BANK FOR INTERNATIONAL SETTLEMENTS

RMB Bond Investments in the Onshore Interbank Market

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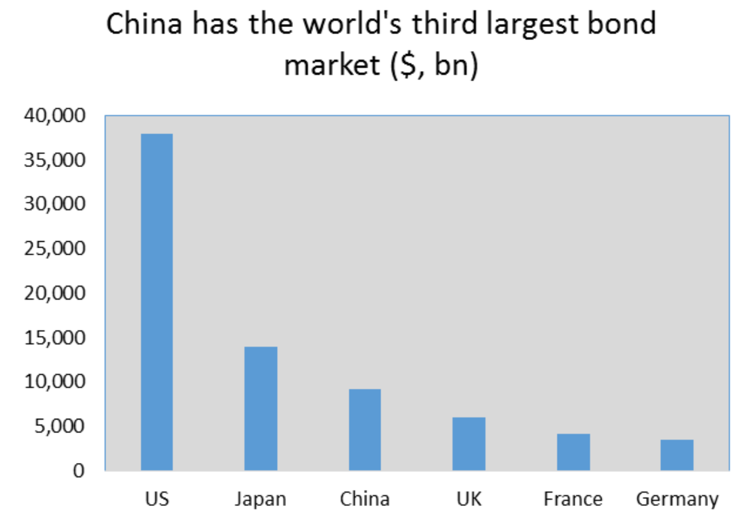
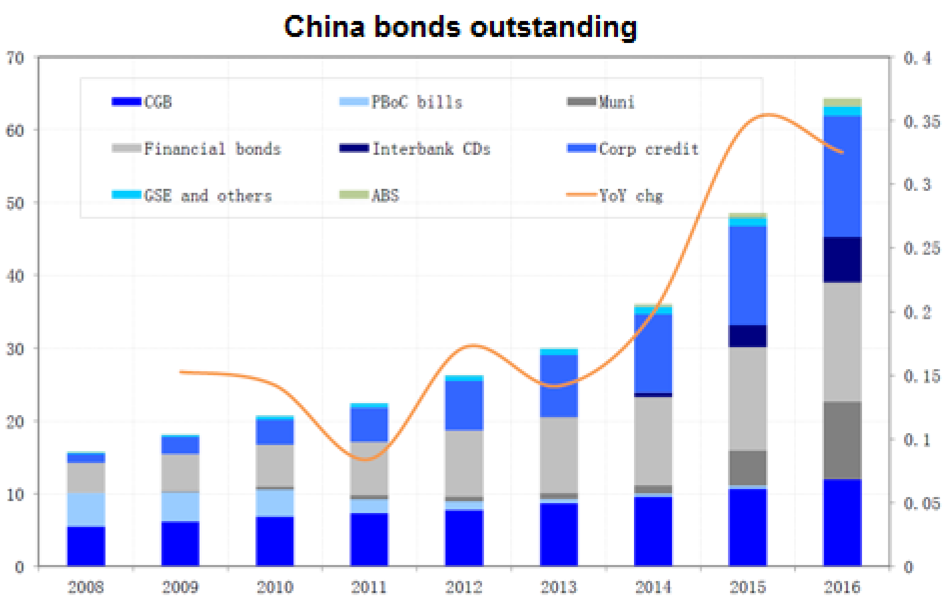
Budapest Renminbi Initiative Conference 2017

Budapest, 05 April 2017

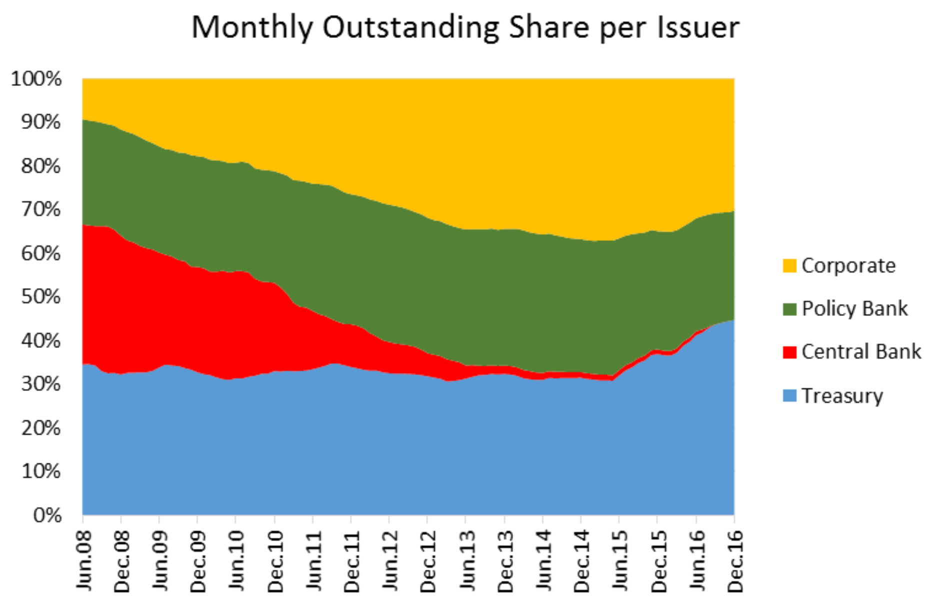
The Size and Importance of China's Bond market has Grown

