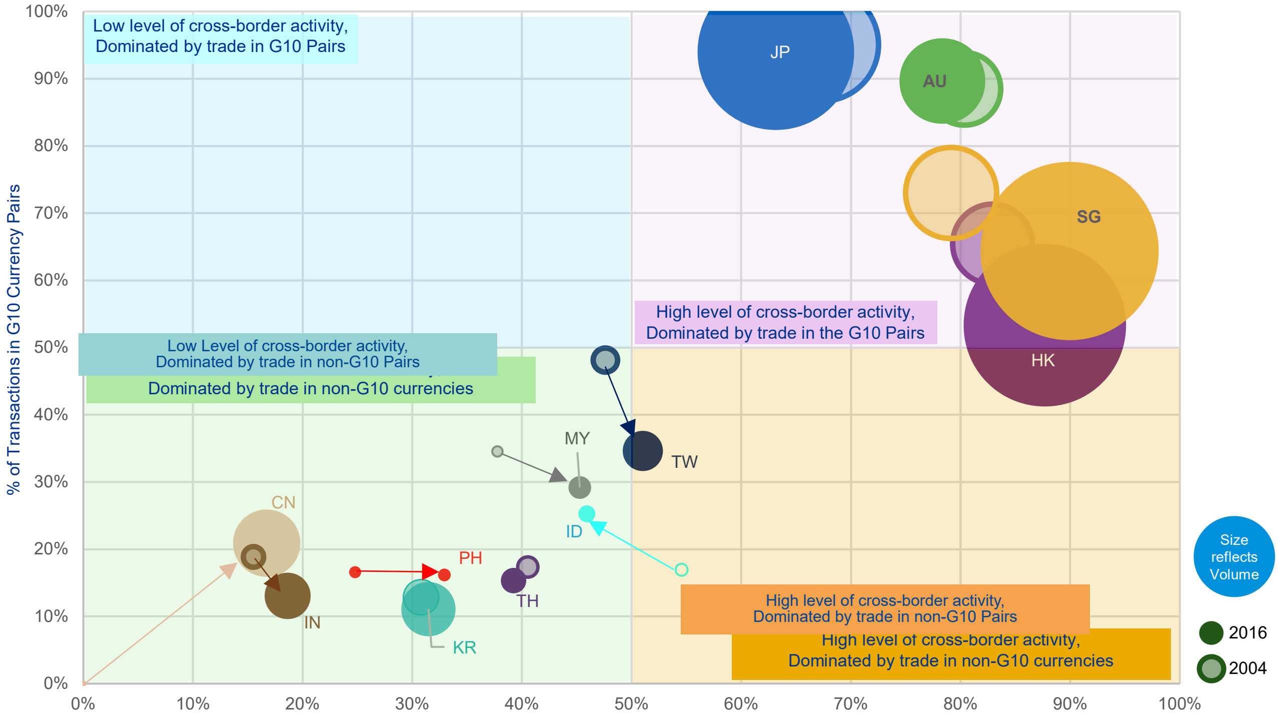
The second consists of markets with onshore regulatory barriers, lower volumes, lower cross-border and G10 volumes. This category includes India, South Korea and, notably, China, which has swiftly emerged as the leader in terms of volume despite being a relatively recent entrant.

Other restricted jurisdictions – with the possible exceptions of Korea and India, both of which are relatively large – exhibit limited growth prospects due to a lack of liquidity in their fixed income and FX markets.

In line with the region's growing global role, Asian currencies have exhibited more global trading patterns with larger volumes traded offshore to hedge the flow of trade and investment into the region. One notable driver of this trend is

[2] BIS, volumes adjusted for local and cross-border inter-dealer double counting
[3] BIS, volumes adjusted for local and cross-border inter-dealer double counting

Figure 3: Relationship between the volume of G10 pairs and the level of cross-border activity [4]

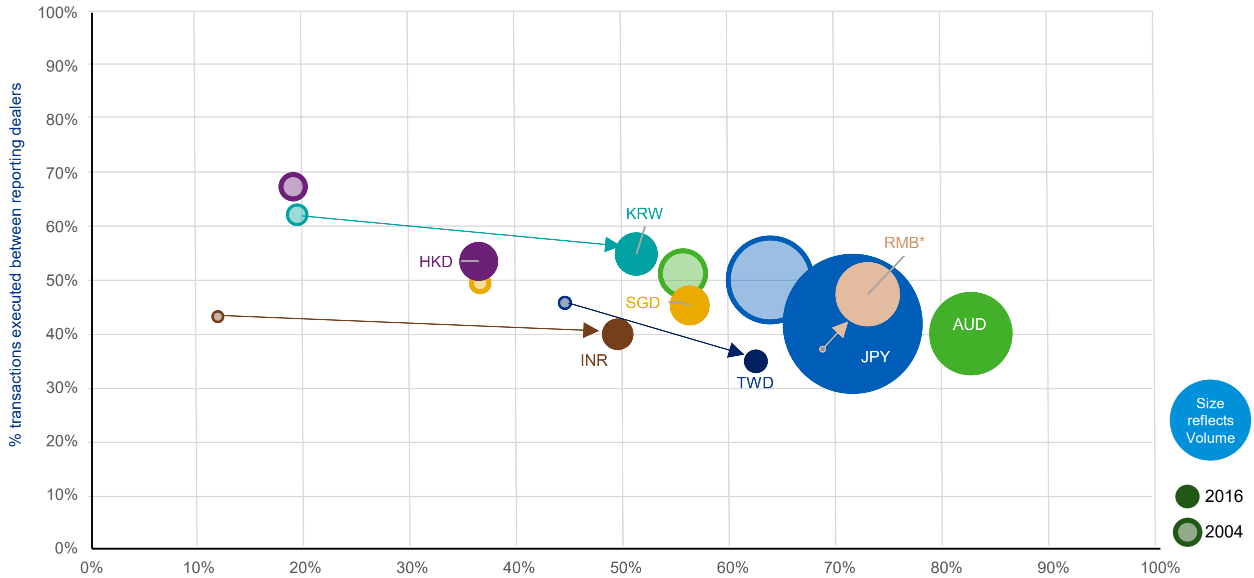


Largest Market: 2004 – JP (USD 206 billion)
2016 – SG (USD 511 Billion)

the FI segment. International institutional investors are hedging their Asia asset weightings, which have increased as a by-product of extended monetary easing in developed markets.

The yen continues to dominate regional trade, with volumes climbing 172 percent since 2004. However, the RMB is the region's rising star, with volumes surging over 100 times to US$202 billion since 2004 to make it the most traded non-G10

Figure 4: Summary of trade in Asian currencies [5]



Largest Market: 2004 – JPY (USD 403 billion)
2016 – JPY (USD 1,097 Billion)

[4] BIS. Includes only transactions with G10 currencies on both sides of the transaction
[5] BIS

regional currency. This growth has been assisted by the emergence of offshore RMB centres linking international markets with the Chinese mainland.

The RMB internationalisation process was reinforced in late 2015 when the International Monetary Fund (IMF) designated the RMB as freely usable, and again in October 2016 when the currency was included in the IMF's Special Drawing Rights (SDR) basket. However, the recent priority for the Chinese authorities has been stability and the strengthening of existing capital controls. This is more likely to be a pause in the internationalisation process, rather than a retrenchment.

Despite its performance, China's FX market remains disproportionately small as a percentage of GDP indicating significant growth potential. With the opening of the China Interbank Bond market in early 2016 and foreign bondholders now able to use the onshore FX derivatives market to hedge currency exposures, the onshore market is expected to expand further.

