



Foreign Exchange Market analysis and observations: considerations for RMB Internationalization

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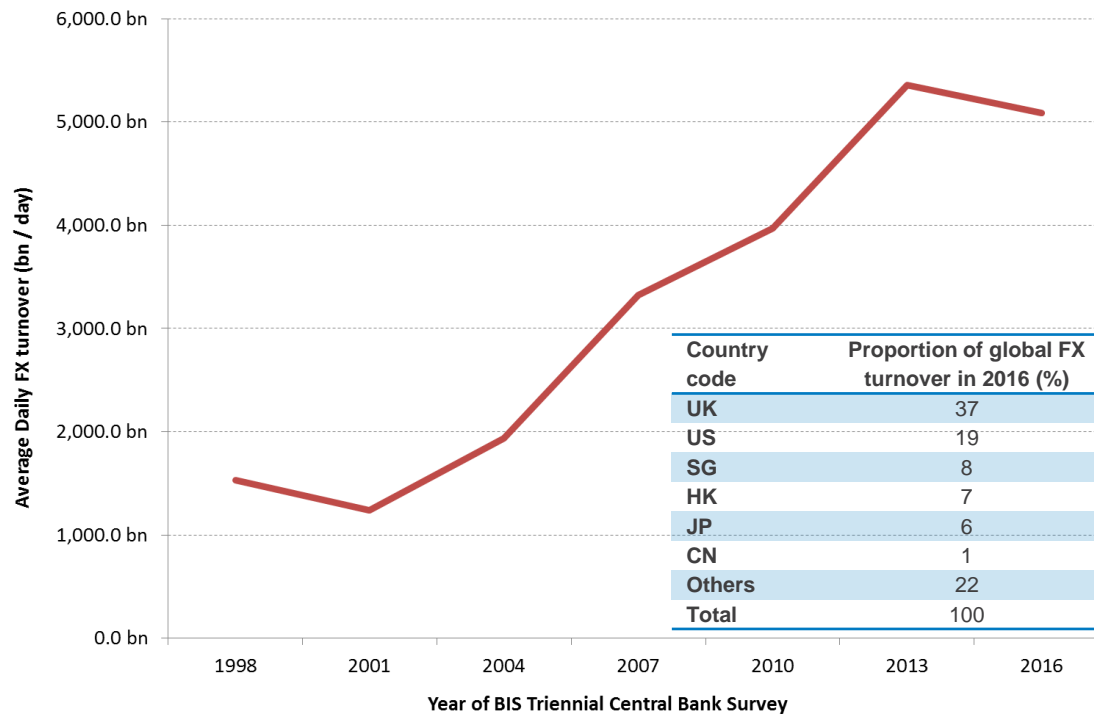
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Overview of the Foreign Exchange (FX) market

FX market size* and scope

- FX daily turnover: USD 5.1 trillion
- Fundamental to supporting other global financial markets
 - good correlation with global trade and cross-border investment



Overview of the FX market: Top 5 FX currencies

FX market popular currencies by turnover*

- USD, EUR, JPY, GBP and AUD
 - representing 80% of global FX turnover
 - USD is the most widely traded currency: 44% of global FX turnover
- Top 5 currencies: 79%** are traded offshore

Currency (code)	Proportion of currency traded offshore (%)
U.S. dollar (USD)	81
Euro (EUR)	85
Japanese yen (JPY)	78
British pound (GBP)	50
Australian dollar (AUD)	88
Renminbi (RMB)	78

Outline of key risks in the BCBS Guidelines

BCBS guidelines outline the following risks :

- Replacement cost risk (pre-settlement or market risk)
- Principal risk (Herstatt risk)
- Liquidity risk
- Operational risk
- Legal risk

Focus on principal risk

- Significant counterparty exposures, which can exceed the entire capital of the bank.¹
- Counterparty risk limits help manage counterparty exposure.

Managing counterparty FX risk

Counterparty risk in FX operations is typically managed through pre-settlement and settlement limits. The method of settlement can impact an institution's efficient utilisation of its counterparty risk limits

- Strains in counterparty risk limits due to volatility are mitigated when settling currencies through Pvp.

