ASIA CREDIT REPORT

First Quarter 2018

PREPARED IN PARTNERSHIP WITH

ASIFMA is an independent, regional trade association with over 100 member firms comprising a diverse range of leading financial institutions from both the buy and sell side including banks, asset managers, law firms and market infrastructure service providers. Together, **we harness the shared interests of the financial industry to promote the development of liquid, deep and broad capital markets in Asia.** ASIFMA advocates stable, innovative and competitive Asian capital markets that are necessary to support the region's economic growth. We drive **consensus, advocate solutions and effect change around key issues through the collective strength and clarity of one industry voice.** Our many initiatives include consultations with regulators and exchanges, development of uniform industry standards, advocacy for enhanced markets through policy papers, and lowering the cost of doing business in the region. Through the GFMA alliance with SIFMA in the US and AFME in Europe, ASIFMA also provides insights on **global best practices and standards to benefit the region.**

1. Table of Contents

2. G3 Asia ex Developed Market Asia (Japan, Australia and New Zealand)

Market Overview and Highlights of Asia (ex-Japan, Australia and New Zealand) debt issuance in First Quarter 2018

Total issuance in 1Q'18 came in at USD 75.5 billion (bn) as of March 31, down 10.9% quarter-over-quarter (qoq) from 4Q'17 (USD 84.8bn) and down 9.2% year-over-year (yoy), inclusive of high grade (HG), high yield (HY), and unrated deals. Slowing Chinese credit growth, coupled with higher US interest rates and widening credit spreads across the globe at a time of increased market volatility, all contributed to the slowdown in issuance – even so, in absolute terms, issuance remains robust as issuers have generally rushed to complete deals ahead of even higher US interest rates, which are expected as the year progresses.

1) HG issuance (of USD 54.bn) continues to easily outpace HY issuance of USD 14.2bn. However, HY issuance continues to remain at elevated levels, with first quarter issuance of USD 14.2bn only slightly below 4Q'17 issuance (USD 14.3bn).

2) With Chinese investors increasingly becoming dominant in the Asian G3 bond markets and with Chinese issuers accounting for over 50% of total Asian G3 debt outstanding, the Asian bond markets have progressively become more "localized", with international investors from Europe and the US accounting for a considerably lower proportion of the investor base, relative to previous years.

3) However, this is set to change going forward, as one of the reasons for Chinese investors' preference for Asian bonds over the last few years was the relatively low funding costs – however, this has changed in recent months as short-dated LIBOR has surged; coupled with a marked curve flattening in yield curves, this has made the holding of Asian bonds for purely funding-driven considerations unattractive. On balance, we should see at least a partial reversal of recent trends, with the relative levels of foreign investor interest in Asian bonds once again picking up compared to past years over the rest of 2018.

4) Looking ahead, there could be some pressure on Chinese credit spreads, as refinancing risk remains high – a large volume of property bonds (including those issued in 2017 with sub-one year maturities) and LGFVs (Local Government Financing Vehicles) have to be refinanced in 2018. This, coupled with overall market volatility, is likely to keep investors somewhat defensive and more selective, with respect to individual credits.

5) Turning to other markets, India is also likely to attract investor interest – the Indian banking system has been weighed down by a large volume of NPLs (non performing loans), which need resolution. However, the passage of a much-improved framework for bankruptcy and resolution of corporates a couple of years ago has given a boost to foreign investor interest in India, not just in distressed debt, but in debt markets overall. Increased confidence in the Indian bankruptcy/insolvency process on the part of foreign investors will also boost the Indian debt markets – specifically, to investor diversification into corporate bonds and away from LCY government debt and quasi-sovereign fixed income instruments.

Key trends in Asia (ex-Japan, Australia and New Zealand) G3 & LCY bond issuance

For the first quarter 2018, total G3 issuance stood at USD 75.5bn, down 10.9% qoq and 9.2% yoy. China remains the largest issuing country in the first quarter, dominating Asian issuance at USD 51.2bn, or approximately 67.9% of G3 issuance; of first quarter volume, USD 35.5bn and USD 10.3bn were in HG and HY deals, respectively. South Korea reasserted itself as the second largest issuer with USD 6.2bn of issuance, followed by Indonesia with USD 4.6bn

Finance remains the largest sector of G3 issuance in the first quarter (USD 23.8bn), followed by real estate/property (USD 11.7bn) and computers & electronics (USD 10.8bn).

In terms of ratings, within the HG space, BBB transactions accounted for the largest share of deals priced during the quarter, with USD 11.3bn in total issuance, followed by A+ rated transactions totaling USD 11.1bn. Within HY issuance, the BB- category led with USD 4.3bn of issuance, followed by B rated transactions of USD 3.1bn.

By tenor, Asia ex-Japan, Australia and NZ G3 deals with tenors of 5 years or less continued to account for the bulk of issuance in 1Q'18, with a total of USD 45.2bn in short tenor issues being priced during the quarter. Of these, USD 28.8bn were HG deals, USD 10.9bn were HY deals and the balance unrated.

Overall G3 debt outstanding in the region stood at USD 1.1tn at the end of March 2018, increasing 4.0% qoq and 18.0% yoy. High grade debt accounted for the bulk of total outstanding debt at USD 718.3bn (a 3.0% increase qoq and 27.4% increase yoy), followed by unrated debt at USD 237.3bn (a growth of 8.2% qoq and 35.8% yoy). HY debt was USD 137.7bn (an increase of 2.7% qoq but a decline of 26.6% yoy).

China (with USD 528.9bn), South Korea (with USD 121.6bn) and Hong Kong (with USD 115.8bn) remain the three regions with the largest shares of G3 debt outstanding. Ratings-wise among HG issuers, deals rated BBB- (USD 144.6bn) account for the largest share of debt outstanding, while B+ transactions outstanding (USD 30.7bn) dominate in the HY space. By sector, financials with a total of USD 336.0bn accounted for 31% of outstanding G3 paper, followed by sovereigns (USD 247.7bn) and energy (USD 110.8bn). Finally, deals with remaining tenors of 5 years or less (USD 694.9bn) accounted for the bulk of total Asia (ex-Japan, Australia and NZ) debt outstanding.

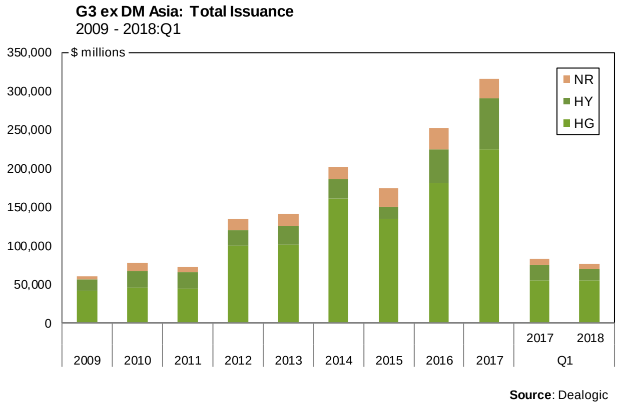
Turning to the LCY debt markets, USD 183.5bn in total LCY-denominated debt was issued in Asia (ex-Japan, Australia & NZ) in 1Q'18, a decline of 0.1% qoq (USD 183.7bn) but an increase of 12.0% yoy (USD 163.8bn). China remains the largest issuer in the LCY debt markets in the fourth quarter, with USD 119.8bn issued, followed by South Korea (USD 28.3bn). India reasserted itself in third place with USD 12.0bn in issuance in 1Q'18. Finance continues to remain the largest category in 1Q'18 with USD 71.6bn issued, followed by construction (USD 25.3bn) and real estate (USD 21.9bn).

Total LCY debt outstanding at the end of 1Q'18 in Asia (ex-Japan, Australia and NZ) stood at USD 17.0tn, rising by 3.3% qoq, with HG and unrated debt outstanding increasing 0.4% and 3.5% qoq, respectively. HY debt declined 0.5% to $12.4bn. China remains the bulk of total outstanding LCY debt at USD 11.5tn, followed by India (USD 1.9tn) and South Korea (USD 1.5tn).

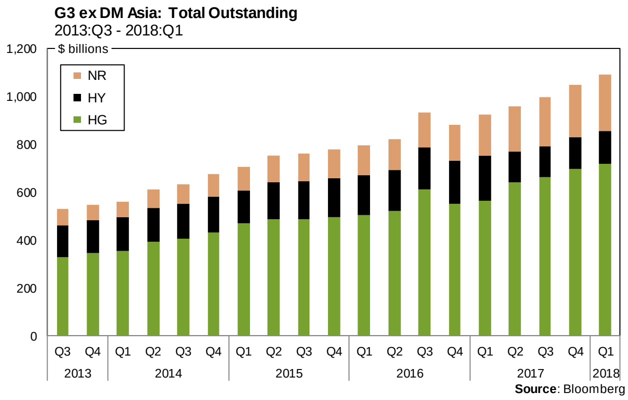
State of the Asian leveraged loan market

Asian leveraged loan debt, excluding developed market Asia, reached USD 53.7bn in 1Q'18, a 29.3% decline qoq but a 57.5% increase yoy. Leading sectors in 1Q'18 issuance were oil & gas (USD 9.1bn), transportation (USD 8.9bn), and real estate/property (USD 6.0bn). Leveraged loan issuance was primarily used for project financing (USD 23.0bn) and refinancing (USD 8.6bn). Sponsored loan deals as a percentage of issuance plummeted in the first quarter, representing a mere 0.7% of deals by dollar amount.