(b) Market liquidity

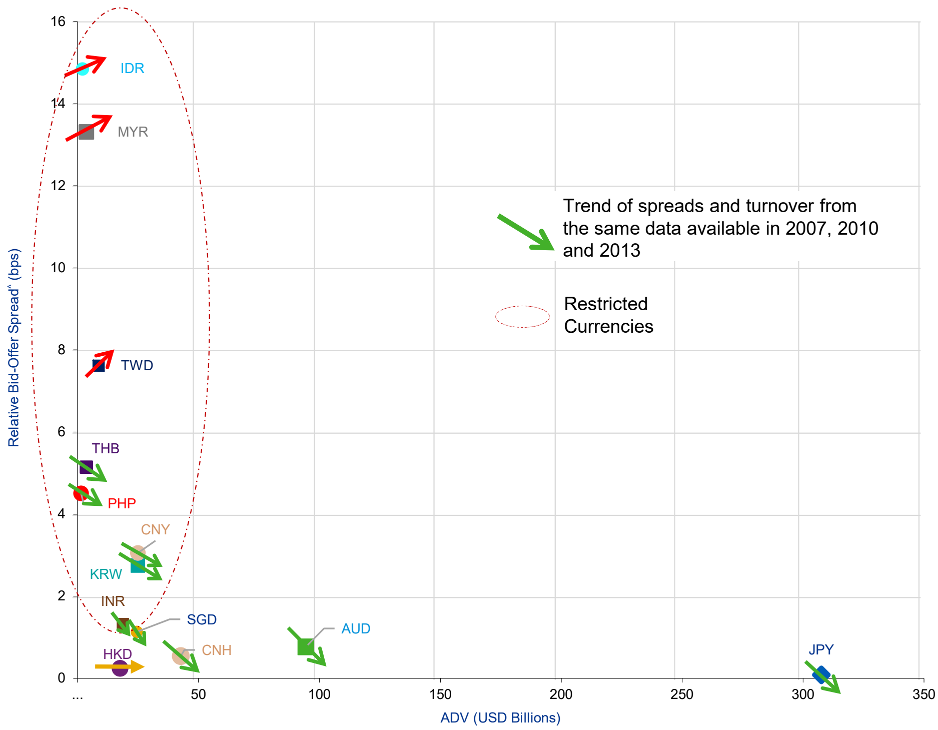
The region's liquid, globally traded currencies are characterised by high volumes and tight bid-offer spreads. Currencies where activity is primarily restricted to onshore markets to prevent speculation are typified by low volumes, wide spreads and directional trading. This limits the availability of natural hedges and increases trading costs.

However, there are exceptions - notably the INR and KRW, which have active onshore electronic trading and futures markets. There is a significant foreign investor presence in the Korean equity and fixed income markets while onshore Korean financial institutions can also access the NDF market. Meanwhile, India's FX market has developed alongside the growth in its equity market and international trade over the last decade.

Among major unrestricted Asian currencies, the Singapore dollar (SGD) is among the more widely traded, particularly by institutional investors, with 56 percent of volume traded offshore. Hong Kong dollar (HKD) volumes are comparatively lower with tighter bid-offer spreads due to the currency's peg to the US dollar.

As noted RMB volumes have grown strongly since the authorities began promoting the currency as a means to settle cross-border transactions in 2009 and the introduction of the CNH in 2010. Hong Kong is the pre-eminent CNH centre, accounting for 39 percent of global turnover despite a falling deposit base on the back of recent RMB depreciation. While this sentiment may have adversely impacted the USD/CNH market, CNH/HKD demand is expected to remain strong as RMB liberalisation continues.

Figure 5: Relative spot bid-offer spreads[6] against spot ADV[7] in April 2016 against the US dollar[8]



(c) Non-deliverable forwards

Asia accounts for four of the top five traded NDF currencies globally. In most cases NDFs have higher volumes than their deliverable onshore equivalents – the result of a wider group of market participants and freer trading dynamics.

The Korean NDF market is the region's largest with daily volumes of US$30 billion, up 54 percent from 2013. The market has been helped by the fact that the NDFs can be traded both on and offshore, despite KRW being non-deliverable offshore. The KRW's weighting in the China Foreign Exchange Trade System (CFETS) RMB index, just behind the USD, euro (EUR) and JPY, also means it is often used as a proxy hedge for CNY exposures.

Volumes and liquidity in the CNY NDF market, by contrast, have declined with the introduction of CNH as an offshore deliverable counterpart to CNY, and history suggests the CNH and NDF markets will co-exist for a limited period. That said some market participants continue to turn to the CNY NDF due to concerns over the depth of liquidity in CNH or because they have not developed the infrastructure to enable them to physically settle RMB.

[6] Relative bid-offer spreads are calculated by dividing the absolute bid-offer spread for the day by the average exchange rate of the day.
[7] Volumes adjusted for local and cross-border inter-dealer double counting
[8] BIS, Bloomberg Terminal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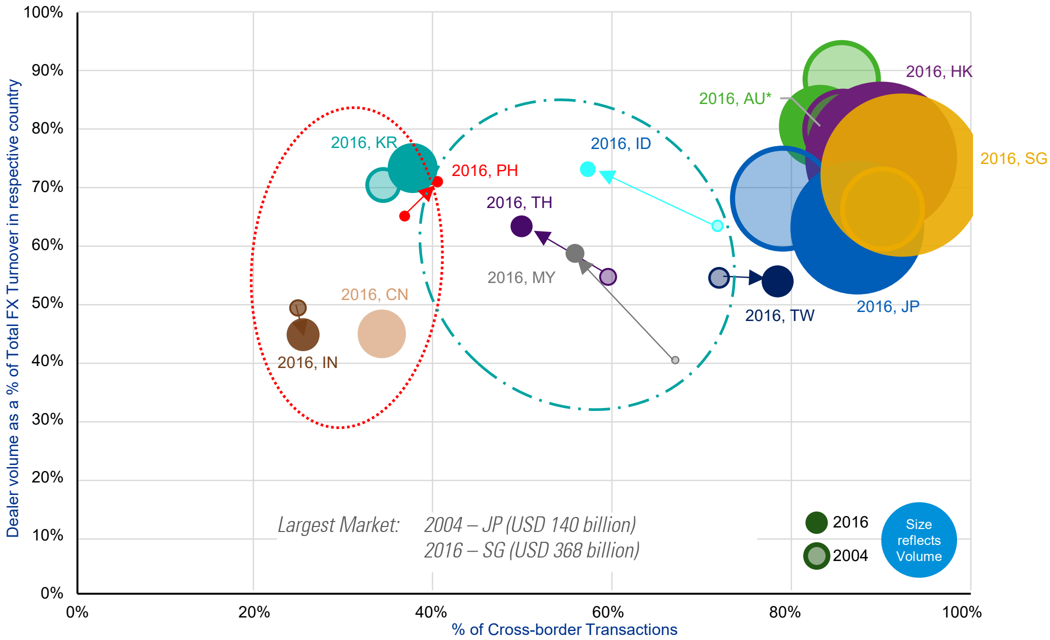
05
Changing Nature of Market Participants

(a) Reporting dealers

Asian FX markets remain dominated by inter-dealer activity, which accounts for 70 percent of regional activity compared to 52 percent in the UK and only 37 percent in the US.[9]

Volume is also concentrated among dealers in the main trading hubs, particularly Hong Kong and Singapore, where volumes have risen 63 percent and 27 percent respectively since 2013 supported by their emergence as CNH centres. Volumes in Japan meanwhile have slipped marginally due to a decline in onshore spot activity.

