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Growing Asia's Markets

ASIA CREDIT REPORT

Third Quarter 2018

PREPARED IN PARTNERSHIP WITH

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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.**

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1. 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 Third Quarter 2018

Total G3 issuance in 3Q'18 came in at USD 40.4 billion (bn) as of September 30, down 42.2% quarter-over-quarter (qoq) from 2Q'17 (USD 70.0bn) and down 41.1% year-over-year (yoy), inclusive of high grade (HG), high yield (HY), and unrated deals. The Sino-US trade war and consequent weakness in the Chinese markets, rising oil prices and consistent weakness in the Asian EM space as on account of relentless USD strength, has adversely impacted issuance in the two of the region's key markets, China and India. In addition, rising US interest rates and the first signs of EM weakness spreading globally, are likely to keep Asian credit markets on the defensive going into the final quarter of 2018.

1) YTD HG issuance (of USD 139.9bn) continues to easily outpace HY issuance of USD 34.4bn. HY issuance dropped 51.8% in the third quarter, falling to USD 6.6bn from 2Q'18 issuance of USD 13.6bn; while HY issuance in 2018 is not expected to reach 2017's peak of USD 66.0bn, 2017 is likely to reach the second highest annual volume in high yield issuance.

2) A combination of individual sector downgrades, such as those carried out by ratings agency S&P, on a number of Chinese Local Government Financing Vehicles (LGFVs) and market resistance, even when coupons appear to be generous (such as those for certain Indonesian HY issuers) have led to a combination of deals being delayed, deal sizes being reduced or even being pulled. This has also contributed to the fall in G3 debt issuance volumes.

3) However, according to Dealogic, with Asian companies having to refinance just a shade under USD 40 bn in debt, there may be no alternative but to tap the markets at whatever price – this could contribute to further spread widening and sustained market weakness in the days and weeks ahead – the current nervousness in both developed markets and the EM world, suggests that investors in Asian debt will be extremely cautious, going into yearend.

4) One possibility is that Asian issuers may choose to tap the LCY bond markets – which look increasingly attractive, as sustained USD strength might convince Asian borrowers to look at the onshore debt markets at the margin. Under the circumstances, it is possible that the gradual revival seen in the offshore renminbi (or CNH) dim sum bond market in Hong Kong, could gain further momentum.

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

For the third quarter 2018, total G3 issuance stood at USD 40.4bn, a decline of 42.2% and 41.1% qoq and yoy. China remains the largest issuing country in the third quarter, dominating Asian issuance at USD 26.3bn, or approximately 65.2% of G3 issuance; of third quarter volume, USD 18.1bn and USD 5.9bn were in HG and HY deals, respectively. South Korea continues to remain the second largest issuer with USD 7.7bn of issuance, followed by Singapore with USD 1.9bn. Year to date, G3 issuance totaled USD 186.1bn, composed of $139.9bn in HG issuance, USD 34.4bn in HY issuance and the balance in unrated issuance; G3 is issuance is on track to fall short of 2017 volumes of USD 316.0bn but remain similar to 2016 volumes.

Finance remains the largest sector of G3 issuance in the third quarter (USD 20.4bn), followed by real estate/property (USD 10.3bn) and transportation (USD 1.8bn).

In terms of ratings, within the HG space, BBB transactions accounted for the largest share of deals priced during the quarter, with USD 8.4bn in total issuance, followed by A+ rated transactions totaling USD 7.1bn.

Within HY issuance, the BB category led with USD 1.9bn of issuance, followed by B+ rated transactions of USD 1.4bn.

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 3Q'18, with a total of USD 32.0bn in short tenor issues being priced during the quarter. Of these, USD 24.6bn were HG deals, USD 5.1bn were HY deals and the balance unrated.

Overall G3 debt outstanding in the region stood at USD 1.2tn at the end of September 2018, increasing 3.4% qoq and 16.6% yoy. High grade debt accounted for the bulk of total outstanding debt at USD 756.6bn (a 2.3% increase qoq and 14.3% increase yoy), followed by unrated debt at USD 249.2bn (a growth of 2.3% qoq and 20.6% yoy). HY debt was USD 157.4bn (an increase of 11.3% qoq and 21.8% yoy).

China (with USD 572.9bn), South Korea (with USD 129.3bn) and Hong Kong (with USD 113.2bn) remain the three regions with the largest shares of G3 debt outstanding. Ratings-wise among HG issuers, deals rated A+ (USD 134.3bn) account for the largest share of debt outstanding, while BB transactions outstanding (USD 32.0bn) just edged out B+ (USD 31.8bn) in the HY space. By sector, financials with a total of USD 367.4bn accounted for 32% of outstanding G3 paper, followed by sovereigns (USD 255.0bn) and real estate (USD 120.5bn). Finally, deals with remaining tenors of 5 years or less (USD 733.1bn) accounted for the bulk of total Asia (ex-Japan, Australia and NZ) debt outstanding.

Turning to the LCY debt markets, USD 162.5bn in total LCY-denominated debt was issued in Asia (ex-Japan, Australia & NZ) in 3Q'18, a decline of 22.1% qoq (USD 208.7bn) and a decline of 37.7% yoy (USD 260.7bn). China remains the dominant issuer in the LCY debt markets in the third quarter, with USD 139.1bn issued, followed distantly behind by South Korea (USD 7.6bn) and India (USD 4.9bn). Finance continues to remain the largest category in 3Q'18 with USD 65.9bn issued, followed by real estate/property (USD 16.7bn) and construction/building (USD 16.7bn).

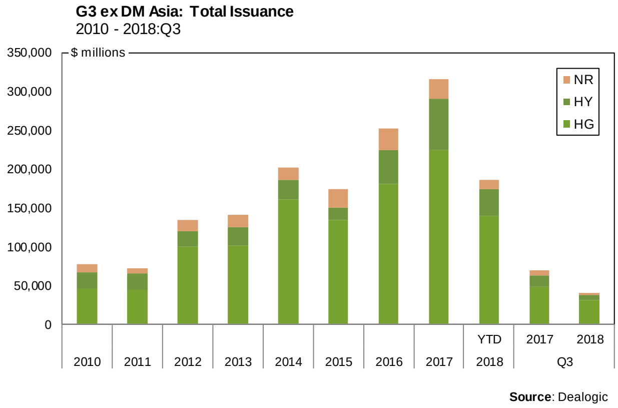
Total LCY debt outstanding at the end of 3Q'18 in Asia (ex-Japan, Australia and NZ) stood at USD 18.3tn, rising by 5.6% qoq, with HG and HY debt outstanding declining 0.8% and 54.9% qoq, respectively. Unrated debt increased 5.9% to $17.7bn. China remains the bulk of total outstanding LCY debt at USD 12.2tn (representing two-thirds of all LCY debt), followed by India (USD 2.5tn) and South Korea (USD 1.5tn).

State of the Asian leveraged loan market

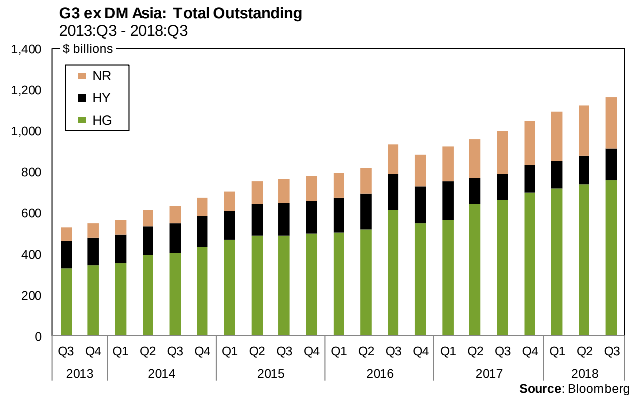
Asian leveraged loan debt, excluding developed market Asia, rose slightly USD 47.4bn in 3Q'18, an increase of 5.3% qoq but a decline of 23.0% yoy. Leading sectors in 3Q'18 issuance were chemicals (USD 13.4bn), finance (USD 7.9bn), and transportation (USD 5.3bn). Leveraged loan issuance was primarily used for project financing (USD 19.4bn) and repayment of debt (USD 6.7bn). Sponsored loan deals, as a percentage of issuance in the third quarter, slightly increased to 4.8% (from 3.2% for 2Q'18) of deals by dollar amount. Year to date, leveraged loan issuance totaled USD 146.1bn.