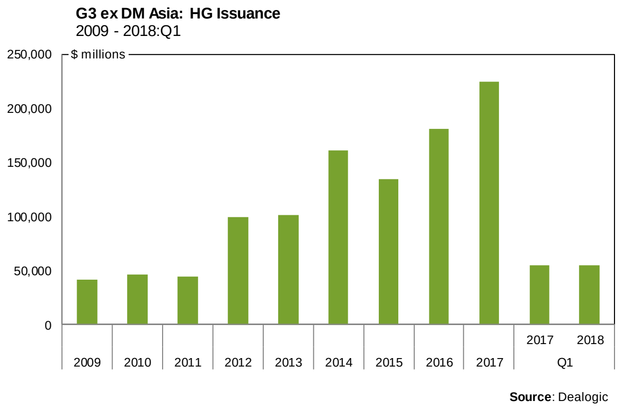
2.1. G3 ex DM Asia: Total Issuance



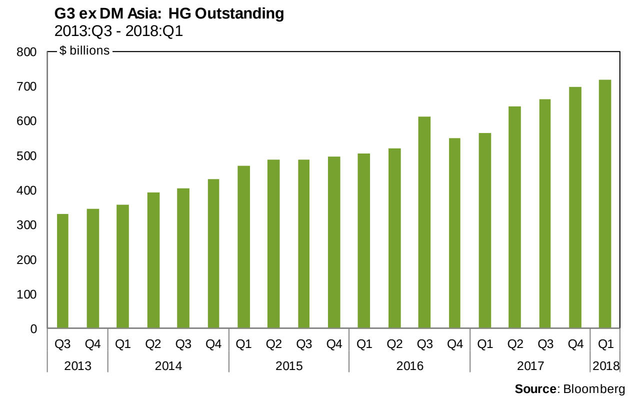
2.2. G3 ex DM Asia: Total Outstanding



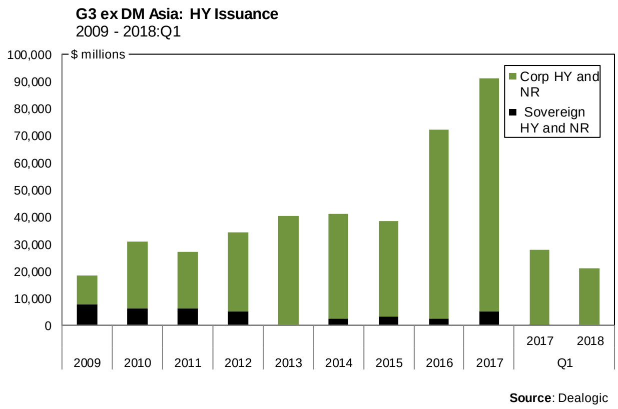
2.3. G3 ex DM Asia: HG Issuance



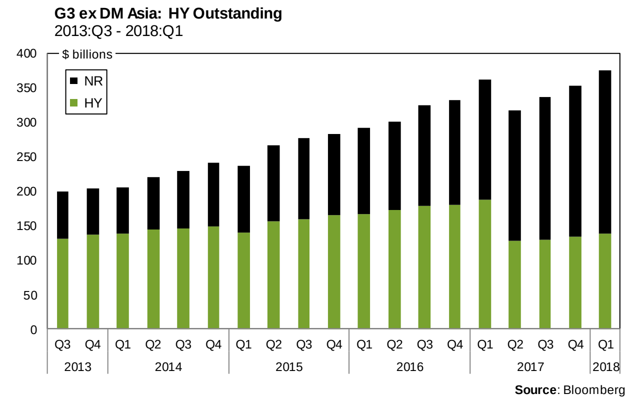
2.4. G3 ex DM Asia: HG Outstanding



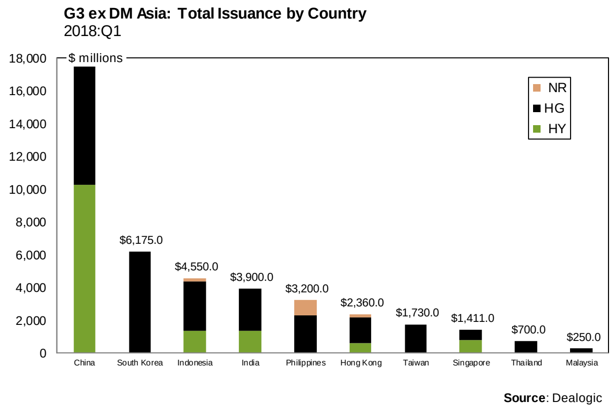
2.5. G3 ex DM Asia: HY Issuance



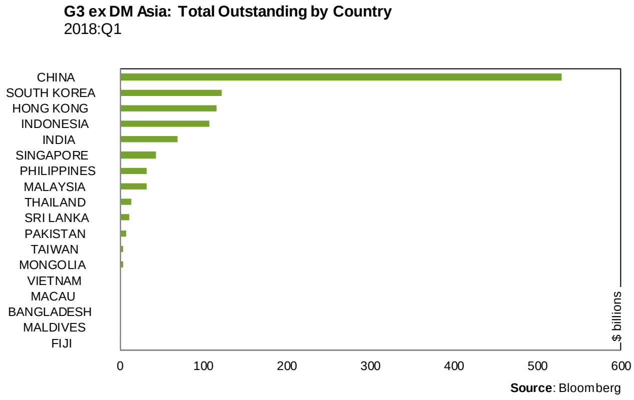
2.6. G3 ex DM Asia: HY Outstanding



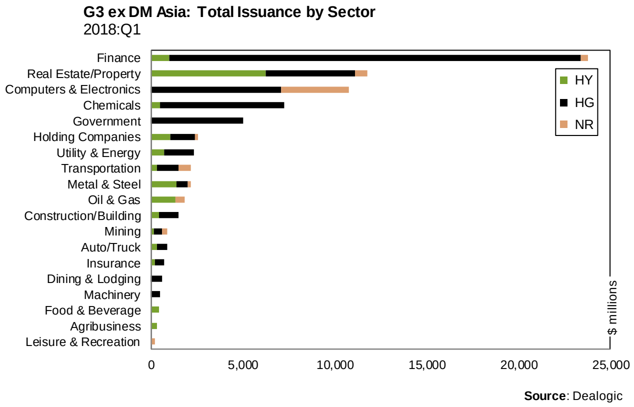
2.7. G3 ex DM Asia: Total Issuance by Country



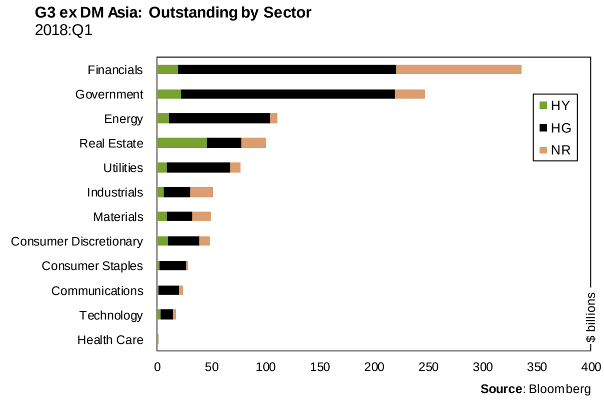
2.8. G3 ex DM Asia: Total Outstanding by Country



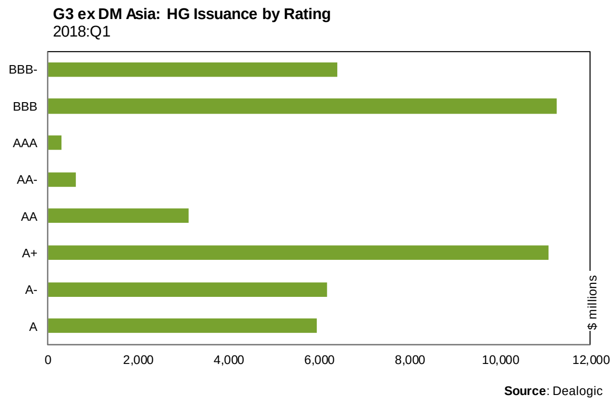
2.9. G3 ex DM Asia: Total Issuance by Sector



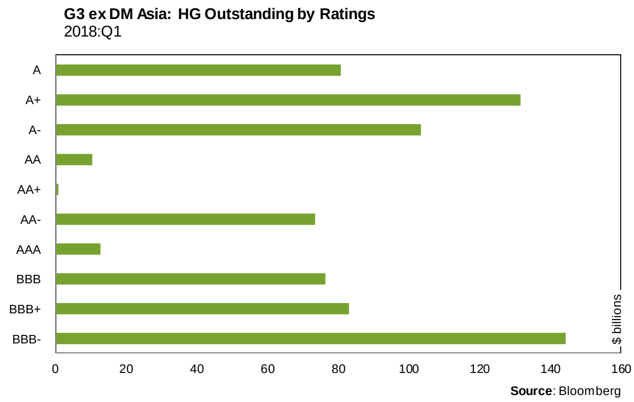
2.10. G3 ex DM Asia: Total Outstanding by Sector



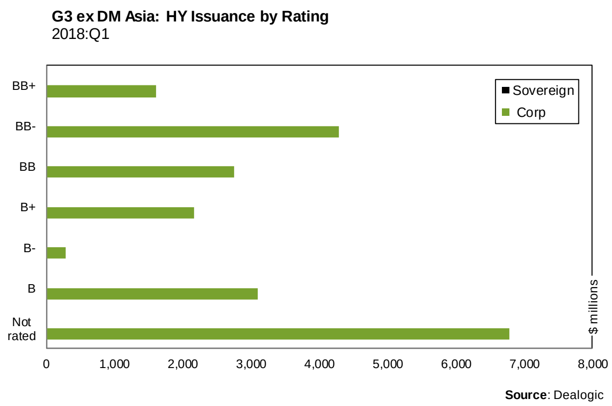
2.11. G3 ex DM Asia: HG Issuance by Rating



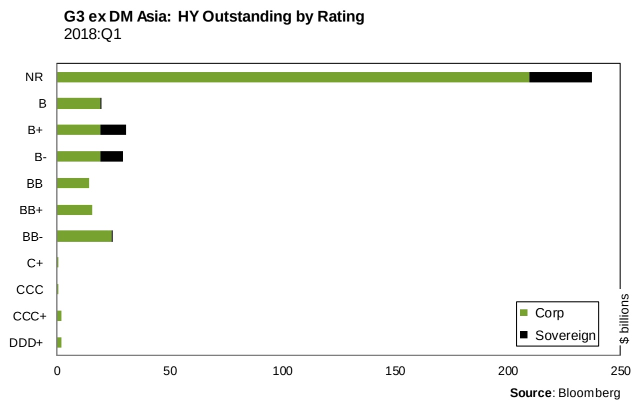
2.12. G3 ex DM Asia: HG Outstanding by Rating