- It is now the third largest, but still only around 70% of GDP (well below DM)
- Dominated by Government bonds (66%, split about evenly between Treasury and Policy Bank bonds)
- Corporate Bond issuance has grown rapidly



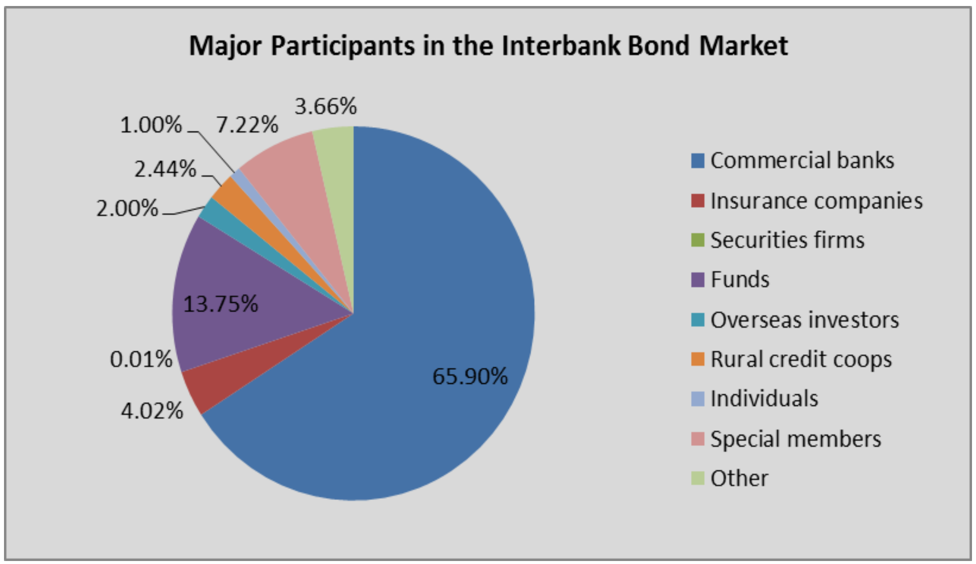


Source: WIND, PBoC



Main Investors in the Interbank Bond Market

- Market is dominated by commercial banks
- Foreign investors participation has increased, but very low compared to other countries
- Central banks/official institutions account for half of foreign investment
- Inclusion in major bond indices (WGBI) would be a major impetus for foreign participation