Looking ahead, heightened market risks could lead to a rapid deterioration in the quality of leveraged loans, leading to lower recovery rates than in past downturns, according to ratings agency Moody's. Thus, while 2018 has been a year of innovation in the Asian CLO market, the negative market trends that have very much been in evidence in the third quarter, could also have a dampening effect on the Asian leveraged loan market going into 2019.

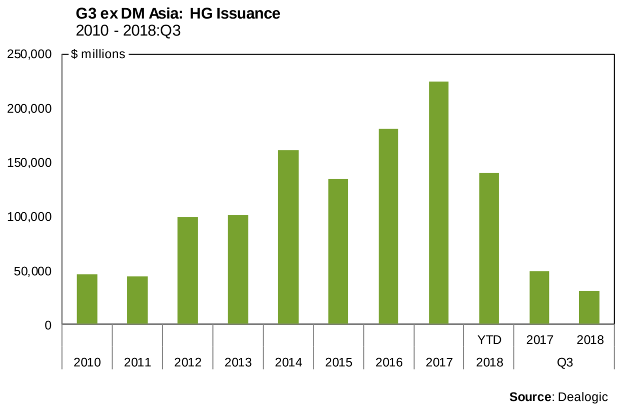
1.1. G3 ex DM Asia: Total Issuance



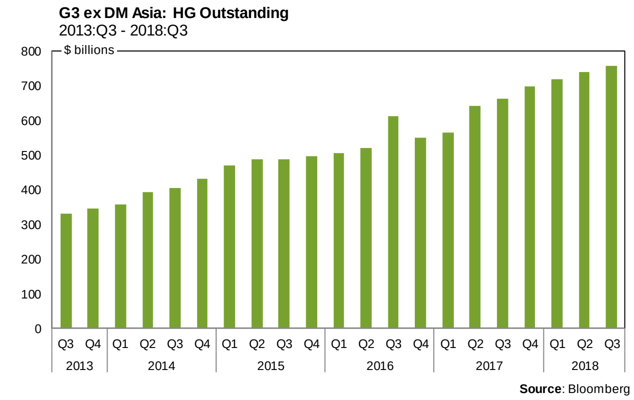
1.2. G3 ex DM Asia: Total Outstanding



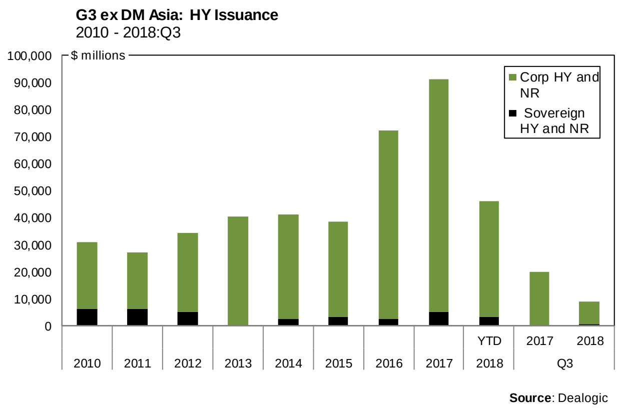
1.3. G3 ex DM Asia: HG Issuance



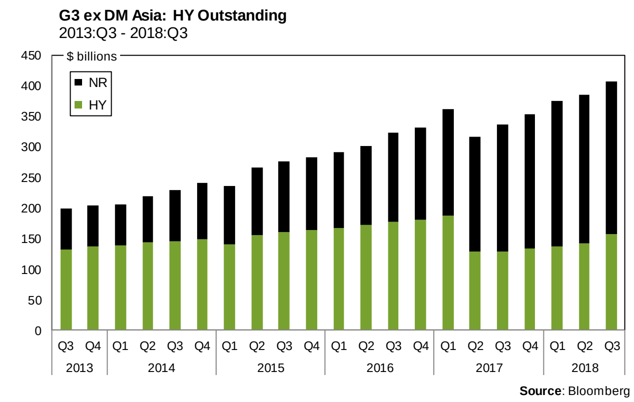
1.4. G3 ex DM Asia: HG Outstanding



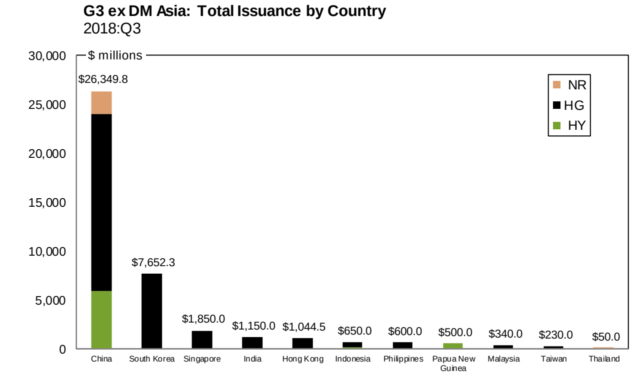
1.5. G3 ex DM Asia: HY Issuance



1.6. G3 ex DM Asia: HY Outstanding

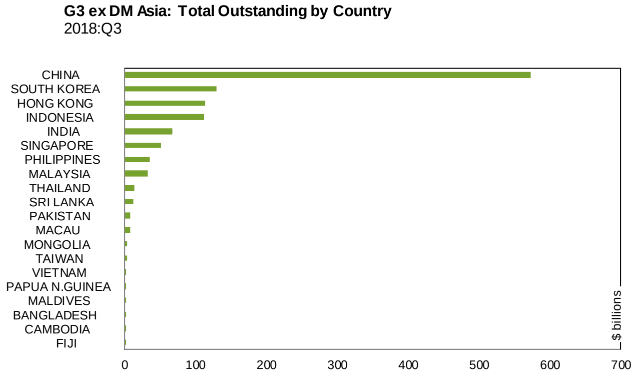


1.7. G3 ex DM Asia: Total Issuance by Country



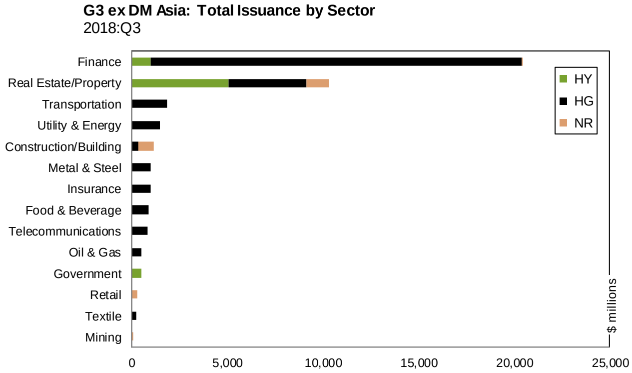
Source: Dealogic

1.8. G3 ex DM Asia: Total Outstanding by Country