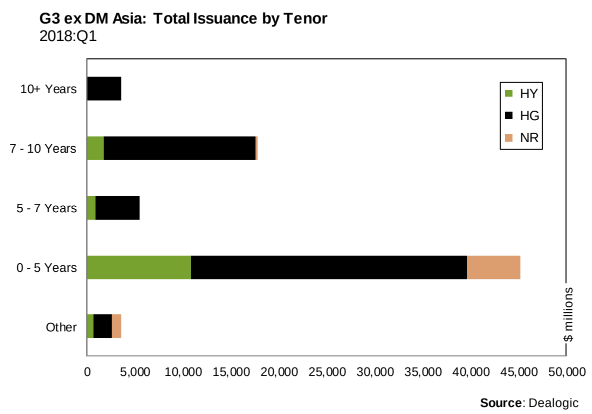
2.13. G3 ex DM Asia: HY Issuance by Rating



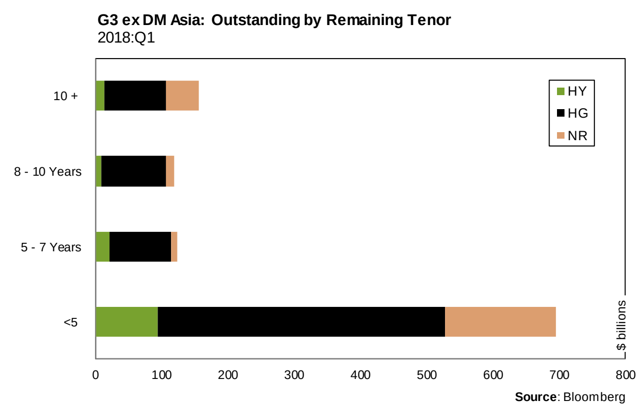
2.14. G3 ex DM Asia: HY Outstanding by Rating



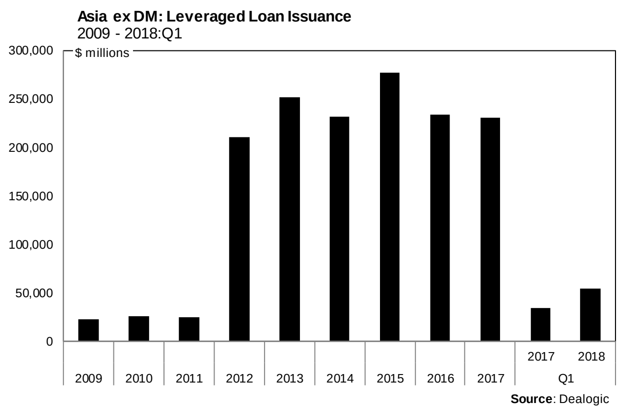
2.15. G3 ex DM Asia: Total Issuance by Tenor



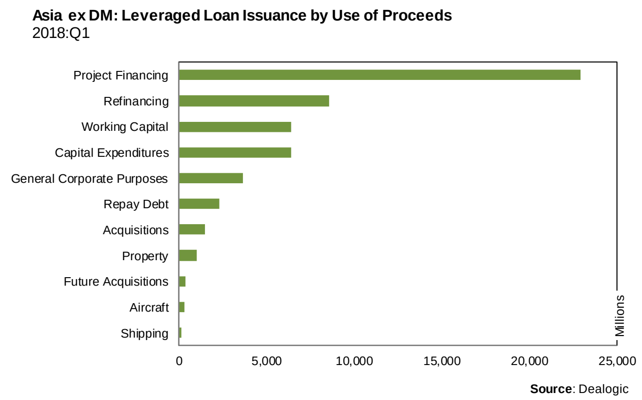
2.16. G3 ex DM Asia: Outstanding by Remaining Tenor



2.17. Asia ex DM: Total Leveraged Loan Issuance



2.18. Asia ex DM: Total Leveraged Loan Issuance by Use of Proceeds



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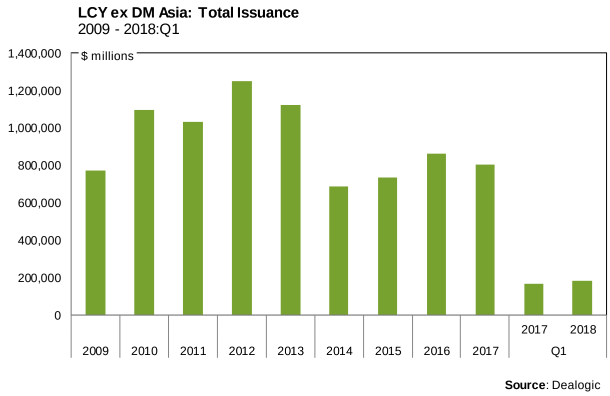
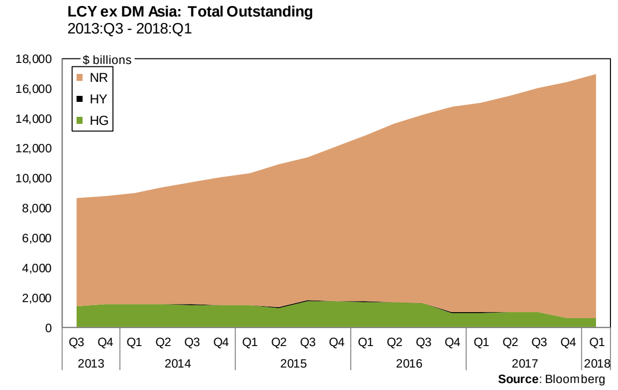
Growing Asia's Markets

3. LCY Asia ex Developed Market Asia (Japan, Australia and New Zealand)

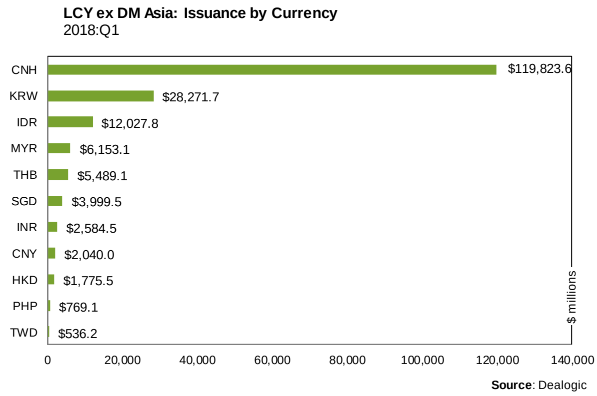
3.1. LCY ex DM Asia: Total Issuance



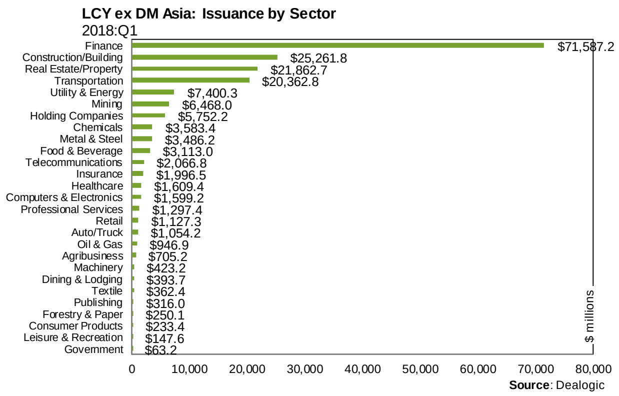
3.2. LCY ex DM Asia: Total Outstanding



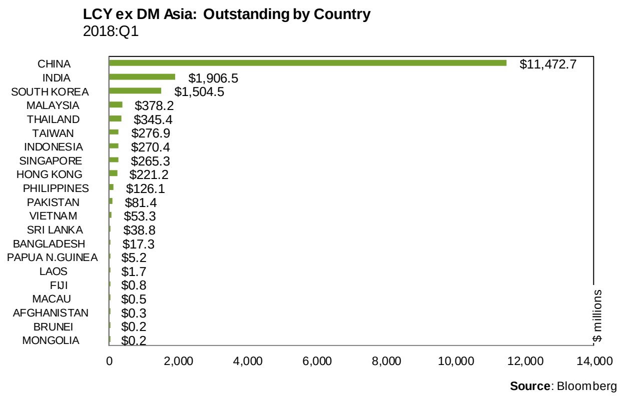
3.3. LCY ex DM Asia: Issuance by Currency



3.4. LCY ex DM Asia: Issuance by Sector



3.5. LCY ex DM Asia: Outstanding by Country



4. All Asia

Total Issuance & Outstanding – G3 and LCY for Asia (including Japan, Australia and New Zealand)

Total G3 issuance in Asia (including Japan, Australia and New Zealand) was USD 148.3bn in the first quarter of 2018, a decline of 9.3% qoq and a decline of 15.3% yoy. In 1Q'18, total HG G3 issuance in Asia was USD 110.4bn, a decline of 7.1% qoq and a decline of 11.8% yoy; HY issuance was USD 16.2bn, an increase of 13.6% qoq but a decline of 31.7% increase yoy; and unrated issuance was USD 21.6bn, a decline of 29.4% qoq and a decline of 17.1% yoy.

LCY debt issuance, including Japan, Australia, and New Zealand, plummeted to USD 247.2bn in the first quarter of 2018, a decline of 50.6% qoq and a decline of 50.9% yoy, comprised of USD 88.2bn in HG issuance, USD 3.9bn in HY issuance and USD 155.2bn in unrated issuance.