Figure 6: Growth of reporting dealer volumes and the level of cross-border activity in Asia markets [10]

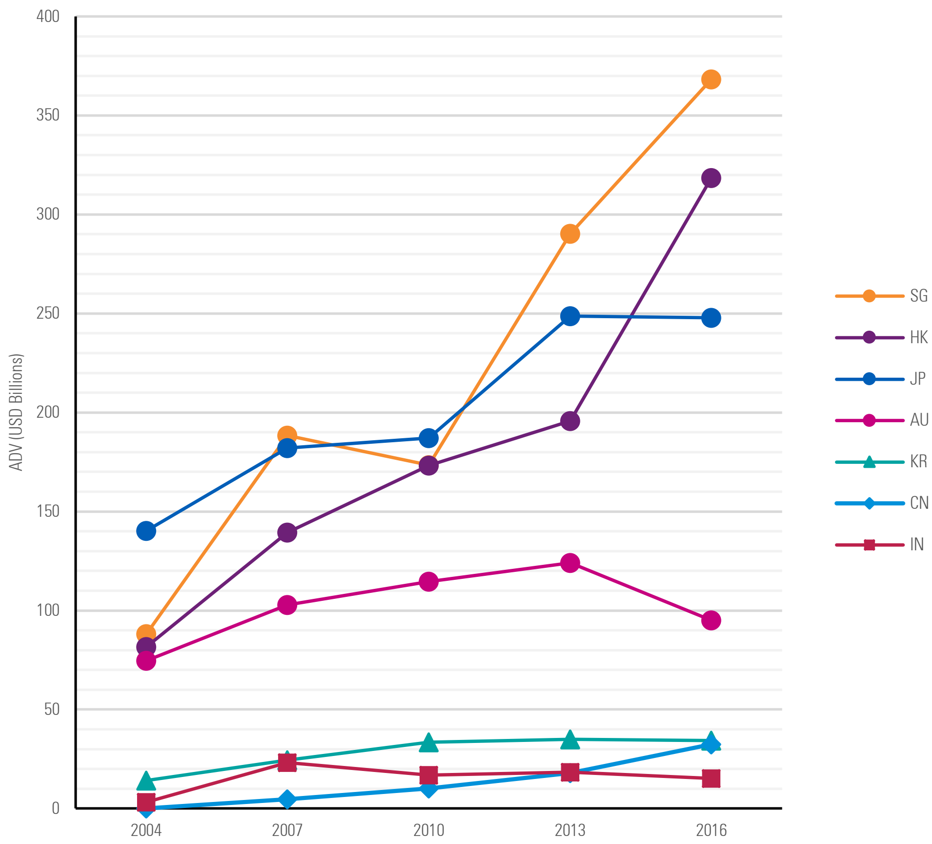


[9] The percentages are different from those observed in Figure 1 as the volumes here are adjusted for only local inter-dealer double counting unlike in Figure 1 where the volumes are adjusted for both local and cross-border inter-dealer double counting.
[10] BIS, Volumes adjusted for local inter-dealer double counting only

International investment and commercial banks account for most of the trade in the hubs, from where they provide their global FI and multinational corporate (MNC) clients with hedging and settlement services. Onshore markets, on the other hand, are led by regional and local banks which are the primary liquidity providers in their domestic currencies to both global banks and their own clients.

Onshore markets can in turn be divided into two types. The first are high-growth, large manufacturing-based economies like China, South Korea and India where over 80 percent of onshore trading volumes are in the local currency. In these markets, local banks have a strong local client base, but struggle to meet the needs of international market participants. In addition, the requirements for underlying commercial trade documentation results in inefficiencies. The second type is smaller producing economies such as Indonesia, Malaysia, Thailand and the Philippines, where onshore banks have traditionally sourced non-local currency liquidity offshore for their clients. Slowing demand has seen these markets contract.

Figure 7: Reporting dealer ADV by country [11]



Given Asia's growth and progressive globalisation, it would be reasonable to expect cross-border transaction volumes to have increased since 2004. However, slowdowns in economies like Malaysia, Indonesia and Thailand mean that while reporting dealer volume has risen, cross-border activity has declined. There has also been a fall in the number of reporting dealers accounting for 75 percent of volume in most markets, with the notable exception of Japan. [12]

[11] BIS, Volumes adjusted for local inter-dealer double counting only
[12] BIS data indicating the number of reporting dealers which account for 75 percent of turnover

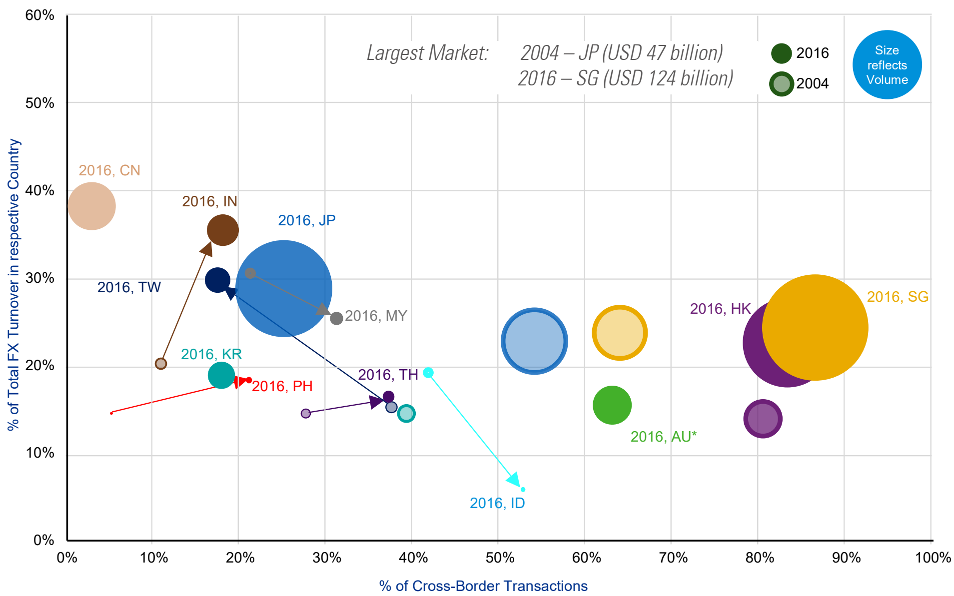
This implies volume is being concentrated in the hands of fewer reporting dealers, which in turn points to a dwindling number of traditional liquidity providers. Taken with reduced risk appetite and higher costs of risk warehousing, this means commercial banks with access to a local deposit base are best positioned to dominate liquidity and grow market share across the region.

US and European banks may have cut business lines and downsized their regional presence, but local and regional banks lack the scale and access to G10 currencies to effectively compete with international institutions for global business. Banks operating outside their home jurisdictions and in less liquid convertible currencies may need to reconsider their business models to determine whether they should act as price takers or possibly on an agency basis.

(b) Other financial institutions

FIs account for 35 percent of the total FX volume traded in the region, with their total trading volume more than doubling to US$421 billion between 2013 to 2016. This growth has been driven by an increase in volumes of both forwards traded primarily by institutional investors looking to hedge portfolios as more capital flows to the region, and swaps used by local and regional banks to manage volatility.

Figure 8: Growth of other FI volumes and the level of cross-border activity in Asia markets [13]



Historically, Japan has had the highest volume of forwards traded by FIs in the region primarily due to a large trust bank presence. However, this mantle has passed to Singapore, where the volume of forwards traded by FIs has tripled to US$ 60 billion between 2013 and 2016, or 52 percent of the regional total. This reflects Singapore's rising significance as a global trading centre.