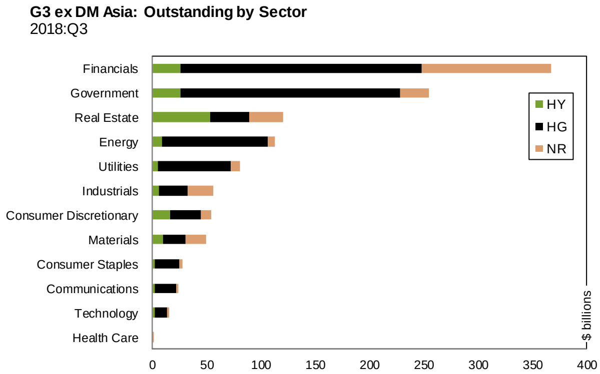
Source: Bloomberg

1.9. G3 ex DM Asia: Total Issuance by Sector



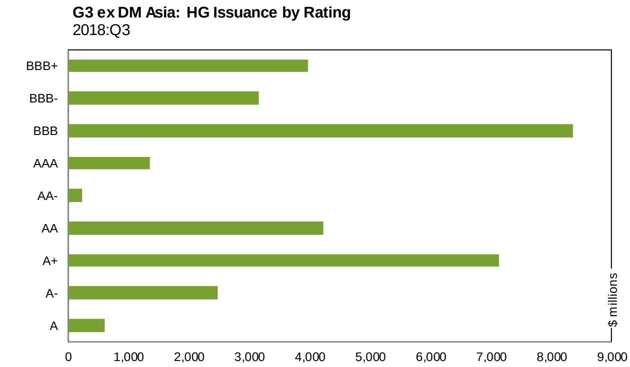
Source: Dealogic

1.10. G3 ex DM Asia: Total Outstanding by Sector



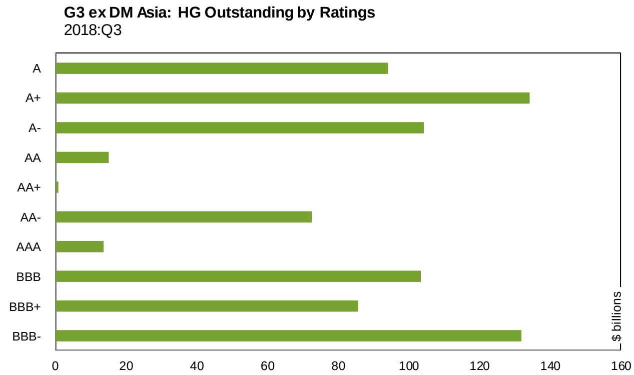
Source: Bloomberg

1.11. G3 ex DM Asia: HG Issuance by Rating



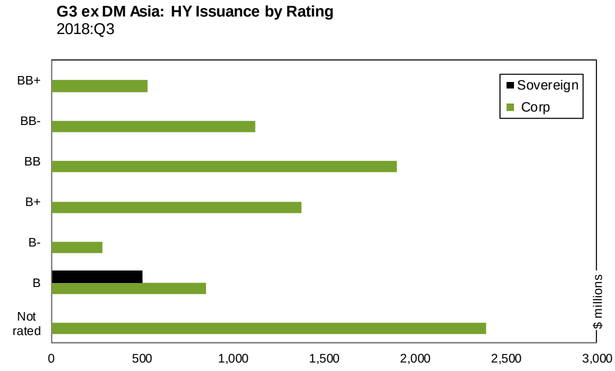
Source: Dealogic

1.12. G3 ex DM Asia: HG Outstanding by Rating



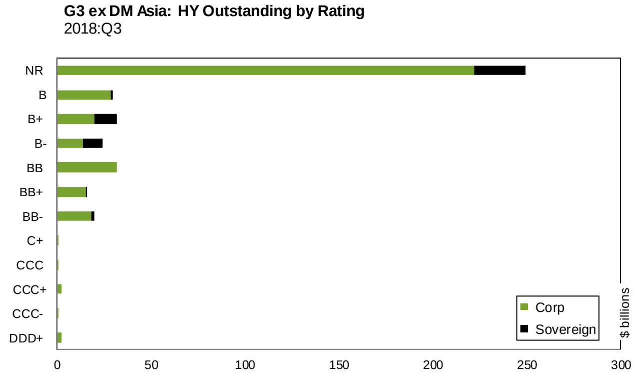
Source: Bloomberg

1.13. G3 ex DM Asia: HY Issuance by Rating



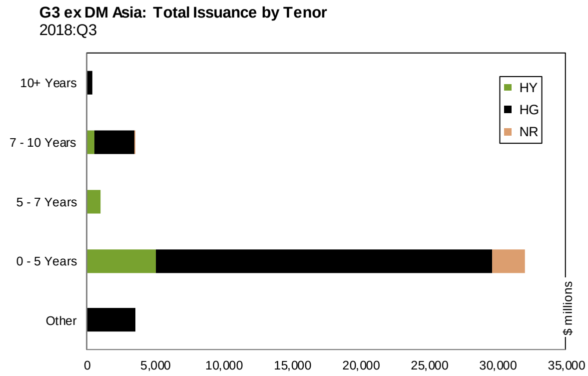
Source: Dealogic

1.14. G3 ex DM Asia: HY Outstanding by Rating



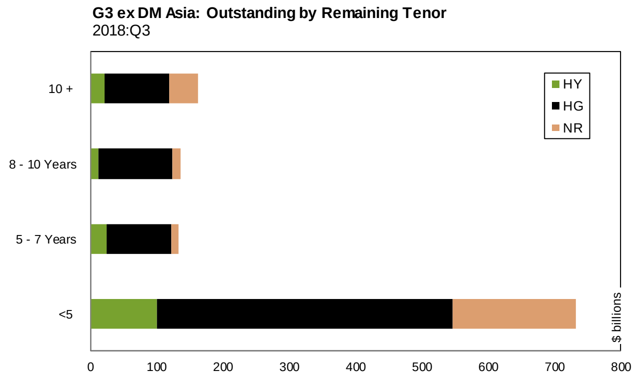
Source: Bloomberg

1.15. G3 ex DM Asia: Total Issuance by Tenor



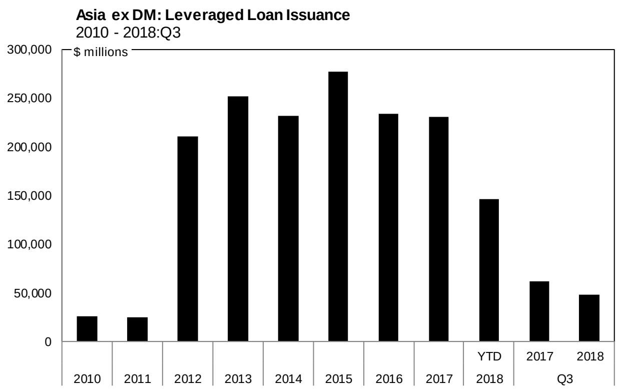
Source: Dealogic

1.16. G3 ex DM Asia: Outstanding by Remaining Tenor



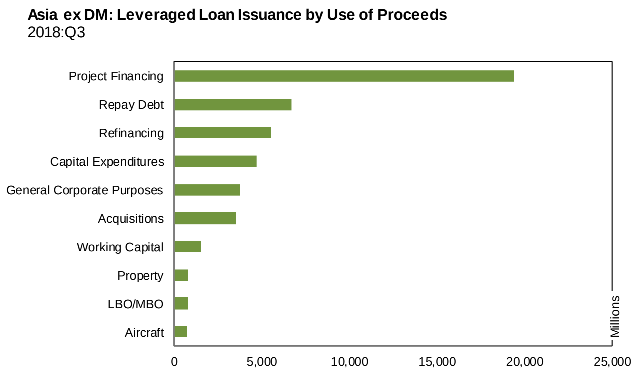
Source: Bloomberg

1.17. Asia ex DM: Total Leveraged Loan Issuance



Source: Dealogic

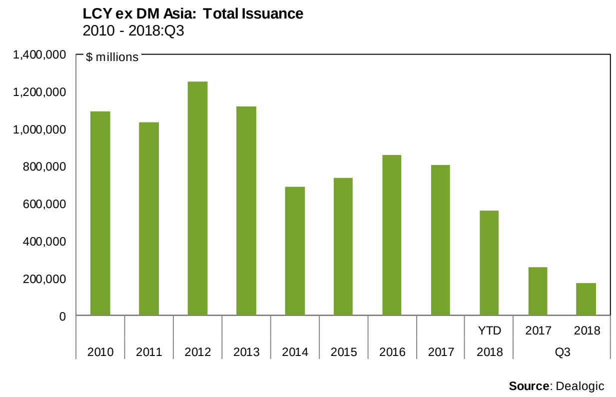
1.18. Asia ex DM: Total Leveraged Loan Issuance by Use of Proceeds