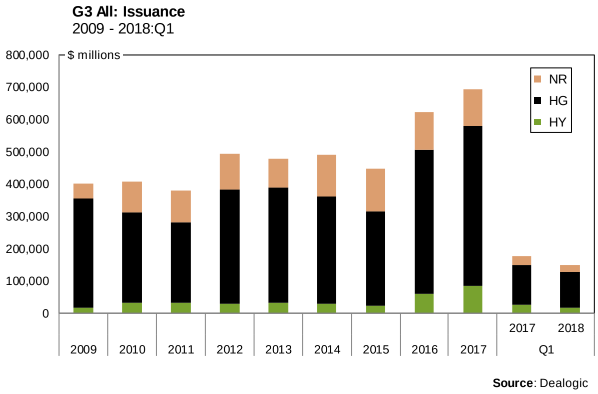
Tighter credit conditions, combined with steepening yield curves amid higher inflation across the regional economies undermined issuance. Following the 19th Congress, the Chinese authorities have signaled their determination to lower the unchecked growth in leverage among Chinese enterprises – this has also contributed to the dampening of issuance volumes.

However, the overall trend towards market liberalization and opening continues unabated, at least as far as China is concerned. Following increased market access to overseas investors via the China Interbank Bond Market (CIBM), the introduction of the HK-China "Bond Connect" in mid-2017 has provided yet another access channel for foreign investors looking to invest in the domestic Chinese bond markets. Finally, the partial inclusion of Chinese bonds in various global/regional local currency bond indices will translate into substantial sums of "passive" investment flows directed into the Chinese fixed income markets, as foreign fund managers seek to replicate the holdings of Chinese bonds in the various indices. So overall, this should prove supportive for Chinese bond markets at the margin – longer-term, this will also help to support increased issuance in the world's third largest bond market, which is soon set to surpass Japan as the second largest bond market globally.

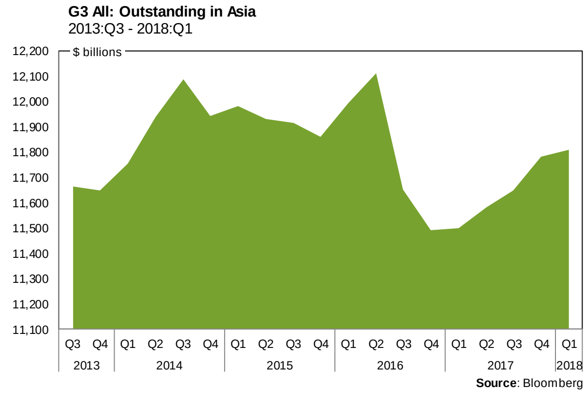
Additionally, from the viewpoint of foreign investors, domestic rates in a number of markets (especially India and China) are higher than the corresponding USD rates/yields available on comparable credits. This is yet another factor driving increased investment in LCY-denominated assets. However, this could be offset to some extent by USD strength going forward – the US currency has been noticeably weak for several months now and there are hints that there could be a trend reversal. With the benchmark 10-year US Treasury note breaching the psychologically important barrier of 3.0%, yields on USD fixed income assets could also start to look attractive; coupled with USD strength, this could yet prompt at least some foreign investors to delay or defer their domestic LCY investments.

So clearly, there are conflicting factors that have contributed to make the investment environment particularly challenging in 2018. That said, we are confident that the trend towards investor inflows into LCY debt instruments, particularly in the Asian Emerging Market (EM) space should continue, given the region's strong growth prospects. It is worth noting that foreign investment in the Chinese fixed income markets is in the low single digits – less than 2.0% by some estimates. Given this extremely low base, it is a safe bet that the international share of the Chinese bond market is set to grow for a long time to come.

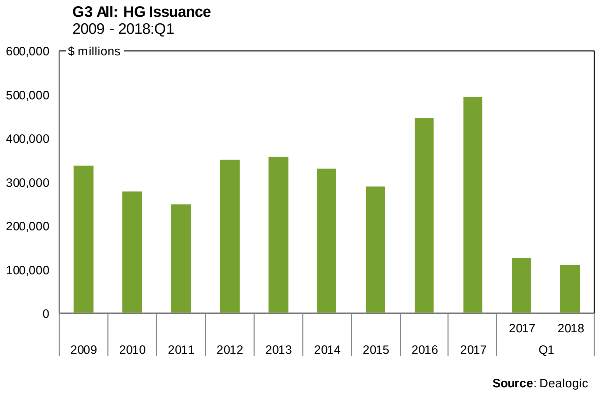
4.1. G3 All: Total Issuance



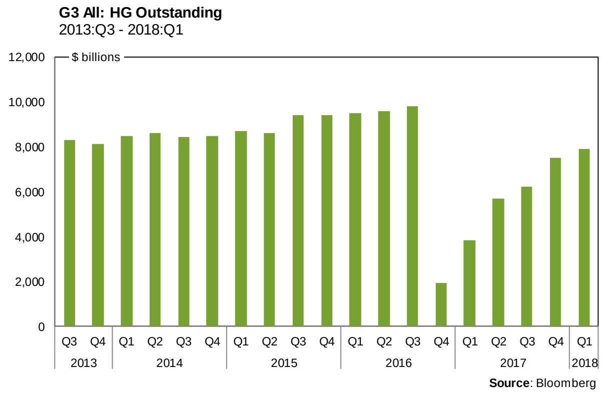
4.2. G3 All: Total Outstanding



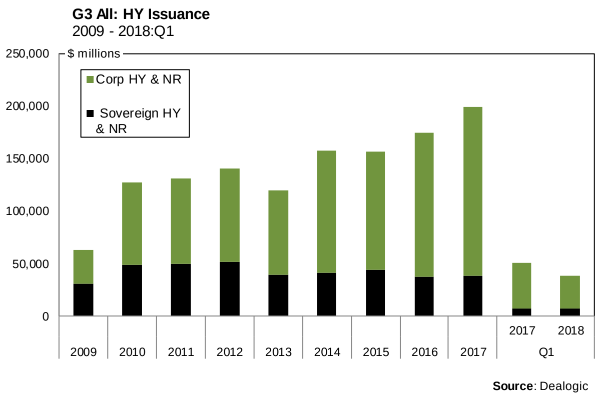
4.3. G3 All: HG Issuance



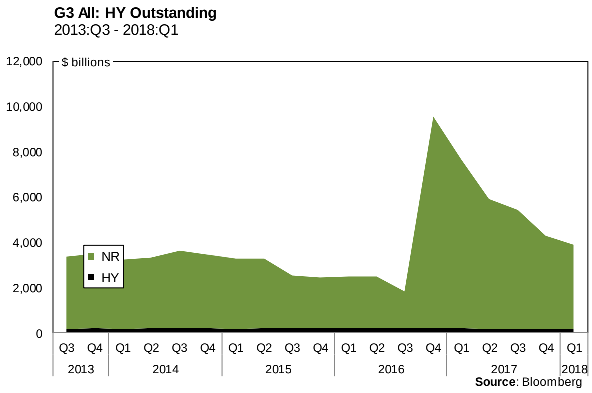
4.4. G3 All: HG Outstanding



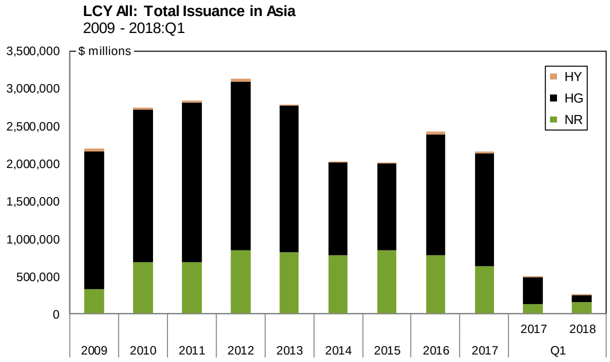
4.5. G3 All: HY Issuance



4.6. G3 All: HY Outstanding



4.7. LCY All: Total Issuance



Source: Dealogic

5. China – Domestic

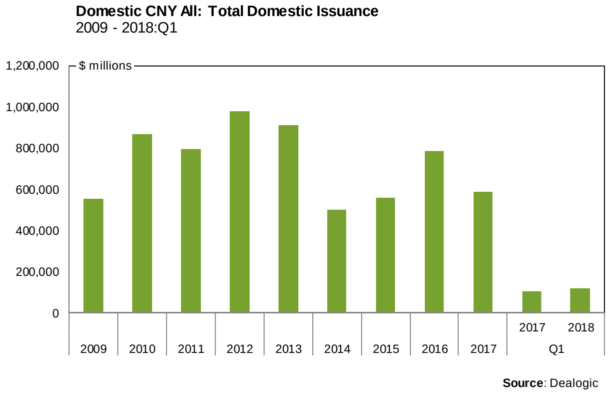
Total Issuance & Outstanding – Domestic CNY issuance

Total domestic CNY issuance stood at USD 119.8bn in the first quarter of 2018, down 12.6% from the fourth quarter (USD 137.2bn) but up 16.5% yoy (USD 102.9bn). By tenor, 77.2% of first quarter issuance (USD 92.5bn) would mature in five years or less, followed by the 7-10 year bucket (USD 14.3bn, or 12.0% of issuance). By sector, finance led issuance totals (USD 32.3bn), followed by construction (USD 23.6bn) and transportation (USD 17.6bn). Outstanding domestic CNY debt stood at USD 11.2tn at the end of first quarter 2018, with sovereigns leading totals (USD 6.3tn), followed by financials (USD 2.9tn) and industrials (USD 878.0bn).

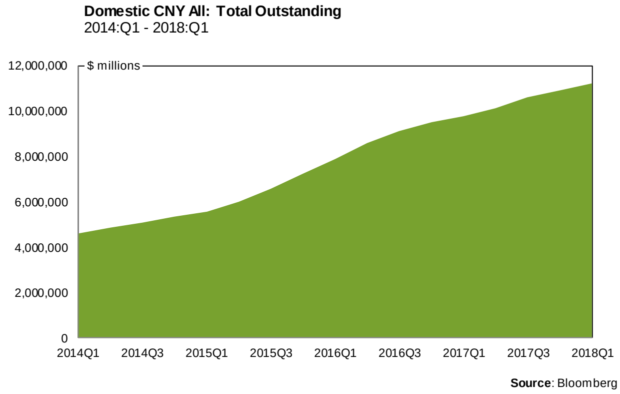
While there has been some de-leveraging at the margin following the determination of the Chinese authorities to reduce NPLs and clean up the Chinese banking system generally, there are enough reasons why Chinese domestic debt issuance cannot contract significantly – even to sustain lower rates of growth while at the same time allowing firms to roll over / refinance existing debt, this would necessarily support a reasonably high level of continued debt issuance. Also, with international investment flows into Chinese fixed income also set to record significant increases for the reasons discussed earlier, this will also underpin more debt issuance.