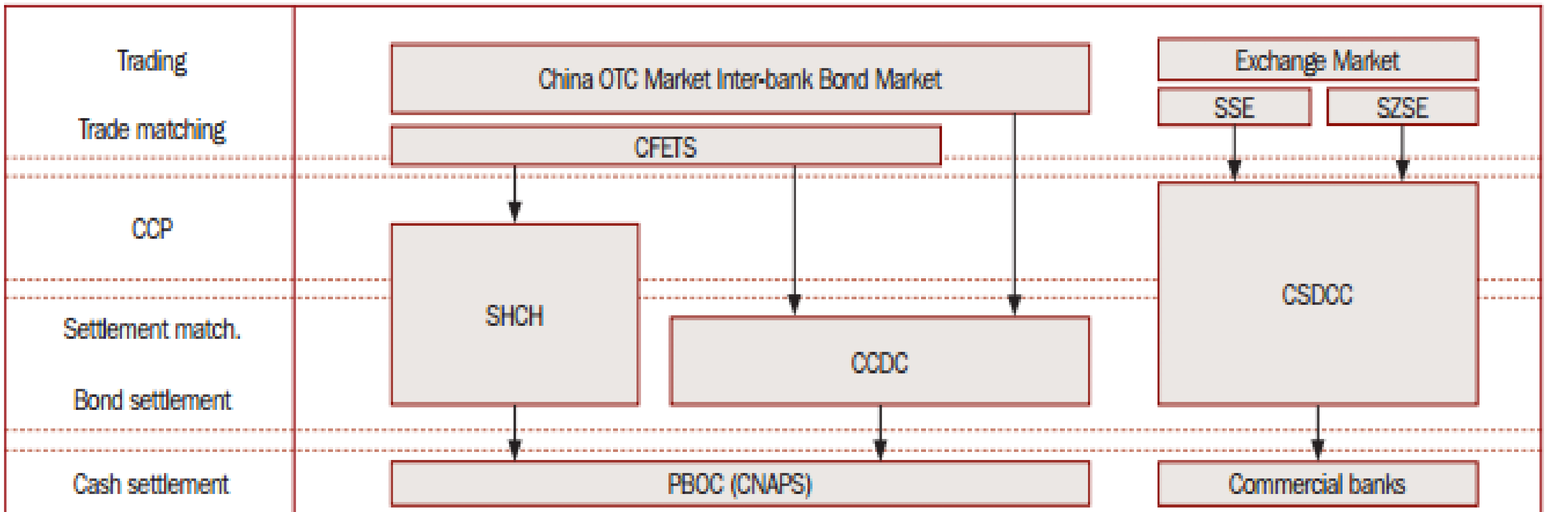


Source: China AM

Source: WIND

Market structure

- The Interbank market is the dominant and more active market
- 96.5% of trading is Interbank (3% Shanghai and 0.5% Shenzhen exchanges)
- Corporate bonds are traded on Exchanges



CFETS and NIFC: China Foreign Exchange Trade System and National Interbank Funding Center, SSE: Shanghai stock exchange, SZSE: Shenzhen stock exchange, CCDC: China Central Depository and Clearing Corporation, CSDCC: China Securities Depository and Clearing Corporation, SHCH (Shanghai Clearing House), CNAPS: China National Automatic Payment System
Note: Commercial Bank Counter Market is not shown here.
Source: ADB consultant.

Accessing the CIBM

Eligible investors

- **COMMERCIAL BANKS INSURERS** — The total assets on their balance sheet should exceed USD 5bn*
- **SECURITY HOUSES ASSET MANAGERS** — Securities under management should exceed USD 1bn or USD 2 bn*
- **PUBLICLY RAISED PRODUCTS** — The investor shall provide relevant license obtained from the regulatory authority
- **PRIVATELY LAUNCHED PRODUCTS**** — The investor shall provide sufficient documentation to evidence the source of funds for PBoC's review***
- **OTHER LONG TERM INVESTORS**** — Pension funds, Charity funds, Endowment funds

*SOURCES: PBoC's verbal guidance, entry threshold for investors at the initial stage. **Investment products lawfully launched by the foresaid financial institutions. ***PBoC's verbal guidance, entry threshold for investors at the initial stage

What can be traded

	FOREIGN CENTRAL BANKS	COMMERCIAL BANKS	OTHER INVESTORS
Tradable Instruments	• Cash Bonds • Repo • Bond Lending • Bond Forward • IRS • Forward Interest Rate Agreement • FX (Spot, Forward, Swap & Option)	• Cash Bonds • Repo	• Cash Bonds
Bond Settlement Agent	Can entrust either PBoC or other qualified Type A agent	Can entrust qualified Type A agent	
Quota	Unlimited quota after filing with PBoC		

SOURCES: BNP Paribas, PBoC, as of February 2016.

- Since February 2016 FII's do not face restrictions – no quota, just filing with PBoC
- No lock-up period to repatriate investment principal, Daily repatriation possible (±10% FCY/CNY)
- Foreign investors have "Type C" status and must appoint a "Type A" licence holder as settlement agent to carry out bond trading on their behalf.

SAFE now allows foreign bond investors to access onshore FX market for hedging

- As of March 2017 foreign institutional investors can hedge FX risks onshore
- Foreign institutional investors can use derivatives such as forwards, FX swap, currency swap and options to hedge currency risks for investments in the Chinese onshore interbank bond market
- Investors can hedge with their settlement agents
- CNH market is very volatile, prone to liquidity squeezes and under current conditions more expensive to hedge on the offshore CNH curve than the onshore FX forward curve
- However, registration process itself remains a substantial bottleneck
- It will take time for investors to have National Association of Financial Market Institutional Investors (NAFMII) agreements, which is the onshore equivalent of ISDA, so they can trade onshore FX forwards with onshore entities
- T+1 or T+0 settlement still a problem for foreigners, as is taxation for non-residents.