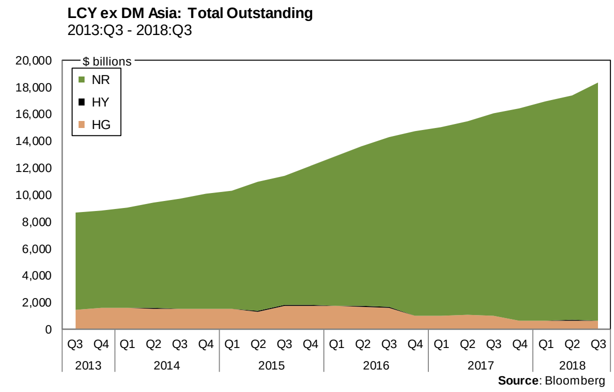
Source: Dealogic

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

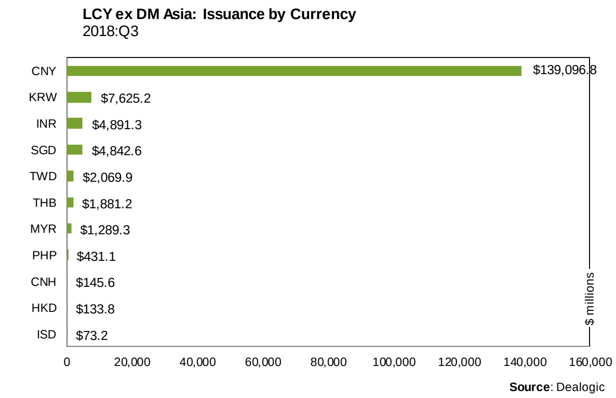
2.1. LCY ex DM Asia: Total Issuance



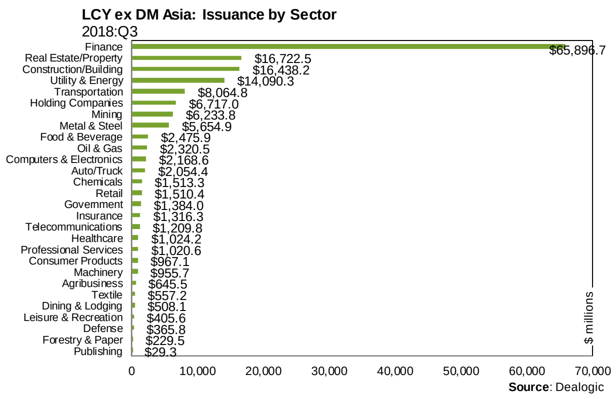
2.2. LCY ex DM Asia: Total Outstanding



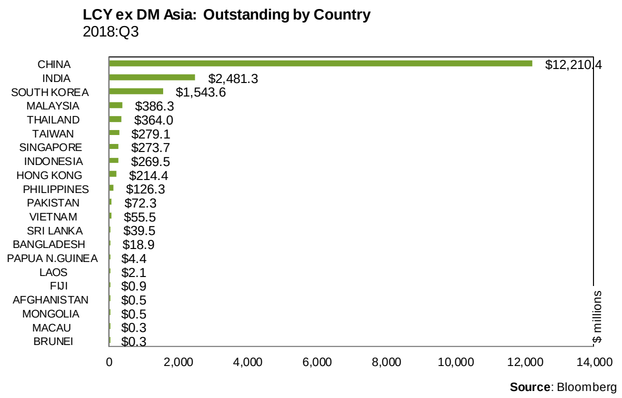
2.3. LCY ex DM Asia: Issuance by Currency



2.4. LCY ex DM Asia: Issuance by Sector



2.5. LCY ex DM Asia: Outstanding by Country



3. 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 77.7bn in the third quarter of 2018, a steep decline of 49.0% qoq and 60.3% yoy. In 3Q'18, total HG G3 issuance in Asia was USD 52.6bn, a decline of 52.3% qoq and 63.2% yoy; HY issuance was USD 7.0bn, a decline of 66.3% qoq and 72.3% yoy; and unrated issuance was USD 18.1bn, a decline of 15.5% qoq and a 34.3% yoy. Year to date, G3 issuance including developed market Asia totaled USD 379.1bn, on pace to be well below the highs of 2016 and 2017.

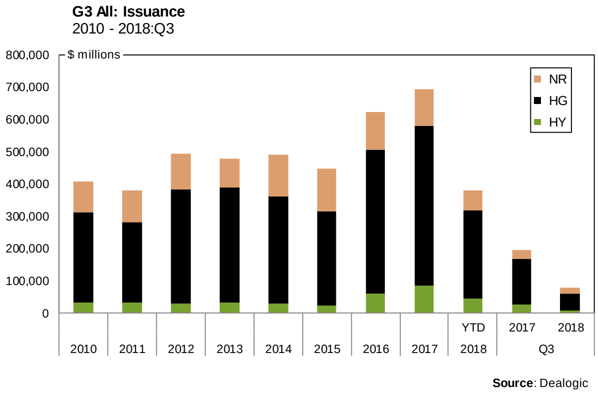
LCY debt issuance, including Japan, Australia, and New Zealand, fell to USD 424.5bn in the third quarter of 2018, a decline of 17.5% qoq and 29.5% yoy, comprised of USD 298.5bn in HG issuance, USD 5.0bn in HY issuance and USD 121.0bn in unrated issuance. Year to date, LCY debt issuance totaled USD 1.5tn, a decline of 12.1% from the first three quarters of 2017.

Key highlights are as follows:

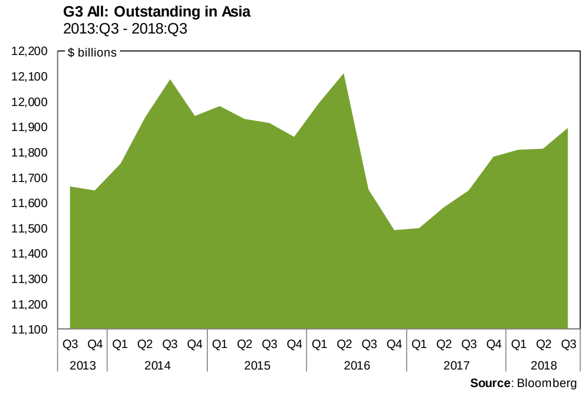
1) EM currency weakness, coupled with differing policy responses throughout the region, has resulted in yields diverging across the Asian markets – Tightening in Malaysia and the Philippines and the rupee (INR) weakness in India, has led to rising LCY yields in these countries – Any sign that USD strength has run its course, coupled with the attractive yields on offer, could attract renewed inflows into these countries. On the other hand, China has responded with policy stimulus and besides, there is no indication that the renminbi (CNY) has bottomed. Uncertainties still abound with respect to the future direction of the trade war and US-Chinese relations across the spectrum. This could keep Chinese assets on the defensive.

2) On the other hand, some of the negatives on the PRC macro front are offset by the fact that China is a leading player in the green bond market globally. According to the Climate Bonds Initiative, a total of USD 13bn in Chinese green bonds was issued in 1H'18 (out of a total of USD 74bn in such bonds being issued globally in the same period – the figure has since risen to over USD 100bn in total issuance in the first nine months of the year). In addition to green bonds, the opening of the "Bond Connect" channel for foreign investment into China, which has considerably streamlined overseas investor access to wthe local Chinese markets, is also a positive which should support Chinese domestic issuance at the margin.