Finally, the Chinese authorities are committed to the "Belt and Road Initiative", which will necessitate massive investments in infrastructure, which in turn will have to be funded by bond issuance – including panda bonds (domestic CNY-denominated bonds issued by international issuers), which is set for significant growth. There has been reasonably sustained sovereign panda bond issuance, which is likely to be complemented by more corporate panda issuance, as and when issuers judge the timing to be right.

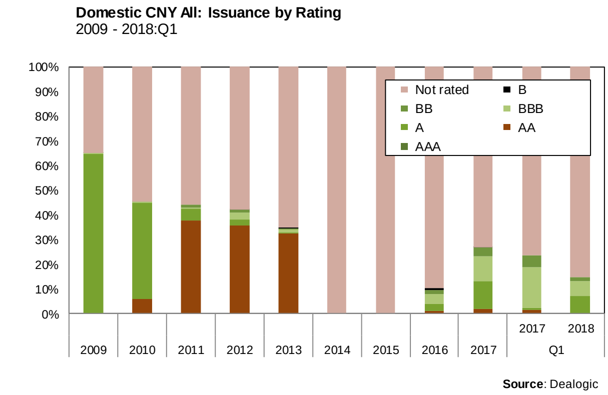
5.1. Domestic CNY All: Total Issuance



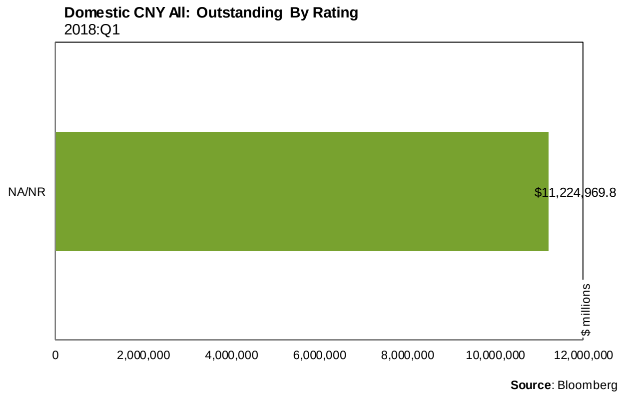
5.2. Domestic CNY All: Total Outstanding



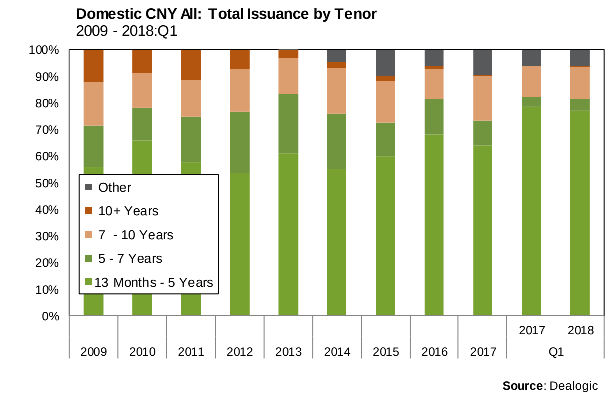
5.3. Domestic CNY All: Issuance by Rating



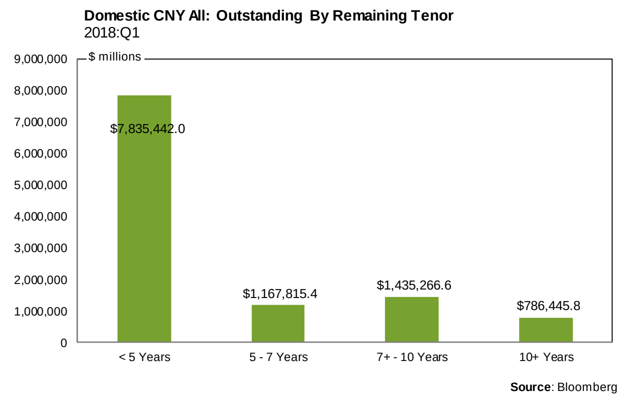
5.4. Domestic CNY All: Outstanding by Rating



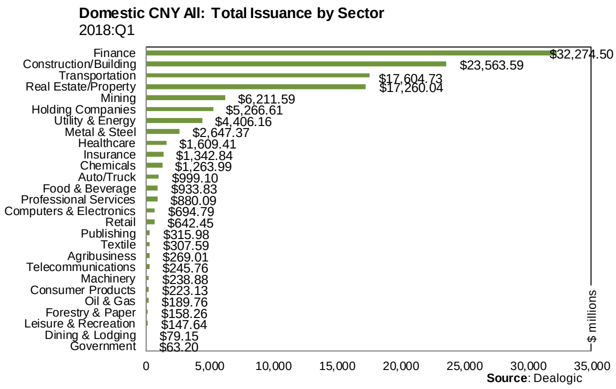
5.5. Domestic CNY All: Issuance by Tenor



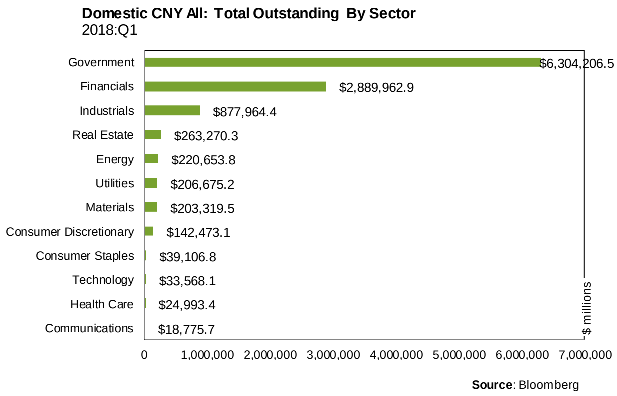
5.6. Domestic CNY All: Outstanding by Remaining Tenor



5.7. Domestic CNY All: Issuance by Sector



5.8. Domestic CNY All: Outstanding by Sector



6. China – CNH

Key trends in offshore renminbi (CNH) and the dim sum bond markets

The pace of offshore issuance picked up in the first quarter from the fourth quarter; an equivalent of USD 3.8bn in CNH bonds were issued, an increase of 43.7% qoq and an increase of 85.6% yoy. In terms of tenor, virtually all (95.0%) all of first quarter issuance was accounted for by transactions with tenors of 5-years or less. HG deals rated A+ totaling USD 785.1mn had the highest share among rated deals (20.5%). In terms of sector, finance was the largest issuer in 1Q'18 (USD 1.6bn), followed by real estate (USD 1.4bn) and transportation (USD 251.7mn).

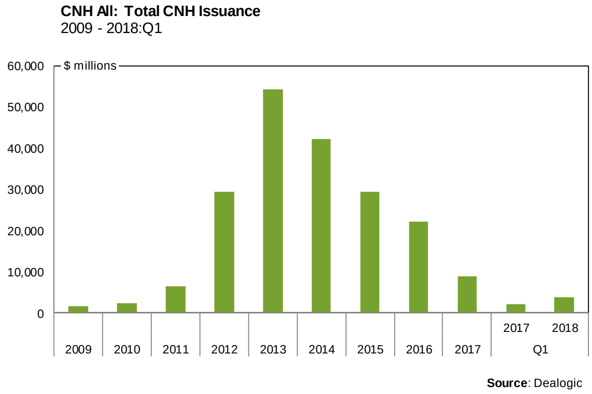
CNH Deposit Base by Location	Amt (USD bn)	As of
Hong Kong	87.7	Feb-18
Singapore	24.2	Dec-17
Taiwan	51.3	Feb-18
Korea, Republic of	1.1	Mar-18
Luxembourg	9.8	Aug-15
United Kingdom	10.1	Dec-17
France	3.2	Dec-15

Sources: HKMA (Hong Kong), MAS (Singpore), Central Bank of Republic of China (Taiwan), Bank of Korea (Korea), Luxembourg for Finance (Luxembourg), Bank of England (UK), PWC (France); Exchange Rate: CNH 6.2755 = USD 1.0, GBP 1.40 = USD 1.0

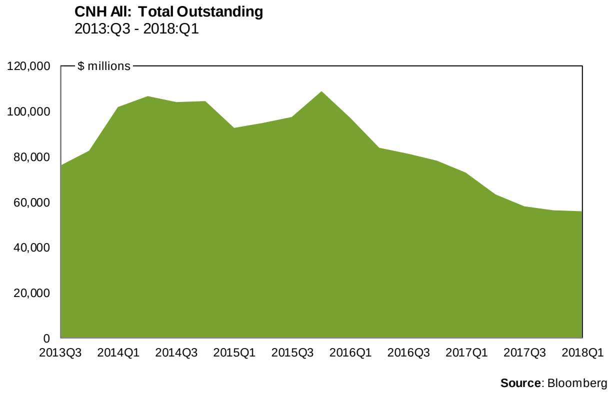
The rebound in issuance was driven by mostly technical factors – primarily the renewed strength in the renminbi after a period of prolonged weakness. The relative attractiveness of yields in CNH-denominated assets also helped lure investors at the margin and provided a boost to issuance, at least in the short term. However, the long-term trends which have adversely impacted the offshore dim sum bond markets continue to remain in place – increased onshore access for overseas investors coupled with the massive size of the domestic CNY market relative to the offshore CNH market and larger pools of domestic liquidity will result in the offshore market's continued decline.

The total of dim sum bonds outstanding stood at USD 56.1bn at the end of the first quarter, a decline of 0.4% qoq and 23.0% yoy. Reflecting this trend in dim sum bonds, most deposit centers resumed their decline in offshore CNH deposits outstanding.