Sourcing bonds and price discovery is not easy

CFETS Best Quote | CFETS Trade Price | Tullett Prebon SITICO | CFETS ICAP | CCDC Settlement | CCDC Valuation | Bond Basic Info.

Treasury

Name	Bond Code	Bid Contributor	Bid Volume	Bid Price	Bid Yield	Ask Yield	Ask Price	Ask Volume	Ask Contributor	Bond Type	Cpn Rate	Yrs. to Mat.	Maturity	Time	Trade Date
												Custom			
17附息國債04	170004	東方證券	3000	101.1711	3.2600	3.2300	101.4248	3000	東方證券	STR	3.4 %	9.8877	09.02.2027	14:56	24.03.2017
16附息國債23	160023	包商銀行	3000	95.4928	3.2500	3.2050	95.8526	3000	包商銀行	STR	2.7 %	9.6192	03.11.2026	14:55	24.03.2017

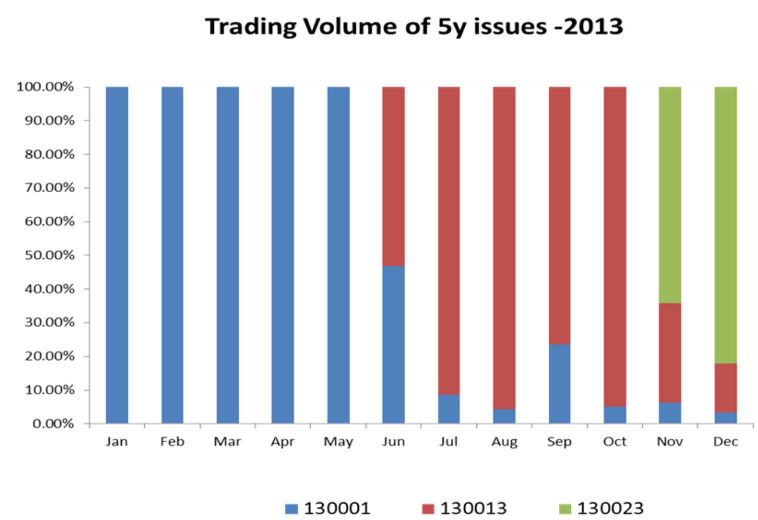
CFETS Best Quote | CFETS Trade Price | Tullett Prebon SITICO | CFETS ICAP | CCDC Settlement | CCDC Valuation | Bond Basic Info.

Treasury

Name	Bond Code	Bid Volume	Bid	Bid Yield	Ask Yield	Ask	Ask Volume	Trade Price	Time	Date	Bond Type	Cpn Rate	Yrs. to Mat.	Maturity
													Custom	
16附息國債23	160023	3000	95.493	3.2500	3.2200	95.733	1000	3.225	15:00	24.03.2017	STR	2.7 %	9.6192	03.11.2026
17附息國債04	170004	1000	101.256	3.2500	3.2300	101.425	2000	3.25	14:55	24.03.2017	STR	3.4 %	9.8877	09.02.2027

Source: Reuters EIKON

- Bonds identified by Bond Number (170004 for example – what does the number mean?)
- Prices mainly in On-the-Runs, B/O typically 3-4 bps
- Off-the-run bonds can have 7 bps bid-offer
- Dealers typically quote benchmark tenor yields, inventory runs are helpful but sporadic
- Liquidity typically in on-the-runs, falls off quickly for seasoned issues
- Bonds are eventually locked in investment books and as such older issues are very hard to find



How can one hedge interest rate exposure?