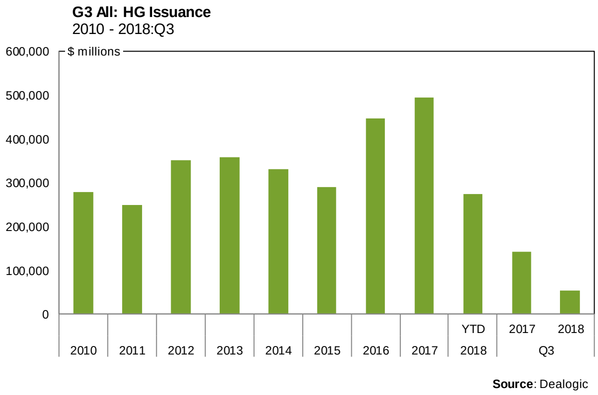
3.1. G3 All: Total Issuance



3.2. G3 All: Total Outstanding

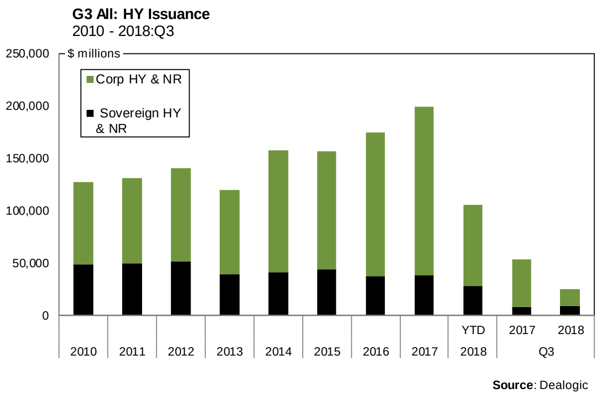


3.3. G3 All: HG Issuance

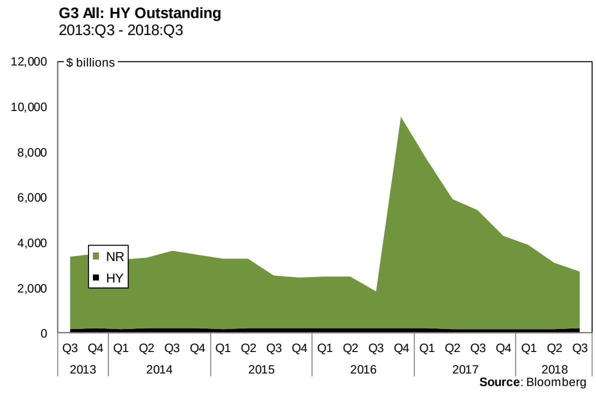


3.4. G3 All: HG Outstanding

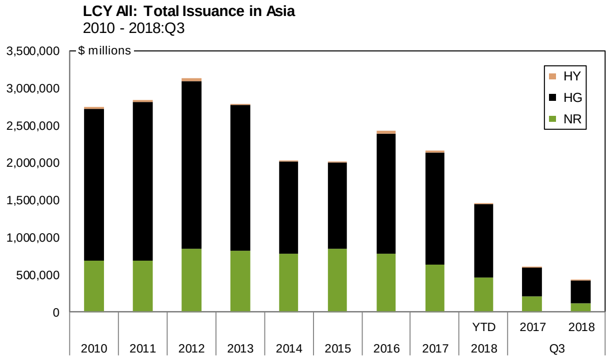
3.5. G3 All: HY Issuance



3.6. G3 All: HY Outstanding



3.7. LCY All: Total Issuance



Source: Dealogic

4. China – Domestic

Total Issuance & Outstanding – Domestic CNY issuance

Total domestic CNY issuance stood at USD 139.5bn in the third quarter of 2018, down 11.1% from the second quarter (USD 157.0bn) and 31.7% yoy (USD 204.5bn). By tenor, 71.4% of third quarter issuance (USD 99.7bn) would mature in five years or less, followed by the 7-10 year bucket (USD 24.1bn, or 17.3% of issuance). By sector, finance led issuance totals (USD 52.3bn), followed by construction (USD 15.8bn) and real estate (USD 15.0bn). Year to date, domestic issuance totaled USD 423.2bn, a decline of 6.0% from the first three quarters of 2017. Outstanding domestic CNY debt stood at USD 12.1tn at the end of third quarter 2018, with sovereigns leading totals (USD 7.0tn), followed by financials (USD 2.9tn) and industrials (USD 959.7bn).

Some of the same factors that underpinned issuance earlier in 2018 should ensure that despite the marginal falls on a qoq and yoy basis, overall Chinese domestic issuance should remain healthy in absolute terms. These factors are as follows:

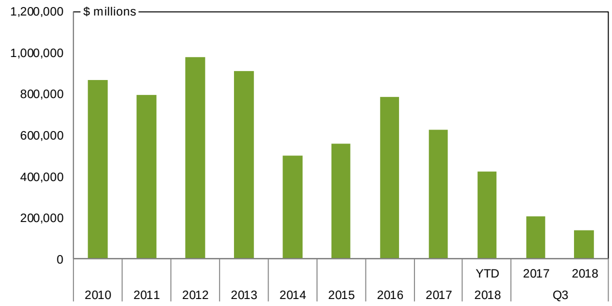
a) Sovereign panda issuance, some of it linked to the Belt and Road Initiative (BRI), should continue to be robust, going forward.

b) Refinancing requirements across the board – for the property sector, LGFVs and banks/financial institutions – given the large volumes of maturing debt, should also support issuance.

c) Finally, at a time of great economic uncertainty, Chinese authorities would not be too pleased to see economic growth slow down too sharply. A range of stimulus measures, aimed at supporting both consumer spending and investment, will also result in greater volumes of debt from a range of issuers, at the margin.

4.1. Domestic CNY All: Total Issuance

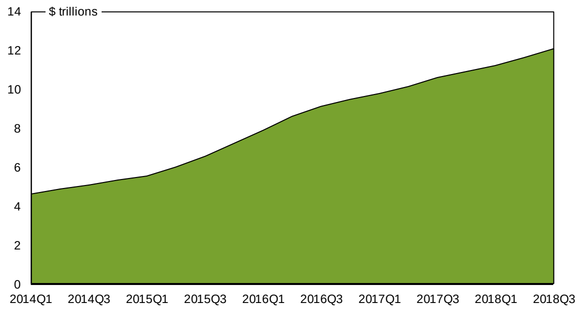
Domestic CNY All: Total Domestic Issuance
2010 - 2018:Q3



Source: Dealogic

4.2. Domestic CNY All: Total Outstanding

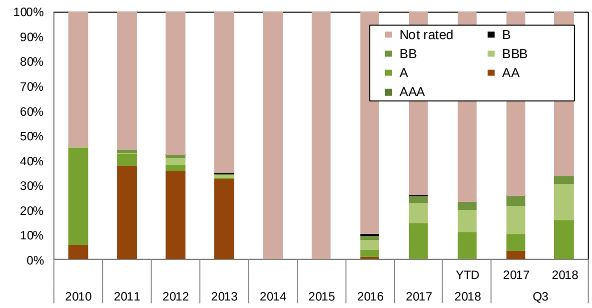
Domestic CNY All: Total Outstanding
2014:Q1 - 2018:Q3



Source: Bloomberg

4.3. Domestic CNY All: Issuance by Rating

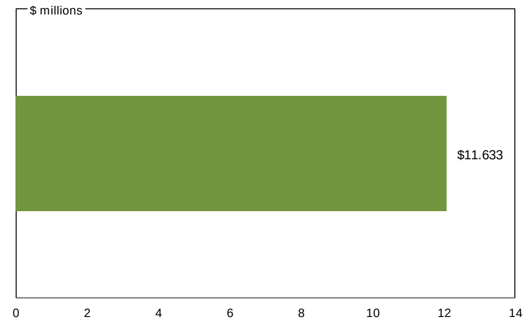
Domestic CNY All: Issuance by Rating
2010 - 2018:Q3