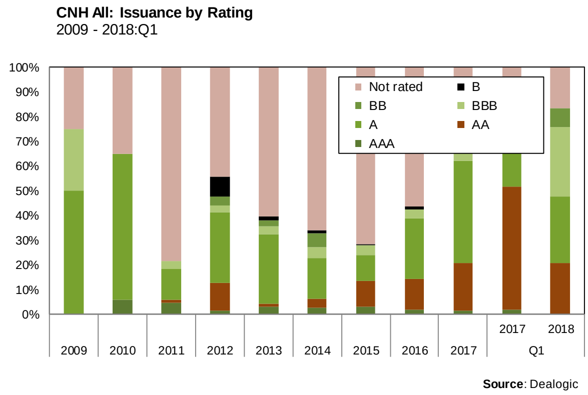
6.1. CNH All: Total CNH Issuance



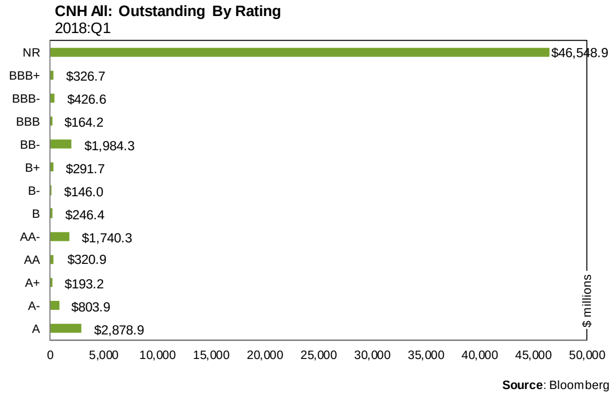
6.2. CNH All: Total Outstanding



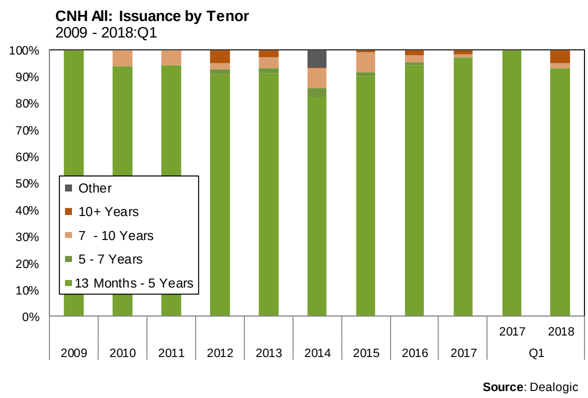
6.3. CNH All: Issuance by Rating



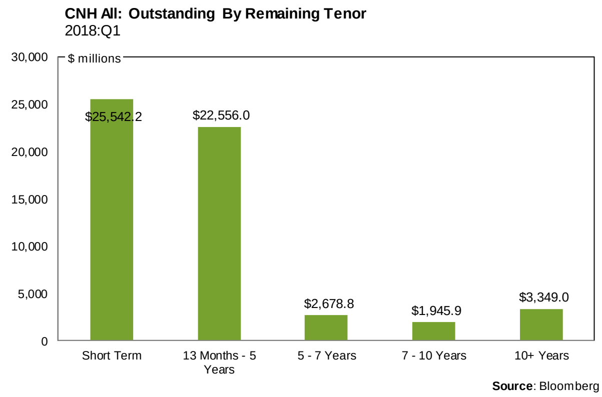
6.4. CNH All: Outstanding by Rating



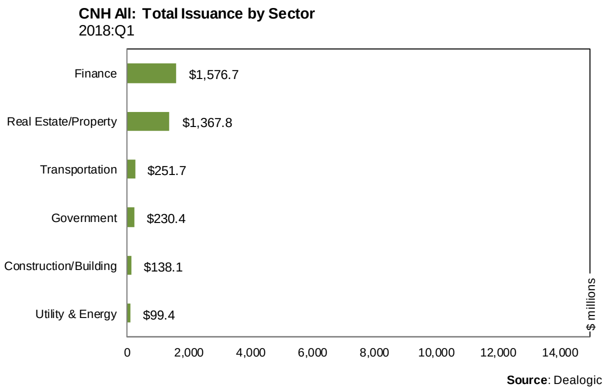
6.5. CNH All: Issuance by Tenor



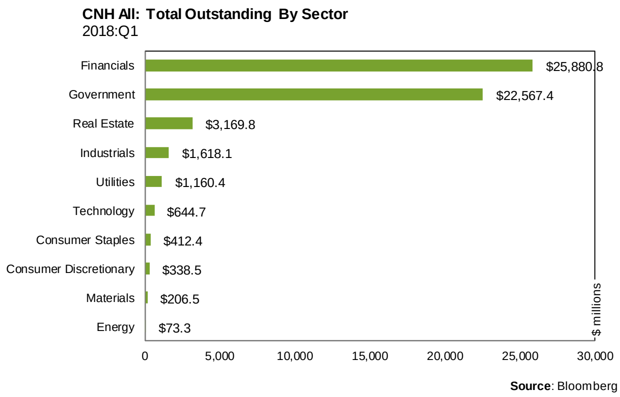
6.6. CNH All: Outstanding by Remaining Tenor



6.7. CNH All: Issuance by Sector



6.8. CNH All: Outstanding by Sector



7. Spreads, Credit & Total Return

Relative Value and returns (Asia ex-Japan, Australia & New Zealand G3)

HG bond spreads traded wider in 1Q'18 from the fourth quarter: Asian HG and US HG bonds on a composite basis were quoted in March at an average spread of 124 basis points (bps) (from 116 bps in December) and 110 bps (from 100 bps in December), respectively while European HG bond issues were essentially unchanged at 88 bps. Asian and European HY corporates traded wider in the first quarter of 2018, averaging 398 bps and 364 bps, respectively, in December (from 374 bps and 360 bps, respectively, in December 2017), while US bonds only widened slightly to 364 bps in March (from 360 bps in December).

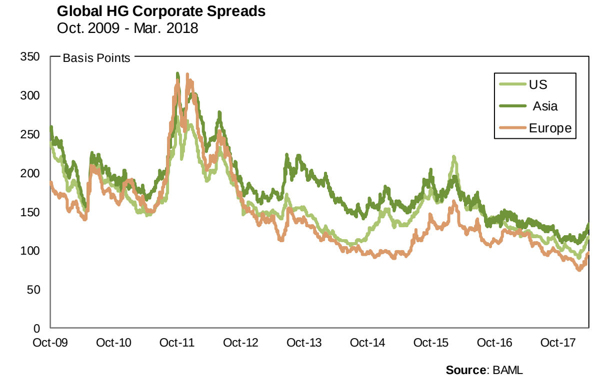
In terms of total return, emerging market Latin America and European equities were the outperformers in the first quarter, while developed market equities globally underperformed. Asian HG lost 1.6% in the first quarter, while Asian HY indices lost 1.04%.

Clearly, the turn in the US interest rate cycle (10-year US treasuries have broken through the psychologically important 3.0% level), coupled with questions related to the credit quality of Chinese and Indian enterprises and the overall contraction in Asian credit spreads in recent years to "cyclically tight" levels, is likely to give investors pause – in addition, surging market volatility and increased risk aversion at the margin will contribute to 2018 being a challenging year in the Asian credit space.

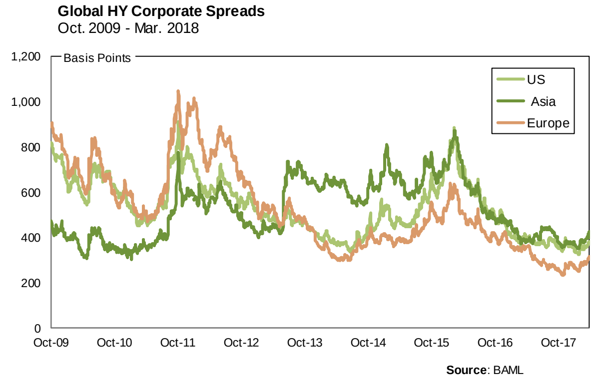
In this environment, a laser-like focus on total return, in the form of relatively high coupons to offset a widening in both interest rates and credit spreads, would be the recommended approach for investors to adopt. So the correct approach would be to concentrate on selectively choosing either beaten-down HY names, or focusing on credits with better prospects that are likely to withstand the periodic sell-offs in bonds between now and yearend.

Yet another consequence of the turn in investor sentiment, which has adversely impacted the performance of USD-denominated credits, would be for investors to turn their attention towards the LCY-denominated domestic fixed income markets – a trend very much in evidence in China in India, but also in smaller markets such as Malaysia, where foreign investor holdings of domestic government securities has increased as a proportion of total holdings, over 2017-18. We expect this trend to continue through the rest of 2018.