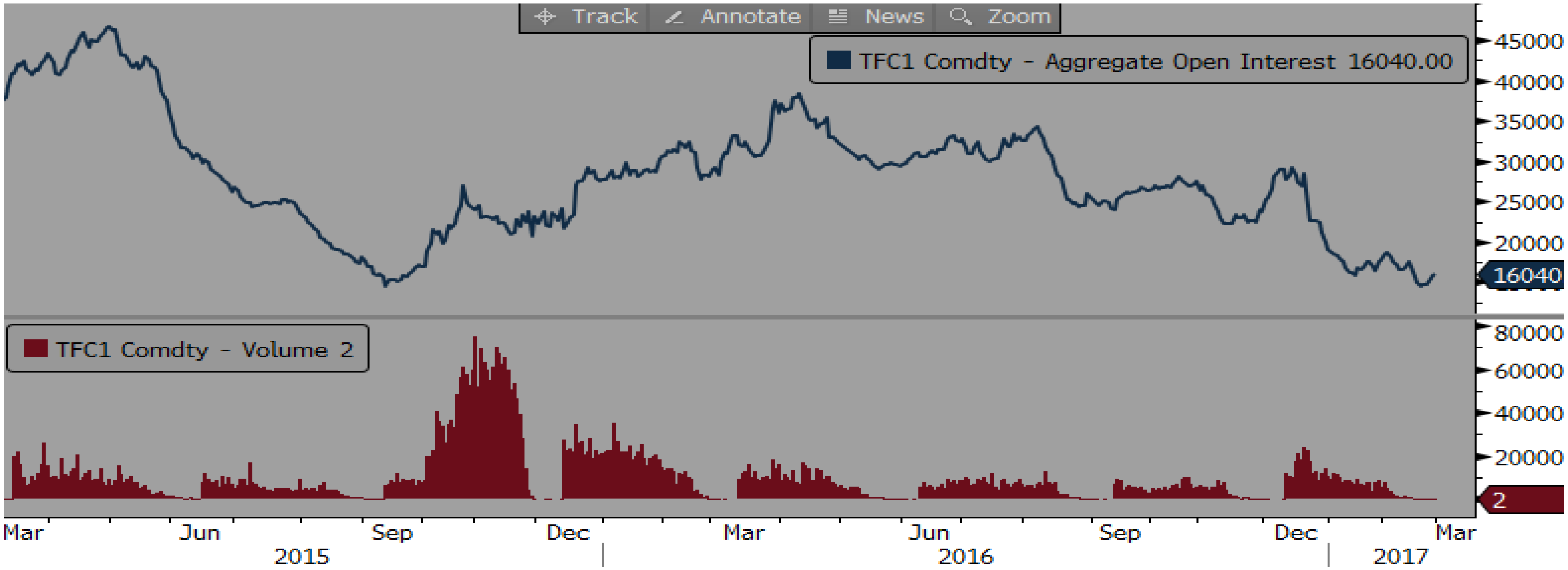
- Interest Rate Swap (IRS) - first introduced in 2006 and was used as a hedging tool for interest rate exposure in the interbank bond market. The market has grown rapidly over the last 10 years, trading volumes have increased more than 110 times
- Primary fixing references are 7-Day Repo Rate and SHIBOR
- Due to its short history, the IRS market is dominated by interbank hedging activities, with swaps against 7 Day repo rate being the most popular. 7 Day repo IRS accounted for 81.1% of total notional transacted in 2014 while SHIBOR IRS accounted for 18.2%, IRS referenced to other floating indices contributed less than1% of total notional
- Liquidity mainly in **1-year and 5-year** (used mainly by banks to take interest rate exposure)

Swap	7 Day Repo IRS	3 Month SHIBOR IRS
Average Daily Market Volume	CNY 20 bn	CNY 3 bn
Average Ticket Size	CNY 50 Mio	CNY 50 Mio
Average bid/offer spread	1-5bps	3-7bps
Term	1 month – 5 years	6 months – 5 years
Liquid up to	5 years	5 years
Coupon fixing/Payment Frequency	7 Days / Quarterly	Quarterly/Quarterly
Day count conventions	A/365 both legs	Fixed Leg: A/365 Floating Leg: A/360
Floating Rate Ticker	CNRR007 Index	SHIF3M Index

Source: SCB, PBOC

Bond Forwards and Futures

- Bond Forward was first introduced on May 2005, total 108 transactions completed in the first year with about 17.8 Billion CNY notional amount
- Market had grown quickly from 2005 to 2009, by the end of 2009, total transaction notional was almost 9 times the amount closed in 2005
- Starting from 2010, the market has been diminishing. There was only one trade in 2013 and no trade was done ever since
- Futures reintroduced in March 2014 after nearly 19 years. Initially 5-years, with 10-years added in 2015.
- Listed on China Financial Futures Exchange (CSRC regulated) – but banks are not allowed to access it
- Volume and especially OI paltry compared to delivery basket (3%) *{80% for US 5-year}*