	T	V - 2
Product (FX)	Settlement limit allocation	Settlement limit allocation
Spot	No	No
Forwards, Swaps	No	No

Counterparty limit management under Pvp settlement

	T	V - 2
Product (FX)	Settlement limit allocation	Settlement limit allocation
Spot	Yes	Yes
Forwards, Swaps	Yes	Yes

Counterparty limit management under Non-Pvp settlement

Description of CLS's data for analysis

CLS daily level data was the basis for most of the analysis

- Aggregated executed trade data:
 - Over 60 of the largest financial and trading institutions
 - Over 23,000 third party institutions
 - Includes time stamp, counterparty information, gross value, currency pair etc.
- For the 17 currencies settled by CLS* (Spots, Forwards and Swaps)
- Estimated 60% of the eligible global FX turnover is settled by CLS

Analysis performed

1. Counterparty level risk and variability
2. EBS Market data show risks to market trading efficiency
3. Political events impact FX values traded

Analysis 1: Quantifying the principal at risk at the institution level

In an extreme case, such as a credit event, financial institutions are subject to potential loss of the principal value:

- FX exposures between counterparties can exceed the entire capital of the bank¹

	(A) Average daily gross settled (USD billion)	(B) Peak day gross settled (USD billion)	(C) Peak to average ratio (B/A)
Average exposure to counterparty	1.7	7.1	4.2
Maximum exposure to counterparty	64.9	163.1	2.5

Gross settlement value for FX between counterparties for currencies settled in CLS in Q2 2015

The high level of interconnectivity between trading institutions and markets mean that any event that leads a counterparty being exposed due to a payment failure can lead to more widespread systemic failure.

Analysis 1: Quantifying the risk at the institution level by currency (1/2)

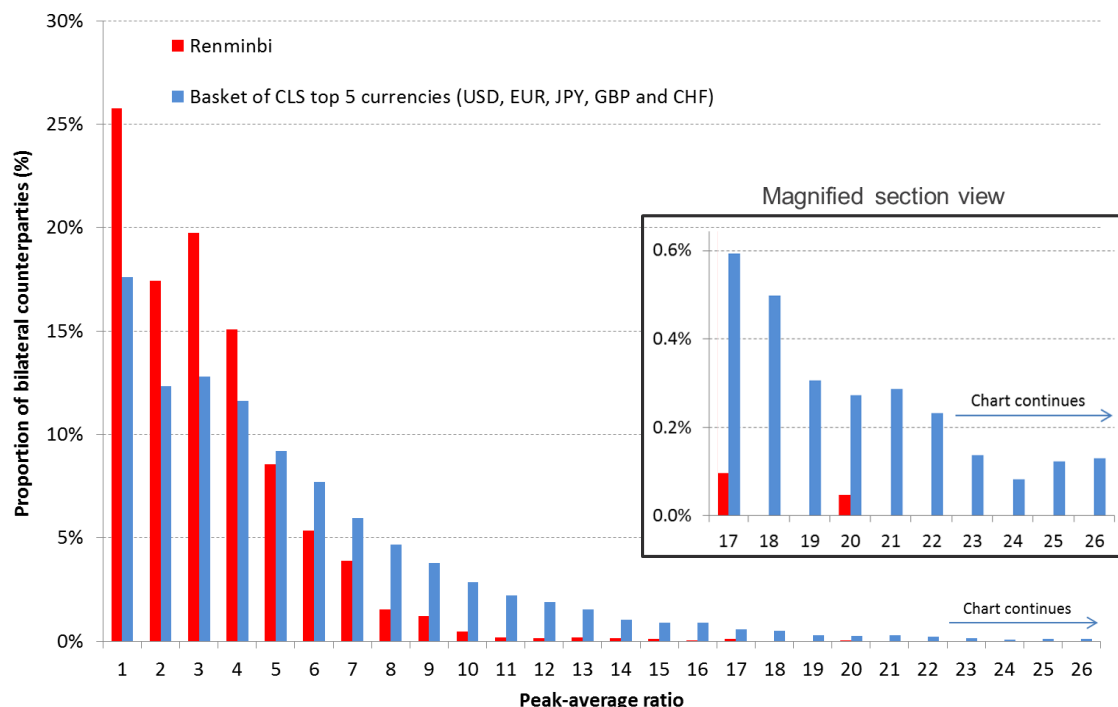
The exposure between two institutions can increase multiple times between a peak day and an average day according to the currencies they trade.