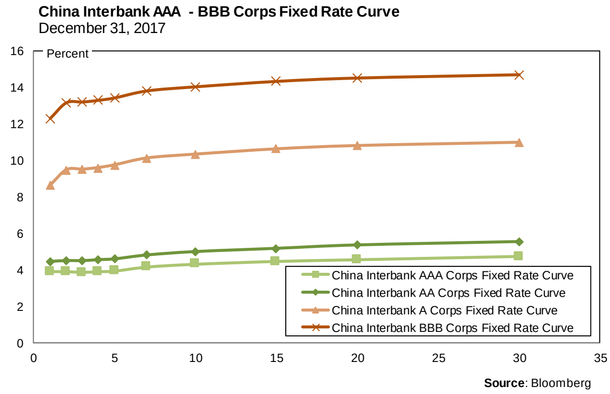
7.1. Global HG Corporate Spreads



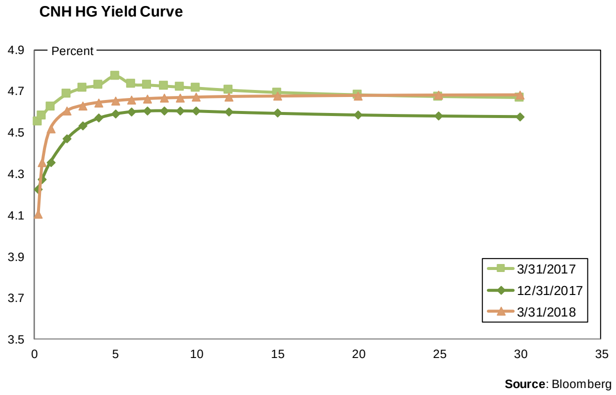
7.2. Global HY Corporate Spreads



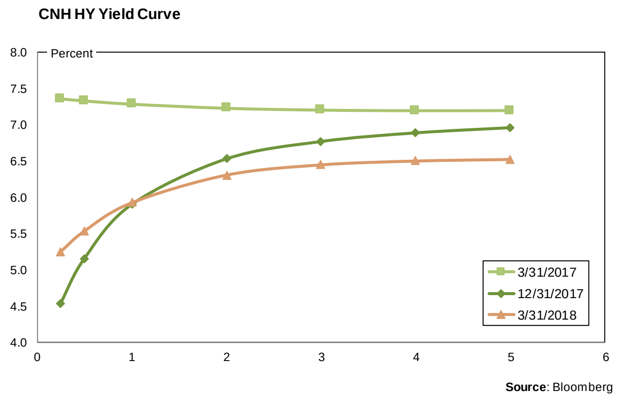
7.3. China Interbank AAA - BBB Corps Fixed Rate Curve



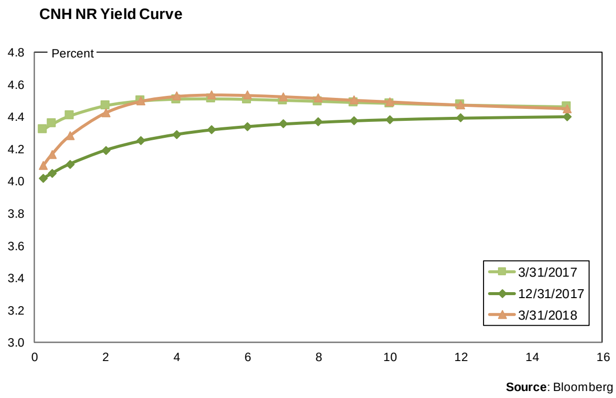
7.4. CNH HG Yield Curve



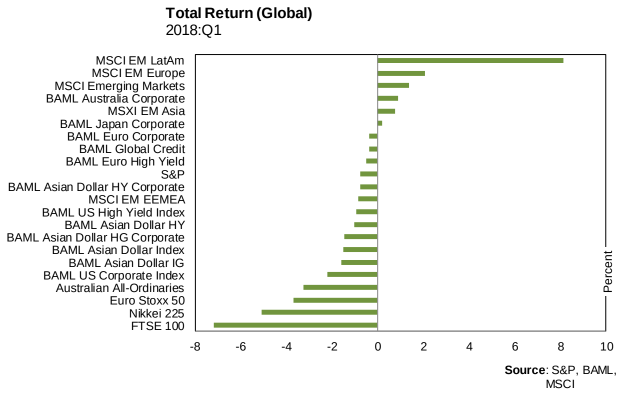
7.5. CNH HY Yield Curve



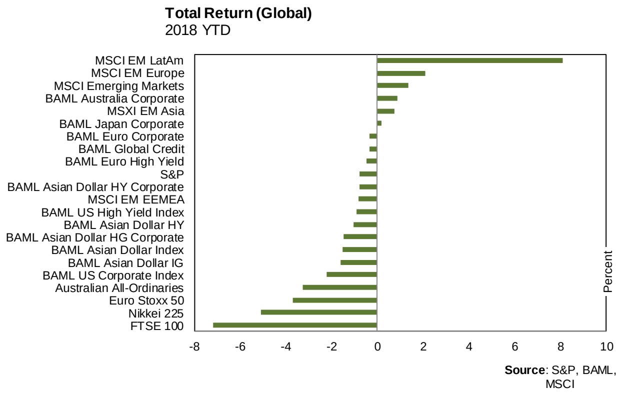
7.6. CNH NR Yield Curve



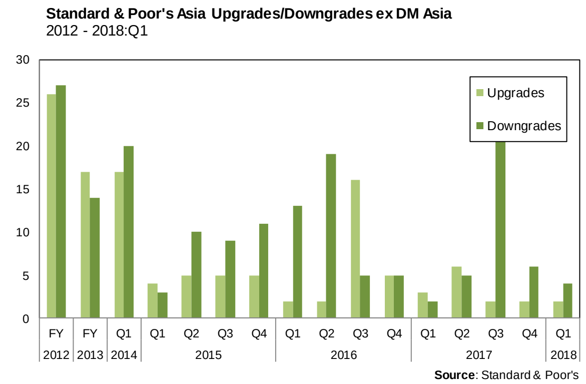
7.7. Global Returns, Quarter-End



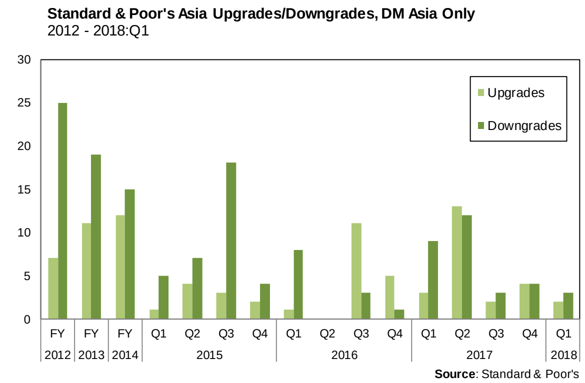
7.8. Global Returns, 2018



7.9. Asia Upgrades / Downgrades ex DM Asia



7.10. Asia Upgrades / Downgrades, DM Asia



7.11. Asian Upgrades & Downgrades, Standard & Poor's, First Quarter 2018

Upgrades	Country	Date	Rating
Southern Cross Airports Corporation Holdings Ltd.	Australia	3/26/2018	BBB+
Yanlord Land Group Limited	Singapore	3/14/2018	BB
GS Caltex Corp.	Korea, Republic of	3/14/2018	BBB+
Toshiba Corp.	Japan	1/19/2018	CCC+

Downgrades	Country	Date	Rating
Ricoh Co. Ltd.	Japan	3/6/2018	BBB+
Glenmark Pharmaceuticals Ltd.	India	3/1/2018	BB-
Ricoh Leasing Company, Ltd.	Japan	3/7/2018	BBB+
BIS Industries Ltd.	Australia	1/15/2018	D
SMRT Corp. Ltd.	Singapore	3/13/2018	AA+
PT MNC Investama Tbk.	Indonesia	2/2/2018	CCC-
PT Pelabuhan Indonesia III (Persero) (Republic of Indonesia)	Indonesia	3/28/2018	BB+

7.12. Asian Defaults, Standard & Poor's, First Quarter 2018

Defaults	Country	Type
BIS Industries Ltd.	Australia	Distressed Exchange

8. Summary of the Methodologies Adopted for this Report

2. G3 Asia ex Developed Market Asia (Japan, Australia, and New Zealand)

Issuance

Bond transactions are sourced primarily from Dealogic, with supplemental information sourced from Bloomberg. Unless otherwise noted, all issuance are long-term debt. High grade transactions are defined as transactions with a Dealogic "effective" rating of equal or greater than BBB-, and may include unrated transactions based on issuer and desk notes. High yield transactions are defined as transactions with a Dealogic "effective" rating of equal or less than BB+, and may also include unrated transactions based on issuer and desk notes. Unrated deals are those deals with no effective rating from Dealogic.

"All Asia" issuances are defined as being a corporate bond issue having a Dealogic "deal nationality" as within Asia, regardless of market, including domestic. Sovereign, sub-sovereign, medium-term notes, and agencies are also included from issuance, while supranational and ABS/MBS issuers are excluded from issuance. Loans are excluded from issuance as well.

"DM", or Developed Market Asia, include those deals with a Dealogic deal nationality from Australia, Japan, and New Zealand. "Ex DM Asia" will refer to all deals excluding those deals with a Dealogic deal nationality from Australia, Japan, and New Zealand.

G3 deals are defined a subset of deals in "All Asia" that are rank eligible, according to Dealogic's rank eligibility guidelines, with a tranche currency in US dollar (USD), European euro (EUR), or Japanese yen (JPY). There may exist deals within "All Asia" issuance that are denominated in a G3 currency but are not rank eligible and therefore not included in G3 tables but may be included in all other non-G3 exclusive tables.

"LCY", or local currency, are defined as a subset of deals in "All Asia" flagged by Dealogic local currency flag. G3 and LCY deals are not mutually exclusive and may overlap (e.g., in the case of Japanese JPY deals).

All issuances are denoted in USD equivalents based on exchange rates as of the issue date of the bond.

Outstanding

Outstanding figures are sourced from Bloomberg and contain all bonds from its corporate securities database, including private placements. Structured notes and debt secured by assets are excluded. All other criteria hew closely to the criteria for issuance.

All outstandings are denoted in USD equivalent based on exchange rates as of quarter-end.

Outstanding G3 deals are defined a subset of deals in "All Asia" that are rated with at least one rating by one of the four rating agencies: Fitch Ratings, Moody's, Standard & Poor's, or DBRS; and denominated in US dollar (USD), European euro (EUR), or Japanese yen (JPY). Deals that are not rated by one of the four rating agencies (those deals with a Bloomberg composite rating of "NA") are excluded. The "NA" exclusion is due to overlap between rank ineligible deals and those deals with no rating; a close analysis of the data reveals that the figures for data excluding "rank ineligible" deals and the figures for data excluding data rated N.A. in Bloomberg are similar.

2.1., 2.3, 2.5., 2.7., 2.9., 2.11., 2.13., 2.15., 2.17., 2.18.

Data are sourced from Dealogic.

Issuance by country is determined by Dealogic's deal nationality.

Issuance by tenor is determined by years of maturity at issuance.

Issuance by sector is defined by Dealogic's General Industry Group ("GIG") groupings and are not analogous to Bloomberg's Sector grouping.

2.2., 2.4., 2.6., 2.8., 2.10., 2.12.

Data are sourced from Bloomberg.