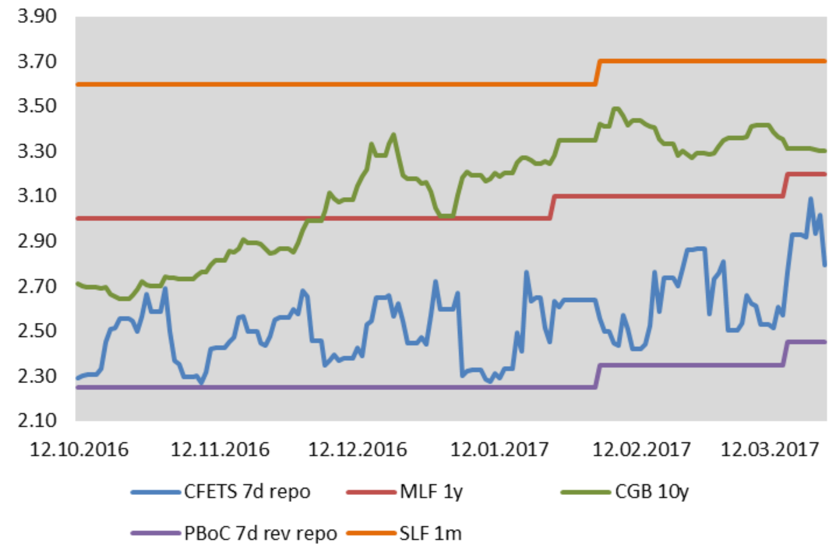


Source: Bloomberg

Bond yield developments

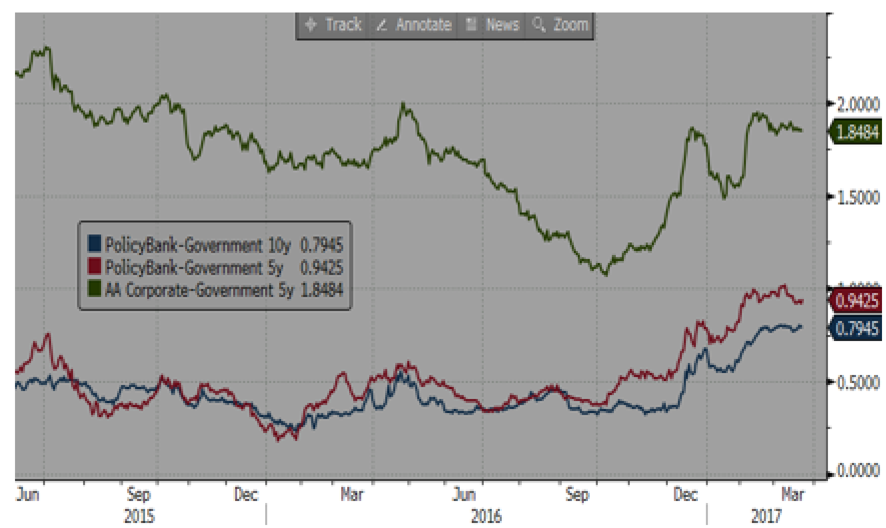
- Chinese bond yields have reversed a 3-year bull market in November
- PBoC now has a tightening bias to decrease rampant credit growth and leverage in the system
- Corporate and policy Bank bond yields have widened in the sell-off
- Chinese yields offer attractive pickup versus DM peers