[13] BIS. Volumes adjusted for local inter-dealer double counting only

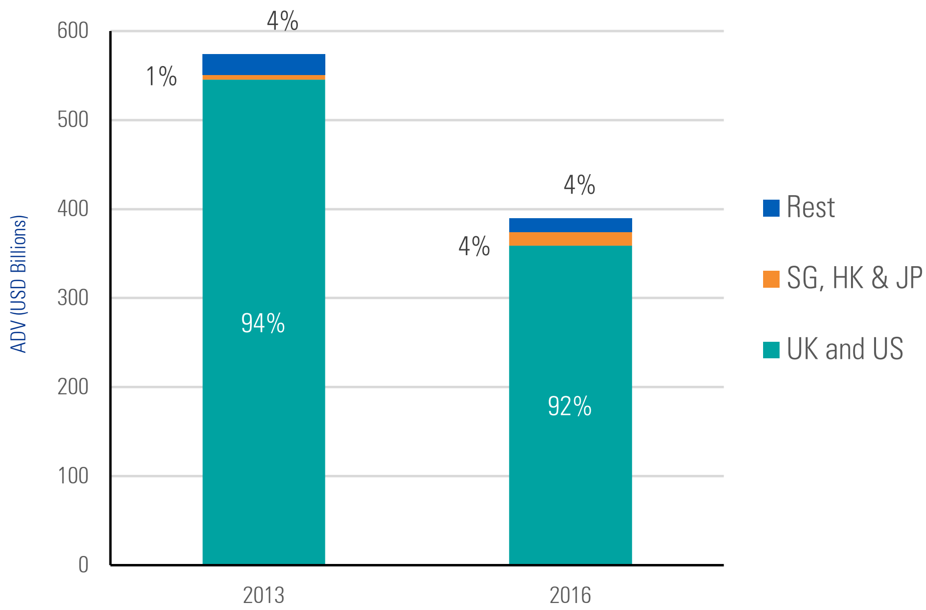
Restricted currency jurisdictions, with the exception of India and China, posted falls in volumes traded by financial institutions between 2013 and 2016 due to depreciating local currencies and declining net investments.

Regional swap volumes have exhibited similar patterns to forwards.In Japan, FI volume has moved onshore due to a change in investor behaviour influenced by the BoJ's QE program. In 2010, 80 percent of the FI volume was traded cross-border compared to 33 percent in 2016.

Hong Kong and Singapore accounted for over half the region's FI swap volume with a turnover of US$90 billion in 2016, up from US$59 billion in 2013.

In China, currency and access restrictions mean the market is illiquid in all but the shortest tenors. FI activity is thus dominated by spot and short-dated swaps traded by local banks providing settlement services or managing liquidity.

Figure 9: FX ADV with hedge funds by geography [14]



[14] BIS

Hedge funds are becoming a growing presence in Asia's key FX hubs from a very low base. Total daily activity from this market segment rose from US$6 billion in 2013 to US$16 billion last year -- with US$11 billion originating in Singapore where a number of funds have set up offices. However, this growth should be kept in perspective as hedge fund turnover still only accounts for under 2 percent of the regional total.

NBLPs will continue to play a key role in liquid spot currencies and will grow their offering in more liquid local currencies and NDFs. However, their business models will evolve and some may become niche players in certain products, asset classes or markets in response to buy-side demand.

(c) Non-financial customers

FX volumes traded by non-financial customers have fallen 37 percent since 2013 to US$102 billion in 2016 on the back of a decline in both swap and spot trades. This is primarily the result of a slowdown in trade, particularly in commodity based export markets.

Over the past two decades there has been a trend for multinationals to establish regional treasury centres to improve risk management and enable the internal netting of positions to reduce hedging and transaction costs, with Singapore and Hong Kong the preferred locations.

Retail activity has also declined since 2013 due to several factors that include the appreciation of the US dollar, tighter credit and margin requirements, and increased regulation. In Japan, historically the most active and sophisticated retail market globally, reduced market volatility and the BOJ's QE program in 2013-14 has led to a fall in spot trading by retail traders who tend to thrive in periods of uncertainty.

06

Evolution of Execution Methods

The proportion of electronic execution in Asia is similar to that seen elsewhere given the high proportion, 65 percent, of regional FX turnover conducted in G10 pairs. While G10 spot can be traded electronically in all jurisdictions, Hong Kong, Singapore and Japan together accounted for 86 percent of the regional volume in 2016. For local currencies, restrictions prevent the electronic execution in some markets, including Indonesia, Taiwan and the Philippines.

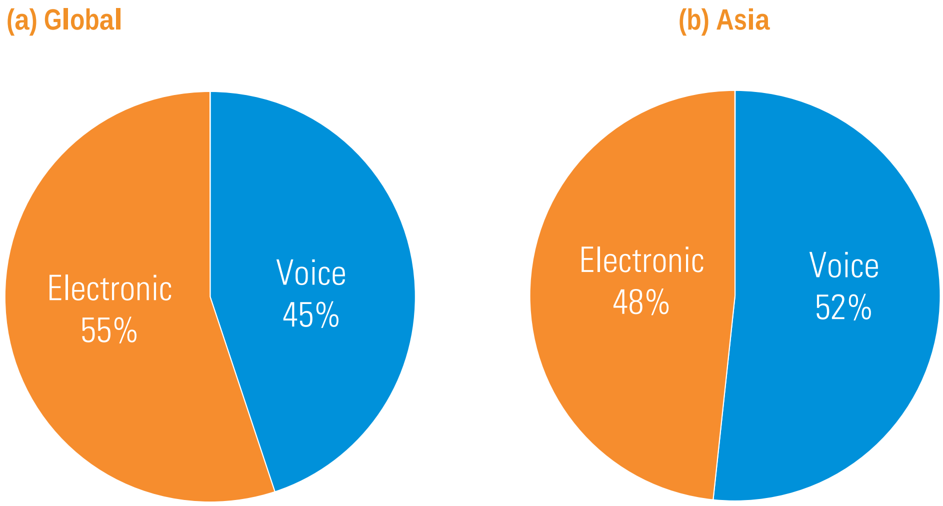
Other markets have their own well-established electronic platforms for local currency interbank trading. These include:

- China, where interbank trading of USD/CNY on CFETS is mandatory
- Korea, where electronic execution of USD/KRW can only be undertaken on two state-sponsored platforms but a lack of application program interface (API) connectivity hampers price transparency
- India, where the central bank has encouraged competition between platform providers, resulting in an active and liquid electronic USD/INR market

Levels of electronic execution have recently plateaued, but are expected to rise further in response to improved algo trading as well as requirements for greater price transparency and best execution. This will present opportunities to enhance price discovery and efficiency in onshore markets that could benefit local economies.

Globally, banks have focused aggressively on developing their SDPs. They are enhancing product offerings by improving interfaces, execution algos and analytics, and on-boarding more clients in an effort to drive straight through processing (STP) and reduce costs. This

Figure 10: Method of execution - 2016 [15]



focus is likely to continue as banks look to migrate additional order execution to electronic platforms to avoid trader discretion and possible conflicts of interest.

Activity on primary venues has decreased as large international dealers with functionally rich platforms have moved to internalise more client flows. MDPs are also gaining popularity by providing access to multiple counterparties, helping investors satisfy best execution requirements of their clients.

Secondary FX venues tend to be managed out of London or New York and so may not have had the same focus on attracting Asian market participants. This together with lower levels of multi-dealer execution compared to London or New York suggests that the number of venues that are active and showing liquidity is lower during Asian trading hours.

High-frequency traders and other NBLPs are more active in markets where liquidity is deeper and they have access to secondary venues to 'make' and

[15] BIS, central bank websites, KPMG calculations

‘take’ on. Consequently, they tend to trade major currencies outside the less liquid Asian trading hours.

The proportion of forwards executed electronically in Asia has lagged global levels as NDFs have traditionally been voice traded. However, both banks and NBLPs have made significant progress and investment in their capabilities to quote NDFs on their platforms, and levels of electronic execution are likely to grow as a result.

(a) Spot

Globally electronic spot trading levels are likely to have been skewed by the top eFX banks which have actively marketed their SDPs while pursuing market share with algos. In Asia, by contrast, SDPs have suffered as regional banks have moved away and Asian domiciled retail aggregators have looked to internalise more client flows.

MDP volumes have also grown in Asia as platforms improve their product offerings and attract new clients. Changing regulation and being able to offer one perceived solution for best execution may see more volumes move on to MDPs worldwide.