Outstanding by rating are by current composite rating assigned by Bloomberg. Composite ratings by Bloomberg are the average of ratings assigned by Moody's, Standard & Poor's, Fitch Ratings, and DBRS; a minimum of two ratings must be given to a bond before a composite rating is generated. "NR" denotes a bond with a single rating assigned by the four rating agencies, whereas "NA" denotes a bond with no rating from any of the four.

Outstanding by tenor are based on current tenor as quarter-end. "Other" includes those bonds with no listed maturity date and perpetuals.

3. LCY Asia ex Developed Market Asia (Japan, Australia and New Zealand)

3.1. - 3.4.

Issuance data are sourced from Dealogic according to the criteria outlined in Section 1. Outstanding data are sourced from Bloomberg according to the criteria outlined in Section 1.

4. All Asia

4.1. – 4.9.

Issuance data are sourced from Dealogic according to the criteria outlined in Section 1. Outstanding data are sourced from Bloomberg according to the criteria outlined in Section 1.

5. Domestic CNY

Issuance

Bond transactions for CNY are sourced from Dealogic and are defined as all issued debt denominated in renminbi (CNY) and in the domestic debt markets. CNY-denominated deals issued in the euro, foreign, or international markets are excluded. There are no restrictions on deal type and will include supranationals, medium-term notes, money market notes, securitisations, and commercial paper debt. Due to the lower restrictions in CNY issuance, CNY-denominated deals outside of Section 5 and 6 are a subset of the deals contained in Section 5 and 6.

Outstanding

Bond transactions for CNY are sourced from Bloomberg and are defined as debt denominated in CNY and issued in the domestic or domestic MTN markets. CNY-denominated deals issued in the euro, foreign, or international debt markets are excluded. Deals include corporate high grade bonds, high yield bonds, medium-term notes, money market and commercial paper debt. The combination of CNH and CNY debt exclude a small minority of dual-currency deals that are non-domestic, non-dim sum debt.

All outstandings are denoted in USD equivalent based on exchange rates as of quarter-end.

5.1. – 5.8.

Issuance data are sourced from Dealogic in accordance to the criteria specified in Section 5. Outstanding data are sourced from Bloomberg in accordance to the criteria specified in Section 5.

6. CNH

Issuance

Bond transactions for CNH are sourced from Dealogic and are defined as all debt denominated in renminbi (CNY) issued and in the euro, foreign, or international debt markets. CNY-denominated deals issued in the domestic market are excluded. There are no restrictions on deal type and will include supranationals, medium-term notes, money market notes, securitisations, and commercial paper debt. Due to the lower restrictions in CNH issuance, CNH-denominated deals outside of Section 5 and 6 are a subset of the deals contained in Section 5 and 6.

All issuance are denoted in USD equivalents based on exchange rates as of the issue date of the bond.

Outstanding

Bond transactions for CNH are sourced from Bloomberg and are defined as debt denominated in CNY and issued in the euro, foreign, or international debt markets. CNY-denominated deals issued in the domestic market are excluded. Deals include corporate high grade bonds, high yield bonds, medium-term notes, money market, securitisations, and commercial paper debt. The combination of CNH and CNY debt exclude a small minority of dual-currency deals that are non-domestic, non-dim sum debt.

All outstandings are denoted in USD equivalent based on exchange rates as of quarter-end.

6.1. – 6.8.

Issuance data are sourced from Dealogic in accordance to the criteria specified in Section 4. Outstanding data are sourced from Bloomberg in accordance to the criteria specified in Section 6.

7. Spreads, Credit Quality & Total Return

7.1. – 7.2. Global Corporate Spreads

High grade and high yield US and European corporate spreads are sourced from Bank of America-Merrill Lynch (BAML) indices. Spreads are over government debt.

US high grade spreads are sourced from BAML's US Corporate Index (C0A0) and tracks the performance of US dollar denominated investment grade corporate debt publicly issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at last 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of USD 250 million. Original issue zero coupon bonds, 144a securities (with and without registration rights), and pay-in-kind securities (including toggle notes) are included in the index. Fixed-to-floating rate securities are included provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities, including those with automatic principal write-down provisions, are included in the index provided they do not have an automatic common equity conversion, unless the conversion is activated by a regulatory authority in which case they are included. Other hybrid capital securities, such as those that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Securities issued or marketed primarily to retail investors, equity-linked securities, securities in legal default, hybrid securitized corporates, Eurodollar bonds (USD securities not issued in the US domestic market), taxable and tax-exempt US municipal securities and DRD eligible securities are excluded from the index.

European high grade spreads are sourced from BAML's Euro Corporate Index (ER00) and tracks the performance of EUR denominated investment grade corporate debt publicly issued in the Eurobond or Euro member domestic markets. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at last 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of EUR 250 million. Original issue zero coupon bonds and pay-in-kind securities, including toggle notes, are included in the index. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities are included in the index provided they do not have an automatic common equity conversion feature; these securities with triggers activated by a regulatory authority, including conversions into equity, qualify for inclusion. Also qualifying for inclusion are contingent capital securities with principal write-down triggers. Hybrid capital securities qualify for the index, including those potentially converting into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms. Euro legacy currency, equity-linked and securities in legal default are excluded from the Index. Securities issued or marketed primarily to retail investments do not qualify for inclusion in the index.

US high yield spreads are sourced from BAML's US High Yield Index (H0A0) and tracks the performance of US dollar denominated below investment grade corporate debt publicly issued in the US domestic market. Qualifying securities must have a below investment grade rating (based on an average of Moody's, S&P and Fitch), at last 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of $100 million. In addition, qualifying securities must have risk exposure to countries that are members of the FX-G10, Western Europe or territories of the US and Western Europe. The FX-G10 includes all Euro members, the US, Japan, the UK, Canada, Australia, New Zealand, Switzerland, Norway and Sweden. Original issue zero coupon bonds, 144a securities (with and without registration rights), and pay-in-kind securities (including toggle notes) are included in the index. Callable perpetual securities are included provided they are at least one year from the first call date. Fixed-to-floating rate securities are included provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities, including those with automatic principal write-down provisions, are included in the index provided they do not have an automatic common equity conversion, unless the conversion is activated by a regulatory authority in which case they are included. Other hybrid capital securities, such as those that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Securities issued or marketed primarily to retail investors, equity-linked securities, securities in legal default, hybrid securitized corporates, Eurodollar bonds (USD securities not issued in the US domestic market), taxable and tax-exempt US municipal securities and DRD eligible securities are excluded from the index.

European high yield spreads are sourced from BAML's Euro High Yield Index (HE00) and tracks the performance of EUR denominated below investment grade corporate debt publicly issued in the euro domestic or eurobond markets. Qualifying securities must have a below investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance. In addition, qualifying securities must have at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of EUR 100 million. Original issue zero coupon bonds, "Global" securities (debt issued simultaneously in the Eurobond and euro domestic markets), 144a securities and pay-in-kind securities, including toggle notes, qualify for inclusion in the index. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities are included in the index provided they do not have an automatic common equity conversion feature; these securities with triggers activated by a regulatory authority, including conversions into equity, qualify for inclusion. Also qualifying for inclusion are contingent capital securities with principal write-down triggers. Hybrid capital securities qualify for the index, including those potentially converting into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms. Euro legacy currency, equity-linked and securities in legal default are excluded from the Index. Securities issued or marketed primarily to retail investments do not qualify for inclusion in the index.

Asian high grade and investment grade spreads are sourced from J.P. Morgan's Asia Credit Index (JACI) and tracks the performance of USD-denominated Asian debt in the Asian ex-Japan region. Qualifying countries are those Asian region excluding Japan, including: China, Hong Kong, Indonesia, India, South Korea, Sri Lanka, Mongolia, Macao, Malaysia, the Philippines, Pakistan, Singapore, Thailand, Taiwan and Vietnam. Minimum deal sizes are $150 million and at least 12 months to final maturity at time of issuance. Fixed and floating rate instruments, and debt issued by sovereign, quasi-sovereign and corporate entities qualify for inclusion. Convertible bonds do not qualify for inclusion in the index.

7.3. China Interbank AAA Yield Curve

The curve is comprised of yuan-denominated fixed-rate corporate bonds that are traded on the China Interbank exchange. The bonds are rated AAA by local rating agencies. The values for the points on the curve are contributed by China Government Securities Depository Trust & Clearing Co Ltd (CDC).

7.4. – 7.6. China CNH Yield Curves

The securities underlying this curve are a subset of CNH data and sourced from Bloomberg; please see section 6 for more details regarding criteria. Ratings are determined by Bloomberg composite rating. Curves are fitted using Nelson-Siegel regression on mid-yield to maturity of underlying bonds.

7.7. – 7.8. Total Return (Quarter-End and YTD)

Total return data are sourced from various global bond and equity, including, but not limited to: the Bank of America-Merrill Lynch, Standard & Poor's, J.P. Morgan, and MSCI,

7.9. – 7.11. Asian Issuer Rating Actions

European issuer upgrades and downgrades are sourced from S&P. and are a combination of both emerging market, Japan, Australia, and New Zealand rating actions. Multiple upgrades or downgrades of a single issuer are counted separately. Rating actions are inclusive of both corporate (both credit, policy, or merger-related) as well as sovereign ratings.

Due to publication timing, these data set may run on a quarter lag.

7.12. Asian Issuer Defaults

European issuer upgrades and downgrades are sourced from S&P and are a combination of both emerging market, Japan, Australia, and New Zealand defaults reported. Defaults are inclusive of both corporate (both credit, policy, or merger-related) as well as sovereign defaults.

9. Disclaimer

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10. Credit

ASIFMA

Vijay Chander, Executive Director, Fixed Income

Timothee Bihet, Associate

SIFMA

Kyle Brandon, Managing Director, Director of Research

Sharon Sung, Vice President, Research

Growing Asia's Markets

UNIT 3603, TOWER 2

LIPPO CENTRE

89 QUEENSWAY

ADMIRALTY

HONG KONG

TEL +852 2531 6500

WWW.ASIFMA.ORG