China short term rates and 10y yield



10y Government Bond Yields

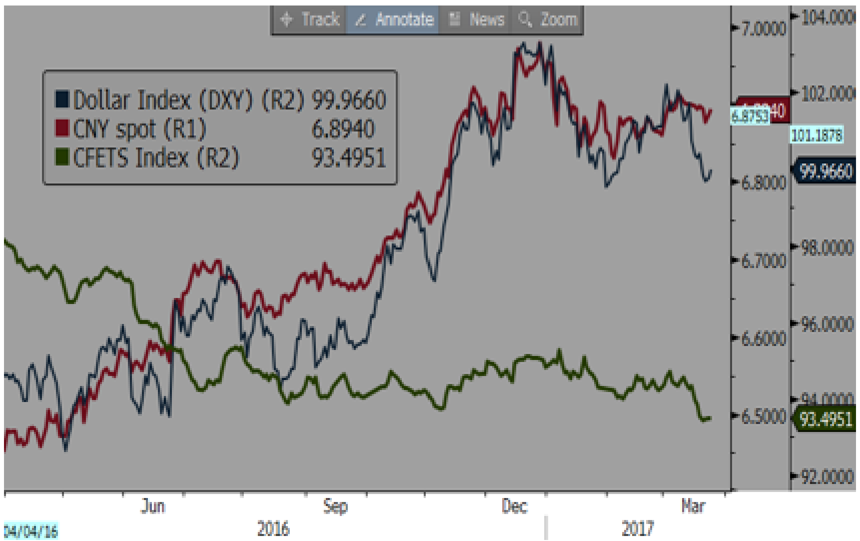
Spreads to Governemnt Bond Yields



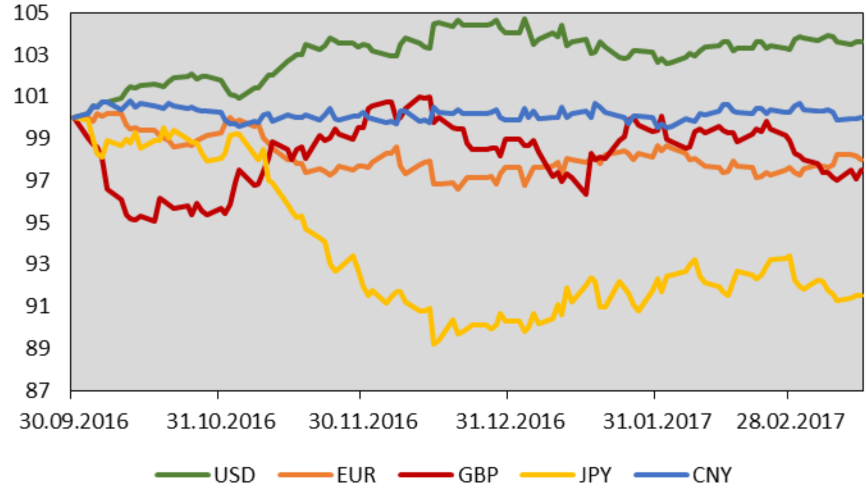
Source: Bloomberg

Currency developments

$/CNY driven by broad USD moves



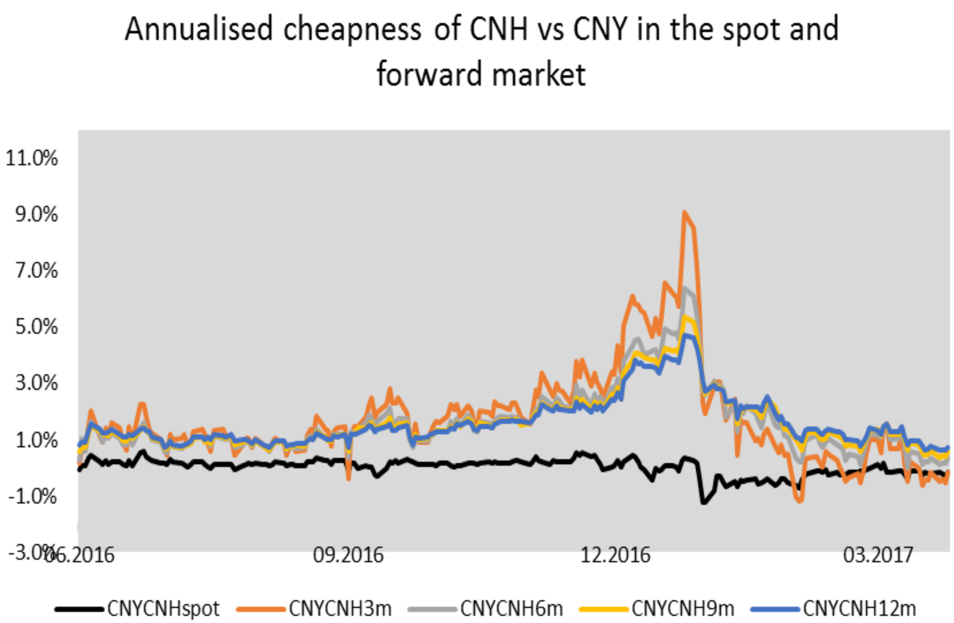
Currencies versus the SDR
Rebased to 100 on 30/09/2016