Source: Dealogic

4.4. Domestic CNY All: Outstanding by Rating

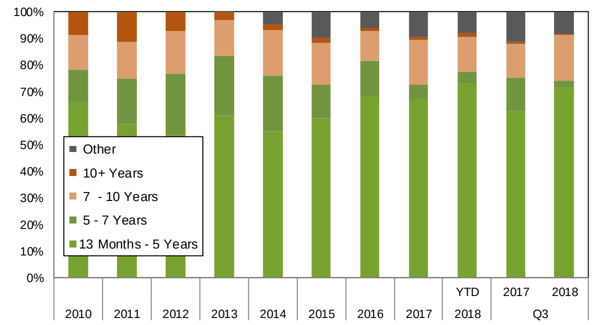
Domestic CNY All: Outstanding By Rating
2018:Q3



Source: Bloomberg

4.5. Domestic CNY All: Issuance by Tenor

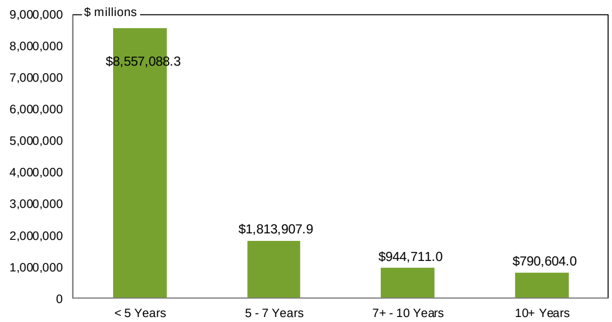
Domestic CNY All: Total Issuance by Tenor
2010 - 2018:Q3



Source: Dealogic

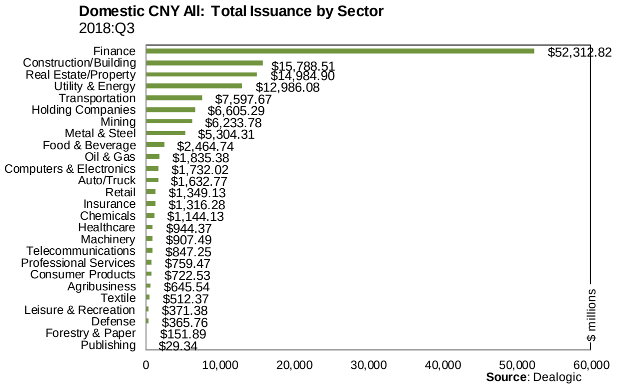
4.6. Domestic CNY All: Outstanding by Remaining Tenor

Domestic CNY All: Outstanding By Remaining Tenor
2018:Q3

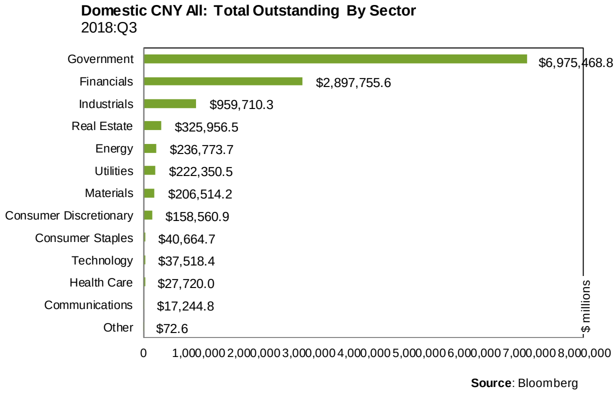


Source: Bloomberg

4.7. Domestic CNY All: Issuance by Sector



4.8. Domestic CNY All: Outstanding by Sector



5. China – CNH

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

The pace of offshore issuance slowed even further in the third quarter from the second quarter; an equivalent of USD 2.0bn in CNH bonds were issued, a decline of 36.2% qoq but an increase of 7.7% yoy. In terms of tenor, transactions with tenors of 5-years or less accounted for 83.7% of third quarter issuance. HG deals rated AA- totaling USD 502.5mn had the highest rating share among deals (25.7%). In terms of sector, real estate was the largest issuer in 3Q'18 (USD 1.1bn), followed by finance (USD 759.0bn) and computers (USD 87.4mn). Year to date, offshore issuance totaled USD 8.9bn, a decline of 48.6% from the first three quarters of 2017.

Looking ahead, there is some hope that there could be a revival of dim sum bond issuance, on a combination of factors:

a) The HK authorities have provided incentives for certified green bond issuance out of the city – As a consequence, there could be a flurry of "green" dim sum issuance, especially those connected to the "Greater Bay Area" and the BRI initiatives.

b) As onshore debt financing gets more expensive, or the USD-denominated debt markets prove inaccessible, Chinese issuers could be tempted to tap the "dim sum" bond markets in HK.

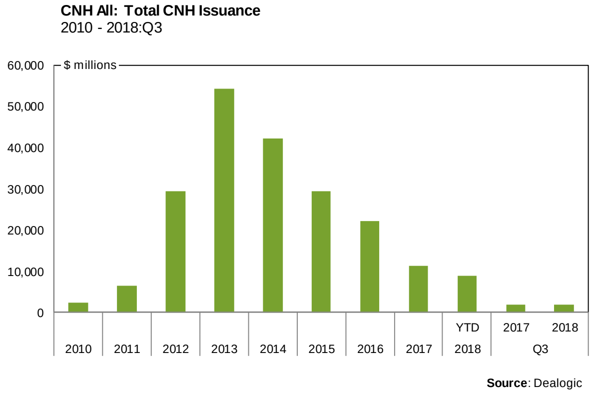
CNH Deposit Base by Location	Amt (USD bn)	As of
Hong Kong	90.9	Aug-18
Singapore	20.3	Jun-18
Taiwan	46.8	Jul-18
Korea, Republic of	1.5	Aug-18
Luxembourg	9.8	Aug-15
United Kingdom	10.3	Jun-18
France	3.2	Dec-15

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 6.687 = USD 1.0, GBP 1.30 = USD 1.0

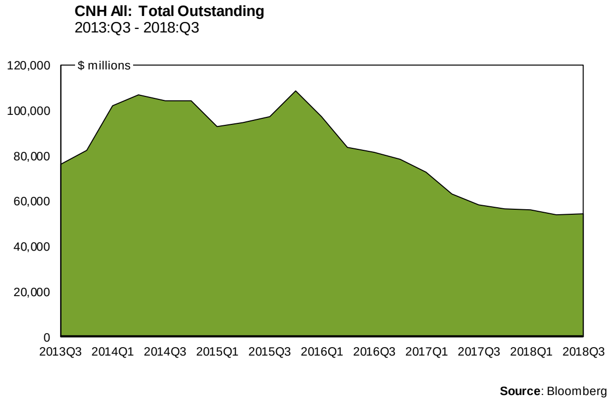
CNH deposits rose slightly in Hong Kong, South Korea, and Taiwan in the most recent data ending the third quarter 2018, although total deposits remain relatively low overall.

The total of dim sum bonds outstanding stood at USD 54.2bn at the end of the third quarter, a small increase of 0.1% qoq but a decline of 6.9% yoy.