The primary trading venues remain popular with a number of banks in Asia. In the less liquid and more volatile conditions that can be experienced in the Asia time zone flows tend to gravitate towards the primary venues. In addition, both venues have made a strong push to capture CNH volume, and now host almost all the CLOB/interbank CNH trade.

(b) Forwards, Swaps and Options

Primary venues dominate the electronic NDF market and, with Asian NDFs among the most liquid with volumes highest during Asia hours, overall volumes have risen. MDPs have seen some success in providing liquidity for currencies such as KRW and INR, but recycled liquidity continues to be an issue.

For swaps, as with spot, non-bank market participants in Asia are moving to MDPs in order to access better liquidity and demonstrate best execution. Banks are also focusing more on providing liquidity to MDPs rather than the high number of direct APIs to which they have historically provided liquidity.

Primary platforms have increased swap market share over the last three years. They have recently acted to on-board additional banks as liquidity providers taking volume from other platforms and generating new volume from previously inactive market participants.

Given the nature of the product, voice continues to dominate the options trade, particularly for larger deal sizes. With the overall fall in option volumes across the region, electronic execution volumes have also fallen, hit by declining demand for vanilla and structured options from SMEs and other Northeast Asian corporates due to regulatory changes and CNH depreciation. This has directly impacted SDP volume which had been robust historically due to a high concentration of regional and private banks accessing liquidity for clients in small ticket sizes.

The market share of options traded on MDPs has historically been low as they were either not available or not liquid on these venues due to a lack of liquidity providers. However, local banks have become more active in trading vanilla options on MDPs, making pricing more competitive and challenging the position of SDPs.

(c) Emerging technologies

In response to the increased capital required to operate across multiple jurisdictions, banks will need to innovate to reduce costs, and leverage evolving utilities. Banks actively developing and marketing their platforms will be able to take advantage of big data analytics generated from client behaviour and machine learning to drive greater internalisation, efficiencies and insights.

Distributed ledger technology (DLT) has the potential to deliver cost savings across financial markets. The activities most likely to be impacted are those that are costly, complex and involve high levels of operational risk, especially in post-trade transaction processing where there has been minimal recent technology investment – i.e. confirmation and trade settlement. This will involve smaller proof of concept implementations over the next five years and wider adoption over the following decade.

However, new technologies and upgrades may require investments that will not be feasible for all institutions, meaning some may need to adjust their business models or cultivate alliances to maintain their competitiveness. With market participants facing the same regulatory shifts and cost pressures, there is an attractive opportunity for banks to form partnerships to develop utility platforms and/or better leverage third-party systems.

07
Opportunities for Regulatory Equivalence

Reflecting the varied levels of development of the region's economies and markets, Asia's regulatory environment is diverse and complex. This presents significant challenges to both global and regional banks and MNCs operating across the region. This environment is also being shaped by global forces, which include:

The G20 regulatory agenda: Global initiatives that have been implemented with local variations add complexity and cost to the design and build of technological solutions to facilitate compliance. International banks face additional challenges when home and host country requirements differ.

Anti-Money Laundering (AML) and Know Your Customer (KYC): Requirements frequently vary from country to country adding to the administrative burden of entities operating across multiple jurisdictions, and leading to inefficiencies in the client on-boarding process and impacting service quality.

Basel capital requirements: Inconsistencies in the implementation of these requirements could create a non-level playing field in some markets for non-locally incorporated entities that may be governed by a different interpretation at group level. In particular, there are uncertainties about how the Basel Committee's FRTB will be interpreted, and how it will impact trading levels and liquidity of emerging market currencies and options.

Questions also surround the potential impact of emerging and future regulation. The recently launched GCC, designed to provide common guidelines to promote the integrity and proper operation of the FX market, the EU's MiFID II, which is due to take effect in early 2018, and the BASEL prudential regulation will all have major implications for trading in Asia.

Table 1. Summary of the key regulations applying to the FX markets in the region [16]

	CAPITAL			IMPACT OF G20 OTC DERIVATIVES REFORM ON FX PRODUCTS				CURRENCY RESTRICTIONS		Other Local Regulations			
	Basel 2.5	Basel III	FRTB	G20 Trade Reporting Initiatives	Central Clearing	Platform Trading	Margin	Convertible	Deliverable Offshore	Local onshore system required?	Central Bank Transaction Reporting	Supporting documents required to be filed	Data privacy/ secrecy impacting reporting
Australia	Rules in force	Planned / in progress	Planned / in progress (Delayed)	Rules in force	Not planned	Not planned	Rules in force	Fully Convertible	Deliverable				
Japan	Rules in force	Planned / in progress	Not planned	Rules in force	Not planned	Not planned	Rules in force	Fully Convertible	Deliverable				
Singapore	Rules in force	Planned / in progress	Planned / in progress (Delayed)	Rules in force	Not planned (Voluntary)	Not planned	Rules in force	Fully Convertible	Deliverable				Requirement in place
Hong Kong	Rules in force	Planned / in progress	Planned / in progress (Delayed)	Rules in force	Not planned (Voluntary)	Not planned	Rules in force	Fully Convertible	Deliverable				
China	Rules in force	Planned / in progress	Not planned	Not planned	Not planned (Voluntary)	Not planned	Not planned	Partially Convertible	Not Deliverable	Requirement in place	Requirement in place	Requirement in place	Requirement in place
India	Rules in force	Planned / in progress	Not planned	Rules in force	Rules in force	Not planned	Planned / in progress	Partially Convertible	Not Deliverable		Requirement in place	Requirement in place	Requirement in place
Korea	Rules in force	Planned / in progress	Not planned	Rules in force	Not planned	Not planned	Rules in force	Fully Convertible	Not Deliverable	Requirement in place	Requirement in place	Requirement in place	Requirement in place
Taiwan	Not planned	Planned / in progress	Not planned	Not planned	Not planned	Not planned	Not planned	Partially Convertible	Not Deliverable		Requirement in place	Requirement in place	Requirement in place
Indonesia	Not planned	Planned / in progress	Not planned	Not planned	Not planned	Not planned	Not planned	Partially Convertible	Not Deliverable	Requirement in place	Requirement in place	Requirement in place	Requirement in place
Malaysia	Not planned	Planned / in progress	Planned / in progress (Potentially Delayed)	Planned / in progress	Not planned	Not planned	Not planned	Partially Convertible	Not Deliverable		Requirement in place	Requirement in place	
Thailand	Not planned	Planned / in progress	Not planned	Not planned	Not planned	Not planned	Not planned	Partially Convertible	Deliverable		Requirement in place	Requirement in place	
Philippines	Planned / in progress	Planned / in progress	Not planned	Not planned	Not planned	Not planned	Not planned	Partially Convertible	Not Deliverable		Requirement in place	Requirement in place	

Capital & impact of G20 reforms	Currency restrictions		Other local regulations
Adoption is not / has not been planned	Restricted	Deliverable	Requirement in place
Adoption is planned / in progress	Partially Convertible	Not Deliverable	
Rules in force	Fully Convertible		

At the local level, there are marked differences among jurisdictions in areas such as:

Data privacy and secrecy: Inconsistent requirements complicate server deployments and compliance with mandatory over the counter (OTC) derivatives reporting obligations. They present challenges for cross-border booking arrangements and centralised management of client accounts and positions.

Use of electronic trading platforms: Regulations may be unclear or prevent the use of such platforms altogether. This lack of consistency has hampered the adoption of electronic trading in some jurisdictions.

Outsourcing and use of offshore servers: Requirements to place systems onshore and to register software with the authorities adds to the cost and complexity of maintaining and securing multi-jurisdiction platforms and the security of source code.

Currency controls: Designed to provide central banks with currency oversight, limit capital outflows and/or limit market access, controls can include requirements for transaction-based reporting to central banks and to present underlying commercial trade documents to support FX transactions. These impact operational efficiencies and opportunities for electronic execution.