Currency	(A) Average exposure on an average day in USD bn	(B) Average exposure on a peak day in USD bn	(X) Peak to Average ratio (B/A)	(C) Largest exposure on an average day in USD bn	(D) Largest exposure on a peak day in USD bn	(Y) Peak to Average ratio (D/C)
CNH*	0.05	0.17	3.77	0.76	5.62	7.39
USD	0.71	2.33	3.30	28.61	73.00	3.18
EUR	0.32	1.48	4.65	14.71	32.82	3.52
JPY	0.18	0.78	4.37	6.84	18.51	2.71
GBP	0.17	0.88	5.15	4.11	14.47	2.23
CHF	0.10	0.45	4.46	3.86	12.27	2.55

Gross settlement value for FX between counterparties in Q2 2015

Analysis 1: Quantifying the risk at the institution level by currency (2/2)

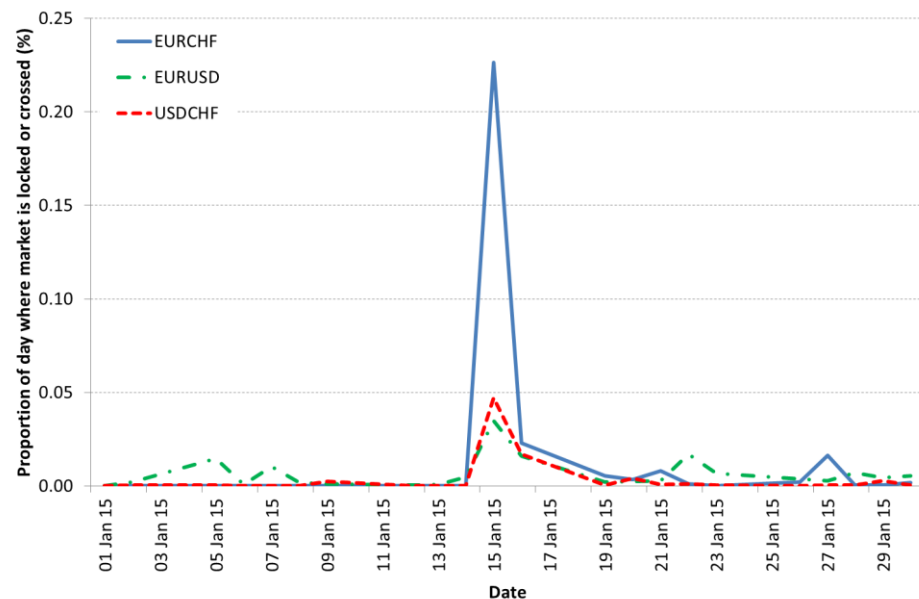
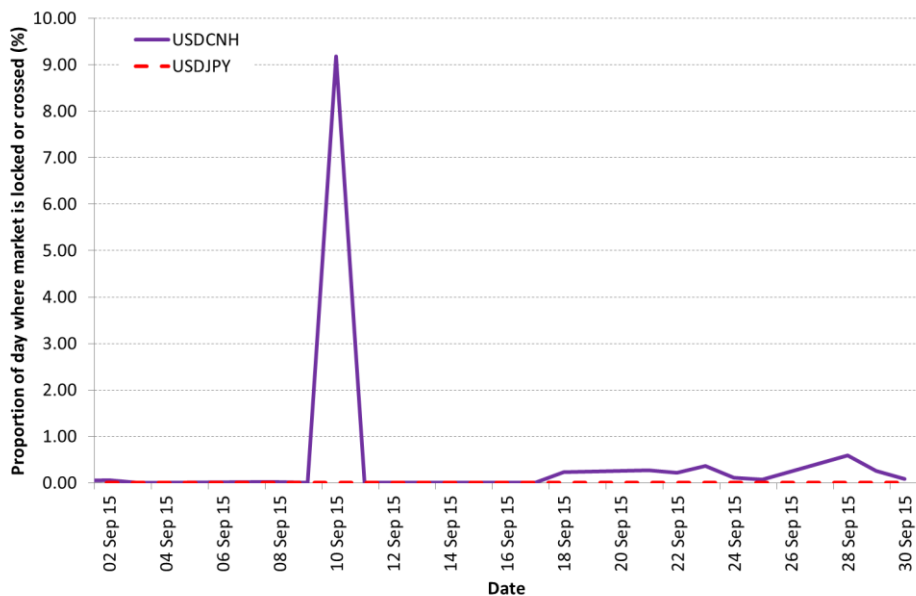
Institutions are capable of accommodating a significant variation in bilateral counterparty exposure on a peak day compared to their average FX trading day.



- As renminbi FX trading grows in absolute terms, the demands on counterparty risk limits will be even higher and potentially beyond the ability of the banks and the markets to accommodate and support demand for FX trades.