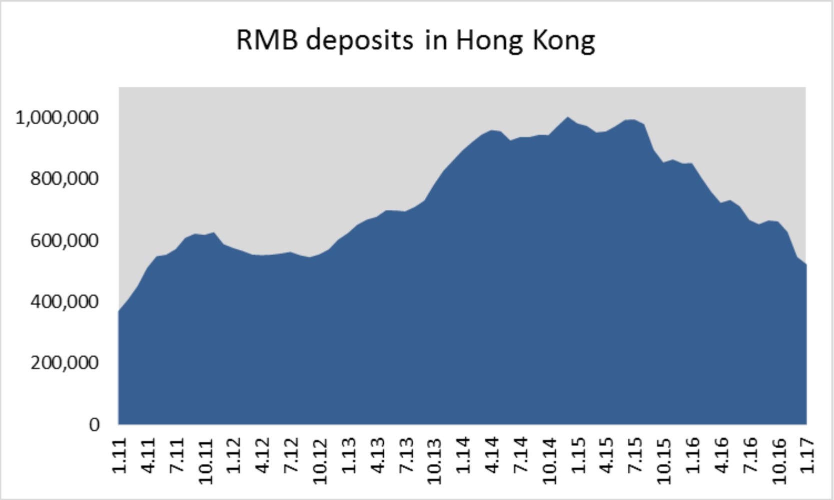


USD/CNY is the least volatile pair

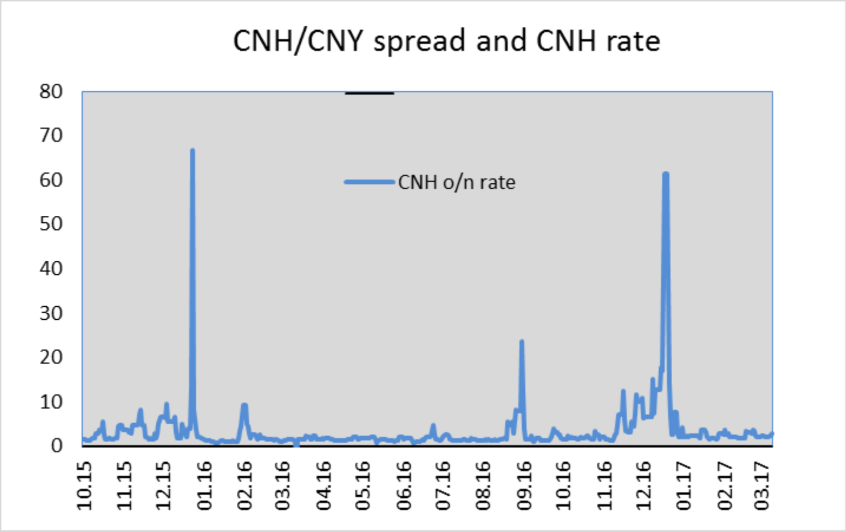
- CNY moves dictated broadly by USD strength/weakness. Authorities aim for basket stability, but gradual weakening in TW terms expected
- Recent depreciation pressure has moderated, as has capital outflow. Capital control measures reduce offshore liquidity.
- CNY has been the most stable SDR component
- With PBoC tightening bias, CNY is expensive to short
- Serious risk for the CNY is the possibility of a credit crisis given the high debt levels

Offshore CNH remains squeezed





Source: Bloomberg, HKMA



- Crackdown on domestic capital outflows and RMB depreciation expectations have led to a sharp drop in CNH liquidity
- CNH prone to funding squeezes
- Rates remain volatile and elevated – not a cheap funding source
- Spot CNH trades at a premium to onshore CNY – but at a discount in forwards

CNY government bonds risk-return

Table 1: Risk return properties of CNY government bonds in CNY and EUR

	in CNY			EUR Governments			UIP holds (in EUR)		
	2Y	3Y	5Y	2Y	3Y	5Y	2Y	3Y	5Y
Expected return	3.16%	3.43%	3.62%	-0.01%	-0.08%	-0.39%	1.00%	1.28%	1.51%
Volatility	0.87%	1.14%	1.77%	1.90%	2.77%	4.66%	10.94%	11.02%	11.29%
Sharpe ratio	0.71	0.78	0.61	<0	<0	<0	0.09	0.12	0.13
Return-at-Risk (95%)	1.8%	1.6%	0.7%	-2.7%	-4.3%	-7.8%	-16.9%	-16.9%	-17.2%
Return-at-Risk (99%)	1.2%	0.8%	-0.5%	-3.6%	-5.8%	-10.7%	-24.5%	-24.3%	-24.3%
Prob. of neg. returns	0.0%	0.1%	1.9%	56.1%	54.8%	54.4%	46.4%	45.4%	44.4%

Notes: Risk and returns are shown in local currency (CNY) and in euro under the assumption of historic deviations from uncovered interest rate parity (UIP) and the assumption that UIP holds. The projection horizon is 5 years and yield curves evolve in line with the BISAM central macro scenario (GDP and inflation is expected to involve according to central bank projections). Risk and return figures are annualized. EUR Governments are restricted to the AAA segment. Data as of 2 March 2017.

The Sharpe ratio is a measure of risk adjusted return and is defined as the ratio of expected return over the risk-free rate and return volatility. As risk free rate the EUR 3-month government yield is used for Sharpe ratios reported in EUR and for Sharpe ratios reported in CNY the respective Chinese yield is used.

The Return-at-Risk (RaR) is the return which will be achieved at a given confidence level. E.g. a RaR of 1% at a confidence level of 95% means that the respective instrument will return at least 1% with a probability of 95% and less than 1% with a probability of 5%.

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