The following sections examine in more detail how major global regulatory initiatives will impact the Asian FX market.

[16] BIS, EIU, FSB, IMF, central bank websites, KPMG research, various currency guides

(a) Margin requirements

Recognising that international inconsistencies could lead to regulatory arbitrage, the Basel Committee on Banking Supervision (BCBS) and International Organization of Securities Commissions (IOSCO) issued a framework to establish minimum standards for margin requirements for non-centrally cleared OTC derivatives in 2015. Nonetheless, national regulators have adapted the framework to account for local market differences, resulting in a number of jurisdiction-specific variations that span areas such as:

- The scope of covered entities
- Treatment of physically settled FX forwards and swaps and reliance on BCBS Supervisory Guidance, resulting in interpretational and enforcement differences

Table 2. Treatment of deliverable FX forwards and swaps and exchange of margin with non-netting jurisdictions

	Treatment of VM for Deliverable FX Forwards & Swaps1	Collateral Settlement Timeliness	Non-Netting Jurisdictions	
			Treatment of IM	Treatment of VM
EU	Subject to the margin regime*	Collected on or before T+2	Exempt where <2.5% ratio**	Exempt where <2.5% ratio**
US Prudential Rules	The Fed has formally adopted the BCBS Supervisory guidance	Collected on or before T+1	Collect only	Collect gross; post net
US CFTC Rules	NA	Collected on or before T+1	Collect gross; post net	Collect gross; post net
Australia	Subject to the BCBS Supervisory Guidance2 (not explicit)	Conducted promptly	Exempt	Exempt
Japan	Subject to the BCBS Supervisory Guidance2	Without delay	Exempt	Exempt
Singapore	Subject to the BCBS Supervisory Guidance2	No later than T+3	Exempt	Exempt
Hong Kong	Subject to the BCBS Supervisory Guidance2	No later than T+2 after being called	Exempt	Exempt
India	Subject to the margin regime in draft rules	Draft rules indicate on a regular basis	No guidance in draft rules	No guidance in draft rules
Korea	VM can be exchanged if it is considered necessary to manage risk	No later than T+3	No exchange – but risks should be properly managed	

1 Under the BCBS/IOSCO Margin requirements for non-centrally cleared derivatives deliverable swaps and forwards are exempt from IM http://www.bis.org/bcbs/publ/d317.htm
2 BCBS Supervisory guidance for managing risks associated with the settlement of foreign exchange transactions http://www.bis.org/publ/bcbs241.htm
* Delay granted for VM on FX forwards until earlier of 31 December 2018 or application of MiFID2 amendments.
** So long as certain conditions met ratio of notional to total notional of all non-centrally cleared derivative at group level

- Treatment of exposures with counterparties in non-netting jurisdictions, which may limit the ability of some participants to trade in these jurisdictions, thereby impacting liquidity and transaction costs
- Timing of collateral settlement, which may create additional funding costs for Asian entities trading with US counterparties

While some of these differences may be resolved by the substituted compliance arrangements adopted by jurisdictions, it is still unclear how these will be applied as substituted compliance assessments have only been completed by Australia and Japan.

Some jurisdictions in Asia have not implemented margin requirements. This creates challenges for participants incorporated in those jurisdictions that are still expected to comply with margin regulations in other countries as a result of cross-border transactions.

European and US banks operating in the region that are subject to home country requirements due to their booking models are also potentially placed at a commercial disadvantage. This could result in a bifurcation of the market and higher transaction costs that will eventually be passed on to clients.

(b) OTC trade reporting

OTC derivatives trade reporting requirements also vary depending on jurisdictions, creating significant complications particularly for international banks with trading activities in multiple Asian locations.

Transactions that are reportable in one jurisdiction may not be reportable in another due to differences in:

- Definitions of OTC contracts
- Rules for reporting of packaged transactions
- Dual or single-sided reporting obligations
- Definitions of lifecycle events and their reporting treatment
- Reporting timelines

Australia, Hong Kong and Singapore add an additional layer of complexity by imposing 'nexus' reporting obligations, meaning trades booked in an affiliate can be subject to reporting requirements.

Another issue is the unique transaction identifiers (UTI) that most authorities require trades to carry when reported. There are no harmonised requirements on the formulation or use of UTIs, and while the Committee on Payments and Market Infrastructures (CPMI) and IOSCO have published technical guidance for regulators addressing harmonisation, concerns remain as to how this will work in practice.

Table 3. OTC trade reporting requirements in the region

	G20 or Local	Timing	Single or Dual-Sided	Recipient	Public Disclosure	Direct or Via Agent	Content	Nexus
Australia	G20	Within T+1	Dual	Trade Repository	Weekly	Via agent	Trade data (61 fields)	Reportable if acceptance of the offer to enter into the contract is received in Australia (exemptions apply
Japan	G20	Within T+1 Weekly	Dual	Trade Repository, Regulator	Quarterly	Direct of via agent	Trade data	Not specified
Hong Kong	G20	Within T+2	Dual	Trade Repository	Under consideration	Direct or via agent	Trade data (100+ fields)	Reportable if decision to trade made in Hong Kong or parameters for electronic platform, are set in Hong Kong
Singapore	G20	Within T+2	Dual	Trade Repository	Under consideration	Via agent	Trade data (36 fields)	Reportable person who conducts activities relating to execution is located in Singapore. Trades on electronic platforms may be captured.
China	G20		Single	CFETS, China Securities Internet System	Daily & Monthly	Direct		Not specified
India	Local	Hourly, EoD. T+1	Dual – inter-dealer; Single - All other	CCIL	Real-time	Via agent	Trade data (13 fields)	Not specified
Korea	Local	Daily		KRX, BoK	Quarterly	Direct		Not specified
Taiwan	Local	T+1	Single	Taipei Exchange	Regularly1	Direct		Not specified
Indonesia	Local			Bank Indonesia	No public disclosure	Direct		Not specified
Malaysia	N/A (Consultation paper issued in November 2013)							
Thailand	N/A							
Philippines	N/A							

1 Based on Taipei Exchange's PFMI, Information Disclosure Report. FSB, ASIC, DTCC, HKEx, CCIL, SHCH, OTC Clear, SGX, TPEx, Various Regulator Websites

(c) Central clearing of derivative transactions

Clearing of deliverable FX contracts in Asia is only available in India and China, where the clearing of USD/local currency contracts on local central counterparty clearing houses (CCPs) is underwritten by the central bank. This is a result of BIS/IOSCO principles introduced in 2012 that state CCPs must understand the size and nature of same-day liquidity risk to guarantee full and timely sentiment.

A 2013 GFXD, study based on historical data of deliverable OTC FX options traded globally in 17 currencies and exercised between January 2007 and December 2011, estimated CCPs must demonstrate they are capable of managing same day liquidity shortfalls as high as US$161 billion - the result of the failure of two clearing firms representing the largest combined settlement obligations in each currency on any given day.

Rules on the recognition of equivalent regulatory regimes can also impact the status of CCPs, potentially limiting the ability of some market participants to clear in some jurisdictions. European regulation, for example, prevents 'covered persons' from participating in third-country CCPs that have not received recognition from the European Securities and Markets Authority.