Analysis 2: Insufficient counterparty risk limits during two separate market events

Counterparty risk limit constraints can create crossed/locked market conditions, which prevent smooth market operations by preventing financial institutions to trade on the platform.

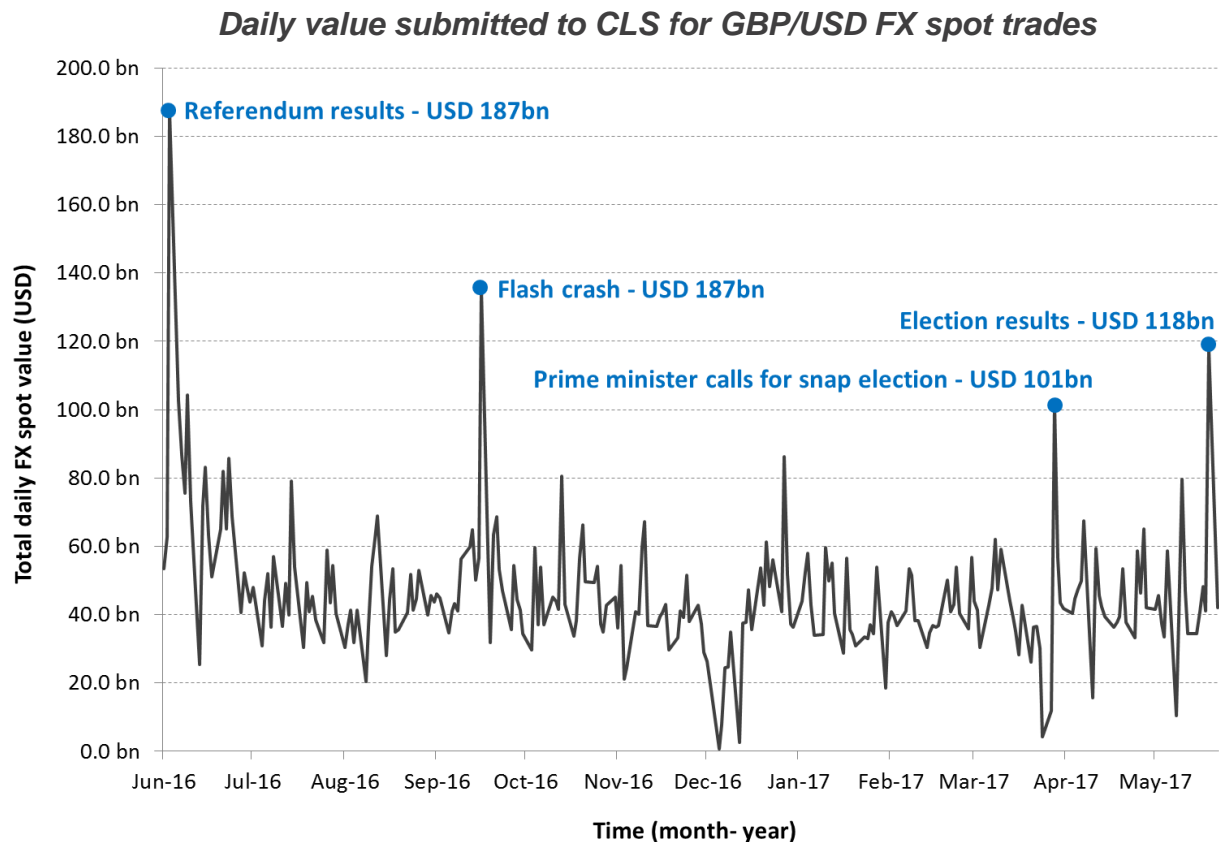


The proportion of time markets were locked and crossed. Reported at daily intervals for January and September 2015

- Despite the relatively small change in price for the USDCNH (1.2%) compared to the EURCHF (19.0%) the USDCNH was more susceptible to crossed markets (9.2% of the day for USDCNH compared to 0.2% of the day for the EURCHF)