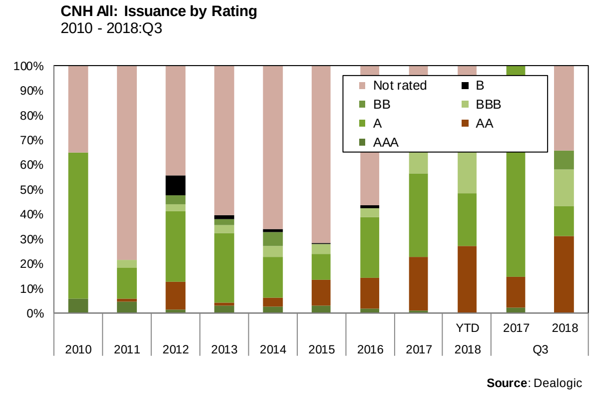
5.1. CNH All: Total CNH Issuance



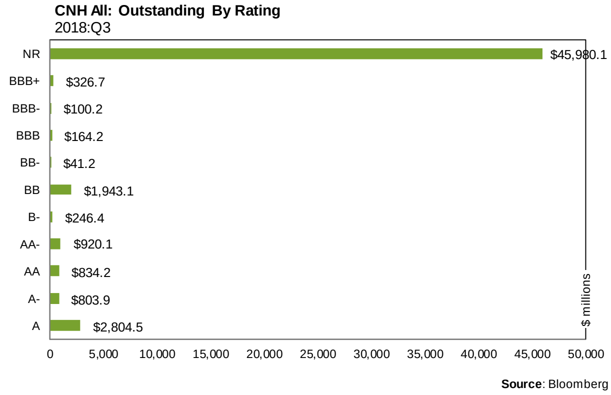
5.2. CNH All: Total Outstanding



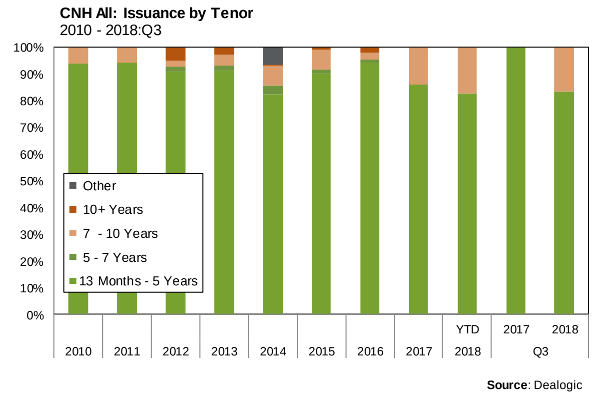
5.3. CNH All: Issuance by Rating



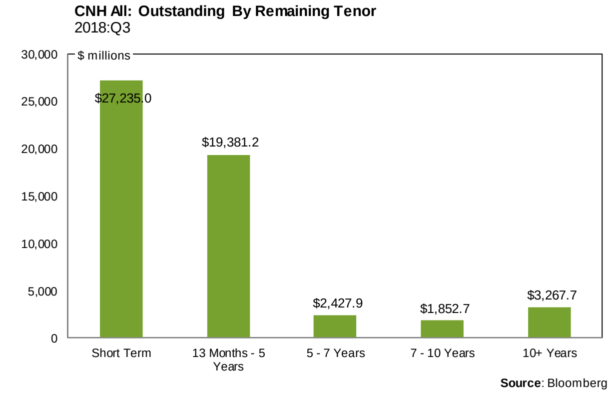
5.4. CNH All: Outstanding by Rating



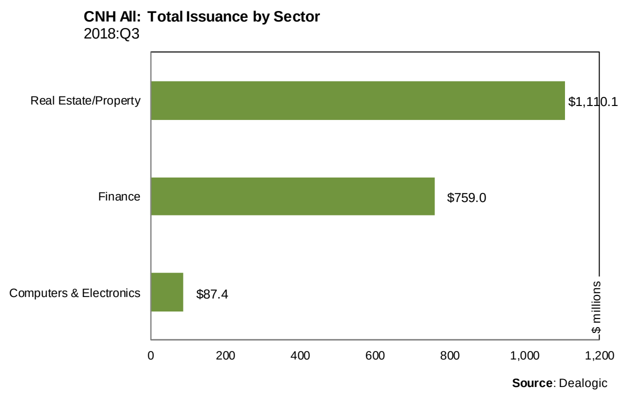
5.5. CNH All: Issuance by Tenor



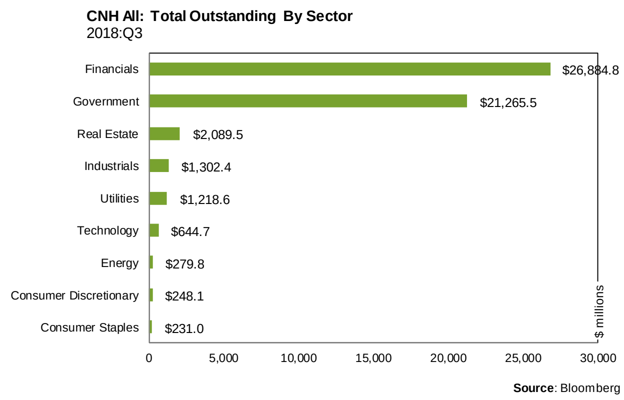
5.6. CNH All: Outstanding by Remaining Tenor



5.7. CNH All: Issuance by Sector



5.8. CNH All: Outstanding by Sector



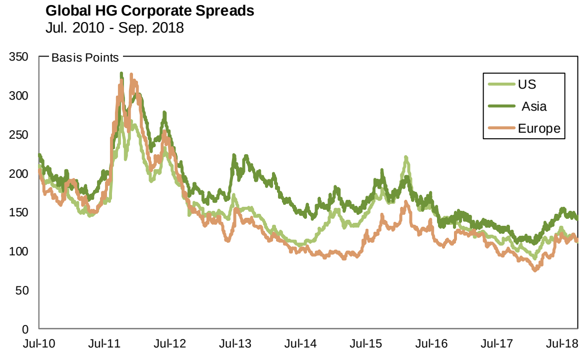
6. Spreads, Credit & Total Return

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

Asian HG bond spreads traded wider in 3Q'18 from the second quarter (147 bps vs. 138 bps): US and European HG bonds traded similarly, at 119 bps and 116 bps respectively. This was slightly wider than the second quarter: for 2Q'18 the US averaged 118 bps and Europe averaged 103 bps. US HY spreads were broadly unchanged at 346 bps in 3Q'18 relative to 2Q'18, while European HY spreads widened by 30 bps to 357 bps from 327 bps over the same period. Asian HY spreads underperformed significantly, widening to 560 bps at the end of 3Q'18 from 460 bps at the end of 2Q'18.

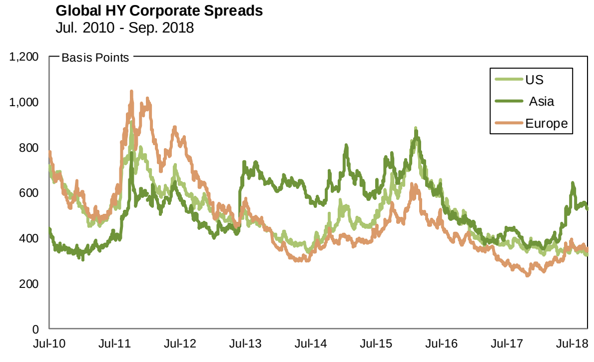
The recent volatility in global markets could continue to keep Asian credit spreads on the defensive for the rest of 2018. Longer-term, going into 2019, a great deal will hinge on how quickly markets stabilize – in any event, the Asian credit markets may well be the first to normalize, given the recent underperformance, particularly in the HY space. Moreover, on a relative value (RV) basis, Asia continues to offer value compared to the US and Europe, which is yet another reason to remain constructive on Asia.