Table 4. Summary of the clearing environment for FX products across the region [17]

	Local CCP	Mandatory Clearing of FX Products	FX Products offered for clearing on local CCP	QCCP Status under EMIR	QCCP Status under CFTC Regulations	Availability of Client Clearing
Australia	ASX Clear, ASX Clear (Futures)	None	None	Recognised	DCO Exempt - ASX Clear (Futures) only	N/A
China	Shanghai Clearing House (SHCH)	None	Spot in the following RMB pairs: USD, EUR, AUD, HKD, JPY, GBP; USD/RMB forwards & swaps	Not Recognised	No action relief[1]	Available
Hong Kong	OTC Clearing Hong Kong Limited (OTC Clear)	None	USD NDFs referencing RMB, TWD, KRW & INR	Recognised	DCO Exempt	Available
India	Clearing Corporation of India Limited (CCIL)	FX Forwards	Spot and forwards referencing USD/INR	Recognised	Not Registered / Exempt	N/A
Japan	Japan Securities Clearing Corp (JSCC)	None	None	Recognised	DCO Exempt	N/A
Korea	Korea Exchange (KRX)	None	None	Recognised	DCO Exempt	N/A
Singapore	SGX Derivatives Clearing Limited	None	USD NDFs referencing RMB, IDR, INR, KRW, MYR, PHP, TWD	Recognised	DCO Registered	Available

1 No action relief extended until the earlier of 30 November 2017 or the date on which the CFTC exempts the SHCH.

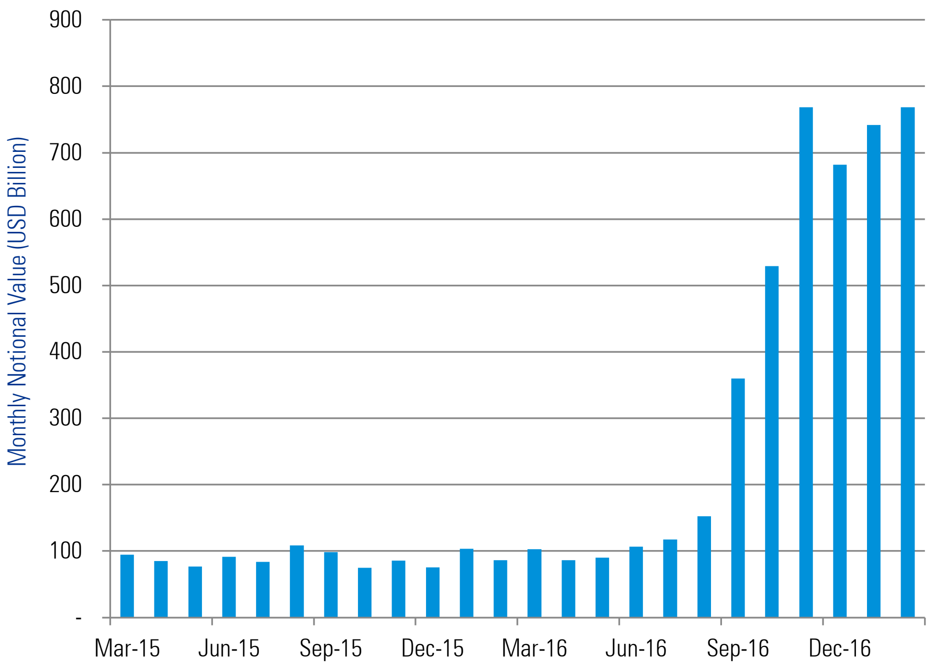
In the US, the Dodd Frank Act requires third-country CCPs to apply for registration or exemption from being recognised as a derivative clearing organisation (DCO). Failure to do so means that US banks and overseas branches (but not overseas incorporated subsidiaries) using these CCPs will be in breach of the Commodity Exchange Act – though US authorities have demonstrated a willingness to grant temporarily relief from these requirements as they did recently for the Shanghai Clearing House (SHCH).

Volumes of cleared FX products have generally been low because (i) clearing is not mandatory, (ii) there is no solution to clear physically settled FX products and (iii) where voluntary clearing does take place the benefits from offsetting margin obligations have not been optimal. The voluntary clearing of NDFs on the London Clearing House's ForexClear (LCH) increased five times between August 2016 and February 2017 after the margin requirements for non-centrally cleared OTC derivatives came into effect.

[17] ESMA, CFTC, FSB, CCIL, SHCH, OTC Clear, SGX, LCH Clearnet Ltd

A similar pattern seems unlikely in Asia. Of the four local CCPs clearing FX products only the Hong Kong Exchange (HKEx) and Singapore Exchange (SGX) offer NDF clearing. While these provide local market participants with an ability to clear in the same jurisdiction and time zone, international banks favour voluntarily clearing Asian currency NDFs on the LCH due to the liquidity and margin benefits of clearing both sides of a trade on the same platform.

Figure 11: Monthly volume of NDFs submitted for clearing at the LCH [18]



(d) Prudential requirements

The Basel Committee's FRTB is an ambitious framework that will change the way banks assess risk and could potentially have significant implications for the regional FX market. Under the current version of the framework all banks will have to adopt the revised Standardised Approach (SA) which will be used to set a floor on the capital held by banks able to use the Internal Model Approach (IMA). This will require significant investment because both approaches calculate risk differently to the way that banks currently undertake risk management for internal purposes. In addition, the risk weightings applied in the SA and the liquidity horizons applied in the IMA disadvantage non-liquid currencies and options.

Banks that satisfy the P&L attribution test will gain approval to use IMA internal risk models. However, the published results of banks undertaking the test show a particularly high rate of failure which forces banks to fall back on the SA.

The most recent study showed that the SA generates an overall capital requirement of up to 2.5 times current levels compared to 1.6 times for the IMA. For FX risk, the SA capital requirements were 5.3 times higher than the IMA.

[18] LCH; volumes cumulated up to 20th March 2017

The regional impact of FRTB will depend to a large extent on how national regulators interpret the rules – to date Australia, Singapore and Hong Kong have all officially delayed implementation of the framework. The weightings applied under both IMA and SA may force banks to reconsider trading non-liquid currencies and options, potentially impacting liquidity and increasing execution costs. There are also concerns that international banks booking emerging market transactions in jurisdictions implementing FRTB could be disadvantaged due to the higher capital levels required.

(e) MiFID II

With an effective date of 3 January, 2018, MiFID II and MiFIR are aimed at improving transparency, enhancing investor protection, reducing risk in financial markets and preventing market abuses.

As the directive is subject to the interpretation of European national regulators before being adopted into local regulations, there is a risk of multiple approaches being required to meet the same requirements. For example, FX spot transactions, security conversions and transactions entered into as a means of payment are not considered financial instruments. However, there is no clear guidance on what constitutes a means of payment, meaning a short-dated forward could be exempt in one jurisdiction but subject to regulation in another.

There is also considerable uncertainty over the extraterritorial reach of MiFID II and how it may impact Asian entities, particularly given the different execution and booking models used for FX that could result in different outcomes.

The immediate concerns facing Asian entities trading with European counterparties include:

- The obligation to provide personal data subject to local data privacy legislation to EU trading venues or entities so transaction reporting obligations are met
- The requirement for all counterparties trading with a European entity to have a registered Legal Entity Identifier (LEI), which is not mandatory in Asia and therefore not widespread
- The extent of account repapering required as entities trading with European counterparties will in many cases have to sign revised agreements

(f) Global Code of Conduct (GCC)

Developed by the BIS Foreign Exchange Working Group (FXWG) to promote the integrity and efficiency of the wholesale FX market, the GCC was launched in May 2017. It is expected to apply to all FX market participants, including sell-side and buy-side, NBLPs, trading venue operators, and other entities providing brokerage, execution and settlement services. The GCC is a broad initiative that covers areas such as information sharing, governance, execution (including

Table 5: Summary of the impact of the global code

<table>
<tr><th colspan="3">Actions required</th></tr>
<tr><td rowspan="3">Strengthening the Control Environment</td><td>1st Line of Defence</td><td>• Strengthening Front Office Control functions, governance structures and policies and procedures.
• Aligning incentives and reward structures to conduct metrics
• Improved reporting, co-ordination and escalation</td></tr>
<tr><td>Training</td><td>• Conduct including use of confidential data
• Provision of market colour
• Conflicts of interest associated with execution discretion including pre-hedging
• External communication</td></tr>
<tr><td>Surveillance</td><td>• Improved surveillance and monitoring technology to cover chat rooms, email and voice communication channels
• Ability to cross reference between channels to link conversations
• Ability to link transactional activity with surveillance</td></tr>
<tr><td rowspan="4">Business Model</td><td>Orders</td><td>• Physical segregation of the Order taking desk
• Higher percentage of orders routed through electronic channels and reduced trader discretion
• Best execution obligations</td></tr>
<tr><td>Client disclosures</td><td>• Clarity of role
• Greater transparency in pricing models and mark-ups
• Clear communication of execution practices including execution priority, risk management and pre-hedging</td></tr>
<tr><td>Agency execution</td><td>• Reduction in risk taking activity
• Execution on a fee basis</td></tr>
<tr><td>Electronic execution</td><td>• Improved functionality and client interface
• Improved controls over algo development, deployment and testing
• Enhanced analytics</td></tr>
</table>

requiring market participants to be clear about the capacities in which they act), and risk management.