Analysis 3: Political events can impact the FX market

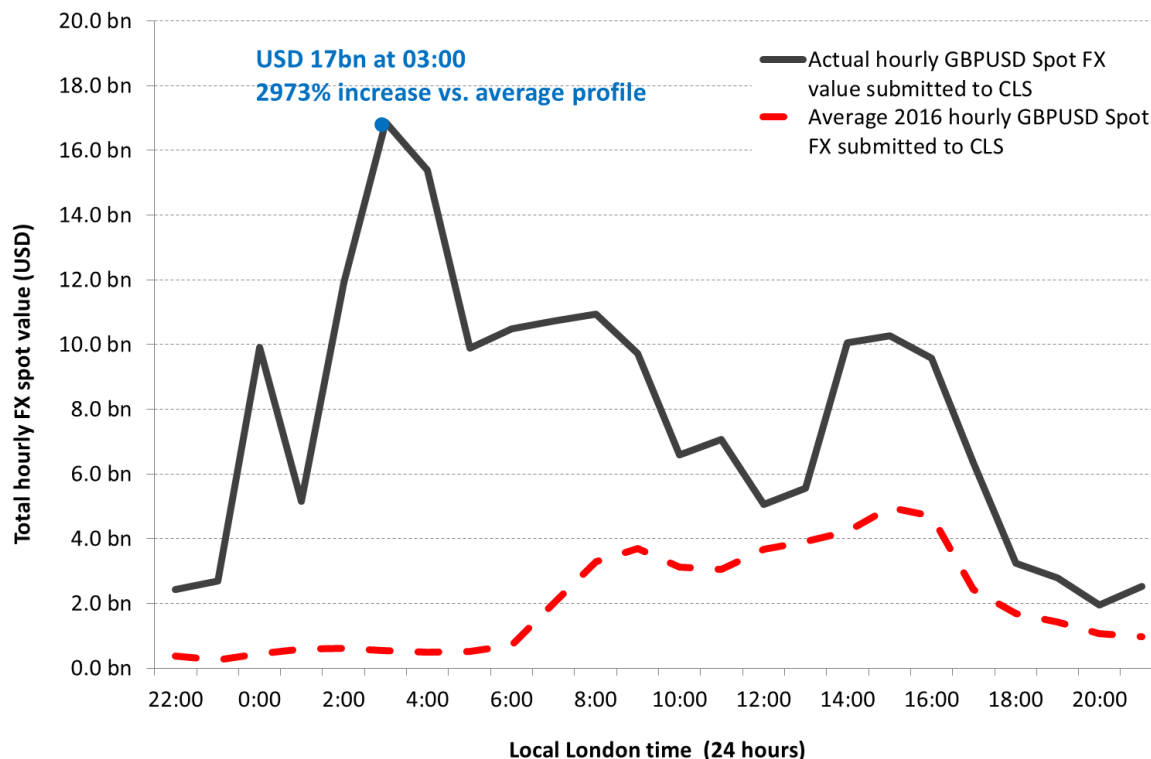
On the announcement of the UK referendum results on June 24, 2016, daily settlement value for GBP/USD spot FX was USD 187bn, which is almost 3 times higher than the previous day at USD 62bn.



Analysis 3: FX trading during the day of the Brexit result

On June 24, 2016, GBP/USD spot FX values peaked in Asia market hours, at 03:00 and was almost 31 times higher compared to the average for the year (2016).

- The intraday profiles for GBP/USD spot FX for the other peak days show intraday peaks that exceeded the average daily profile by at least 4 times.



Survey of operational and risk constraints to RMB Internationalization

Significant operational oversight, monitoring and intervention

- Less efficient than models used for other comparably traded currencies that are settled on PvP

RMB trades require intervention and enhanced monitoring by banks to ensure completion of settlement

- Absence of netting, creating high liquidity demands and
- The need to manage the release of payments and/or pursue funds on a manual basis for bilaterally netted trades.

Accounts with multiple offshore clearing banks

- Separate process workflows in place with each offshore clearing bank

Survey of operational and risk constraints to RMB Internationalization

- **Further operational challenges apply**
 - Participants may need to prefund an entire day's trades
- **Lack of standardization, as well as geographic fragmentation of FX settlement, increases costs and the potential for error**
 - Could reduce scalability going forward

Conclusion

As China's economy and financial strength continues to grow so will the expected global use of the RMB. FX market participants need to be able to safely manage their counterparty exposures and absorb peaks in trading caused by market volatility

The RMB and counter-currency leg of a FX trade do not benefit fully from settlement risk mitigation

- This asymmetry negatively impacts on counterparty credit risk limits, liquidity efficiencies and settlement limits.

For RMB to assume a greater global role and influence it must become an international medium of exchange.

- Safe and efficient settlement of RMB should be explored.
- Market participants must gain comfort and security in the settlement of RMB transactions



Thank you!