6.1. Global HG Corporate Spreads



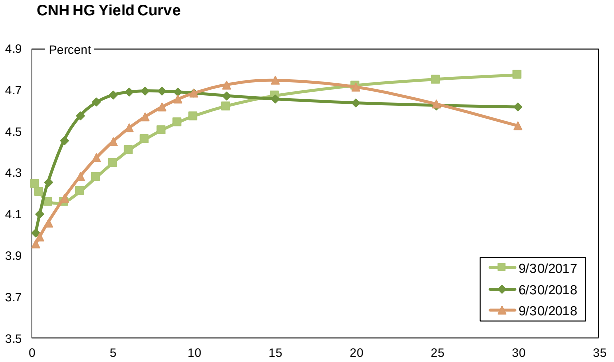
Source: ICE BofAML

6.2. Global HY Corporate Spreads



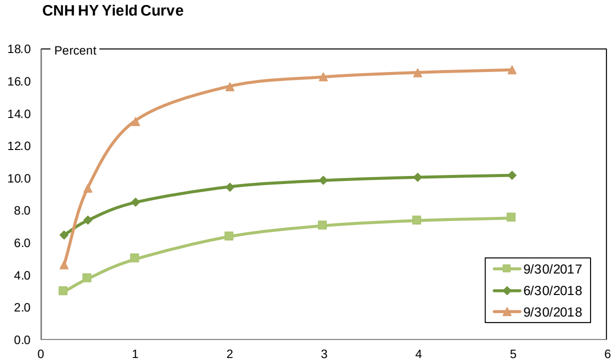
Source: ICE BofAML

6.3. CNH HG Yield Curve



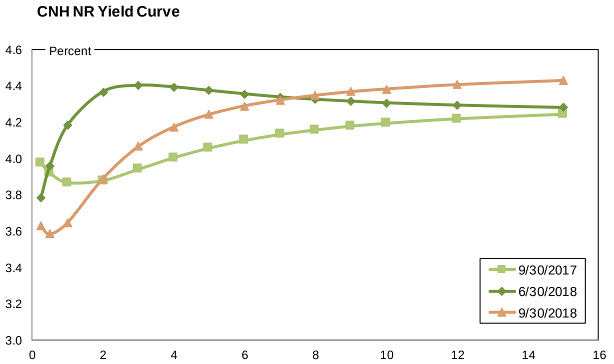
Source: Bloomberg

6.4. CNH HY Yield Curve



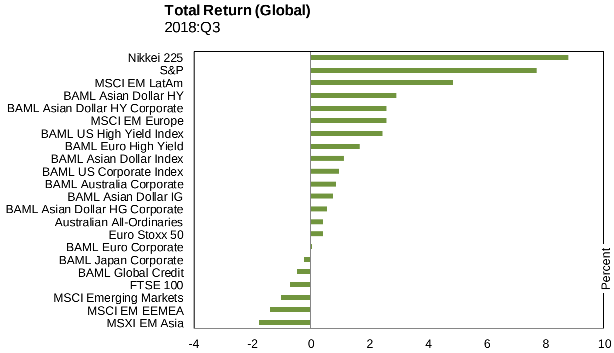
Source: Bloomberg

6.5. CNH NR Yield Curve



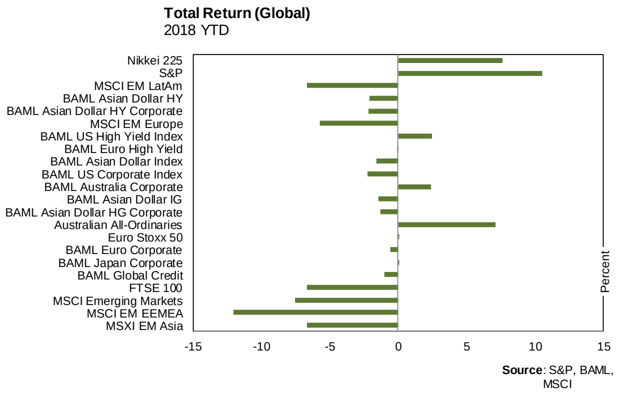
Source: Bloomberg

6.6. Global Returns, Quarter-End

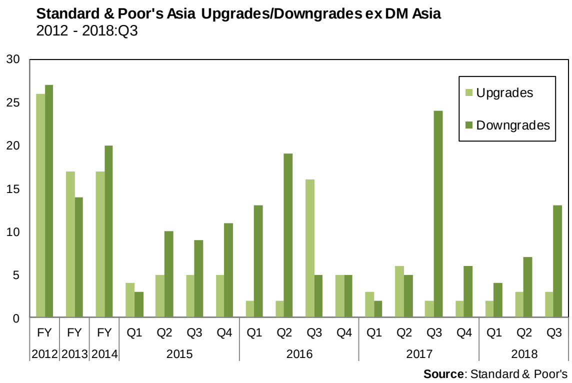


Source: S&P, BAML, MSCI

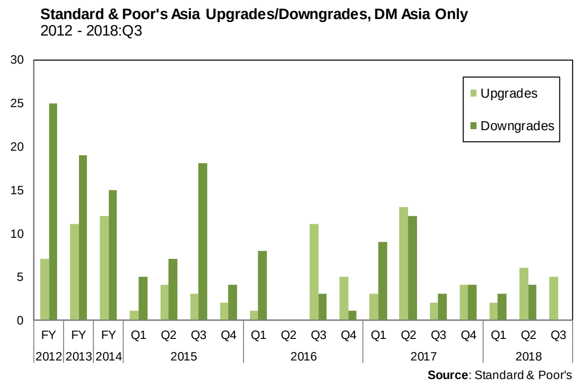
6.7. Global Returns, 2018



6.8. Asia Upgrades / Downgrades ex DM Asia



6.9. Asia Upgrades / Downgrades, DM Asia



6.10. Asian Upgrades & Downgrades, Standard & Poor's, Third Quarter 2018

Upgrades	Country	Date	Rating
Hitachi Ltd.	Japan	8/7/2018	A
PT Perusahaan Listrik Negara (Persero) (Republic of Indonesia)	Indonesia	8/20/2018	BBB-
EMECO Holdings Ltd.	Australia	9/11/2018	B
Bright Food (Group) Co. Ltd.	China	7/18/2018	BBB
Health and Happiness (H&H) International Holdings Ltd.	China	9/10/2018	BB+
ITOCHU Corp.	Japan	7/13/2018	A
Christchurch International Airport Ltd.	New Zealand	9/18/2018	A-
New Energy Group Ltd.	Australia	9/20/2018	A-

Downgrades	Country	Date	Rating
China South City Holdings Limited	Hong Kong	7/30/2018	B-
Tianjin Binhai New Area Construction & Investment Group Co. Ltd.	China	9/11/2018	BBB
Tata Motors Ltd.	India	7/26/2018	BB
Beijing Automotive Group Co. Ltd.	China	8/30/2018	BBB+
Zhenjiang Transportation Industry Group Co. Ltd.	China	9/11/2018	BB-
Wuxi Construction and Development Investment Co. Ltd.	China	9/11/2018	BBB
China Huarong Asset Management Co. Ltd.	China	8/28/2018	BBB+
Yida China Holdings Ltd.	China	8/21/2018	B-
Guorui Properties Ltd.	China	9/7/2018	B-
Chongqing Nan'an Urban Construction & Development (Group) Co. Ltd.	China	9/11/2018	BBB
Zhongrong Xinda Group Co. Ltd.	Hong Kong	7/13/2018	B
Qinghai Provincial Investment Group Co. Ltd.	China	9/6/2018	B+
Tianjin Infrastructure Construction & Investment Group Co. Ltd	China	9/11/2018	BBB+

7. Summary of the Methodologies Adopted for this Report

1. 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.

1.1., 1.3, 1.5., 1.7., 1.9., 1.11., 1.13., 1.15., 1.17., 1.18.

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.

1.2., 1.4., 1.6., 1.8., 1.10., 1.12.

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.

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

2.1. - 2.4.

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.

3. All Asia

3.1. – 3.9.

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.

4. 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.

4.1. – 4.8.

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.

5. 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.

5.1. – 5.8.

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.

6. Spreads, Credit Quality & Total Return

6.1. – 6.2. Global Corporate Spreads

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

US high grade spreads are sourced from ICE BofAML'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 ICE BofAML'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 ICE BofAML'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 ICE BofAML'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.

6.3. – 6.5. 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.

6.6. – 6.7. 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,

6.10. – 6.10. 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.

8. Disclaimer

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9. 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