For Asian entities, this will create a clear need to review business models and refine the front office control environment. This will require investment in people (training and control functions), processes (policies and procedures) and systems (monitoring and surveillance, electronic execution platforms).

The GCC does not impose legal or regulatory obligations. However, it does include a Statement of Commitment for market participants to sign demonstrating their commitment to conducting their FX business in accordance with the Code, and to confirm they have taken appropriate steps to align their activity to its principles.

Authorities and industry bodies are currently employing a number of different approaches to ensure adoption of the GCC. The UK's Financial Conduct Authority and Prudential Regulation Authority have stated that they could use the Senior Managers Regime to enforce compliance, while the Association Cambiste Internationale has made adherence a prerequisite for membership.

Central bank members of the FXWG have indicated they will demonstrate their commitment to the Code by adopting the Statement, and they will expect their regular FX trading counterparties to adhere to its principles. In addition, a number of Foreign Exchange Committees have decided to publicly link membership with adherence to the Code using the Statement.

(g) KYC and market infrastructure opportunities

KYC requirements vary widely across the region, making client on-boarding processes costly and time-consuming, which adversely affects service to customers. These processes are also often duplicated across firms negatively impacting customers that often have to provide the same information to numerous counterparties. A 2016 survey by Thomson Reuters found investment banks in Asia spend an average of US$100 million on customer due diligence annually, and regional and retail banks an average of US$30 million.

As noted by the BIS Committee on Payments and Market Infrastructure (CPMI), a standard KYC utility could go a significant way towards addressing these issues by providing a single template or gateway for KYC checks, reducing resubmissions of identical information and enhancing accuracy, consistency and efficiency.

A number of utilities have already emerged that cover jurisdictions in the region, including Bloomberg Entity Exchange, the SWIFT KYC registry, Thomson Reuters Accelus and Markit/Genpact. However, in many cases they are still in the development stage and lack critical mass.

Adoption is likely to remain limited until several factors are addressed, including:

- The lack of a regulatory framework permitting reliance on the information and documentation utilities provide
- Differences in documentation requirements between jurisdictions
- Interoperability limitations
- Varying cybersecurity and data privacy requirements
- Material outsourcing and data secrecy constraints

While these gaps present difficulties for banks, they also point to opportunities to develop utility platforms that address these shortfalls and facilitate a more standardised approach to KYC procedures.

08 APPENDICES

(a) Glossary

Regulatory Bodies & Other Institutions/Corporations

ACI	Association Cambiste Internationale
ASIC	Australian Securities and Investments Commission
ASX	Australian Securities Exchange
BCBS	Basel Committee on Banking Supervision
BI	Bank Indonesia
BIS	Bank of International Settlements
BNM	Bank Negara Malaysia
BoJ	Bank of Japan
BoK	Bank of Korea
CCIL	The Clearing Corporation of India Ltd.
CFTC	Commodity Futures Trading Commission
ESMA	European Securities and Markets Authority
FEDAI	Foreign Exchange Dealers' Association of India
FCA	Financial Conduct Authority
FSB	Financial Stability Board
FT	Financial Times
GFMA	Global Financial Markets Association
HKEx	Hong Kong Exchange
HKMA	Hong Kong Monetary Authority
IMF	International Monetary Fund
JSCC	Japan Securities Clearing Corporation
KMBC	Korea Money Brokerage Corporation
KRX	Korea Exchange
MAS	Monetary Authority of Singapore

PBOC	The People's Bank of China
RBI	Reserve Bank of India
SFC	Securities and Futures Commission
SGX	Singapore Exchange
SHCH	Shanghai Clearing House
SMBS	Seoul Money Brokerage Services
TPEx	Taipei Exchange
WTO	World Trade Organisation

Other Abbreviations

ADV	Average Daily Turnover/Volume
API	Application Programming Interface
CCR	Counterparty Credit Risk
CDD	Customer Due Diligence
CFETS	China Foreign Exchange Trade System
CCP	Central Counterparty Clearing House
DCO	Derivative Clearing Organisation
DF	Deliverable Forwards
DLT	Distributed Ledger Technology
ECN	Electronic Communications Network
EMIR	European Market Infrastructure Regulation
FI	Financial Institutions
FDI	Foreign Direct Investments
FRTB	Fundamental Review of the Trading Book
FXWG	Foreign Exchange Working Group
GCC	Global FX Code of Conduct
HFT	High Frequency Trading
HIBOR	Hong Kong Interbank Offer Rate
IM	Initial Margin
IMA	Internal Models Approach
KYC	Know Your Customer
LCH	London Clearing House
LEI	Legal Entity Identifier
MDP	Multi Dealer Platforms
MiFID	Markets in Financial Instruments Regulation
MiFIR	Markets in Financial Instruments Directive
MNC	Multinational Corporates
MTF	Multilateral Trading Facility
NBLP	Non Bank Liquidity Providers
NDF	Non Deliverable Forwards
NMRF	Non-Modelable Risk Factors
OTC	Over the Counter
OTF	Organized Trading Facility
PTF	Proprietary Trading Firms
QCCP	Qualified Central Counterparty
QE	Quantitative Easing
QIS	Quantitative Impact Study

RM	Regulated Market
RTGS	Real Time Gross Settlement
SA	Standardised Approach
SDP	Single Dealer Platforms
SDR	Special Drawing Rights
SME	Small & Medium Enterprises
STP	Straight Through Processing
TCA	Total Cost Analysis
UTI	Unique Transaction Identifier
VM	Variation Margin

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Relevant Country Regulatory, Exchanges and Central Bank related sources

1. Australia – Reserve Bank of Australia (RBA), Australian Securities and Investments Commission ASIC, Australian Prudential Regulation Authority (APRA),

2. China –The People's Bank of China (PBOC), State Administration of Foreign Exchange (SAFE), Shanghai Clearing House (SHCH)
3. Hong Kong – Hong Kong Monetary Authority (HKMA), Hong Kong Exchange (HKEx)
4. India – Reserve Bank of India (RBI), The Clearing Corporation of India (CCIL),
5. Indonesia – Bank Indonesia,
6. Japan – Bank of Japan (BoJ),
7. Korea – Bank of Korea (BoK), Korea Exchange (KRX)
8. Malaysia – Bank Negara Malaysia, Bursa Malaysia
9. Philippines -The Bangko Sentral ng Pilipinas (BSP)
10. Singapore – Monetary Authority of Singapore (MAS), Singapore Exchange (SGX)
11. Taiwan – Central Bank of the Republic of China (Taiwan), Taipei Exchange
12. Thailand – Bank of Thailand (BoT),
13. Other Sources – European Securities and Markets Authority (ESMA), Commodity Futures Trading Commission (CFTC), Bank of England, Federal Reserve Bank of New York, Norges Bank, Bank of Canada, The Central Bank of the Russian Federation

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