October 2019 / Investment Insights

Asian Dollar Bonds: A Giant Awakens

Accounting for 45%[1] of global GDP, 63% of global GDP growth[2], and about three-fifths of the planet's population[3], Asia is an economic powerhouse that is forecast to provide half the world's middle class by 2020[4]. Now it has a trillion dollar hard currency credit market, befitting its new status. We explore the investment implications.

It's been 20 years since the Asian financial crisis, when the region's tiger economies suddenly turned tail and ran. Now they appear to have come roaring back. But these tigers are not identical to the old ones. No less fierce and agile, they are now more mature and resilient, and for investors today, more compelling than when they were cubs.

July 2017 marked the 20th anniversary of the Asian crisis in which numerous economies descended into crisis as their debt spiralled and currencies collapsed. The contagion across Asia was exacerbated by the region's dependence on a huge balance of US dollar-denominated liabilities, much of it owned by foreign investors who were quick to withdraw their capital.

Over the subsequent two decades, Asian economies have recovered to become a remarkable economic force. The region now accounts for 45%[5] of global GDP and 63% of global GDP growth[6]. The region's population has also continued to grow dramatically so that Asia now harbours about three-fifths of the planet's population[7] and is forecast to account for half the world's middle class by 2020[8].

In spite of the region's phenomenal economic growth, Asian bond markets have been largely overlooked by investors from outside the region. But the hard currency Asian bond market has quintupled in size over the past decade and is growing too large for investors to ignore. Crucially, this growth in the market has coincided with a significant shift in ownership structure. Domestic Asian investors now account for more than three-quarters of new issuance take-up and are the dominant investor constituency.

In this paper, we explore the implications of the rise in dollar-denominated Asian fixed income credit and consider the opportunity for global investors in this expanding asset class.

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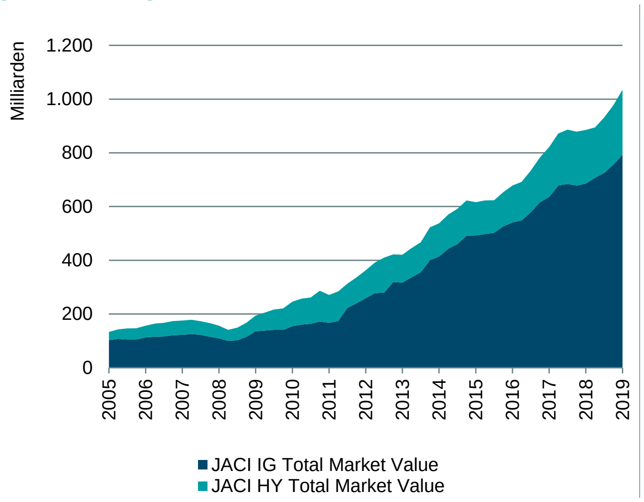
[1] GDP based on purchasing power parity. World Economic Outlook, International Monetary Fund, April 2019
[2] World Economic Forum, IMF, 21 March 2019
[3] World Economic Outlook, International Monetary Fund, April 2019
[4] The Asian Century is set to begin, 26 March 2019, Financial Times, *https://www.ft.com/content/520cb6f6-2958-11e9-a5ab-ff8ef2b976c7*
[5] GDP based on purchasing power parity. World Economic Outlook, International Monetary Fund, April 2019
[6] World Economic Forum, IMF, 21 March 2019
[7] World Economic Outlook, International Monetary Fund, April 2019
[8] The Asian Century is set to begin, 26 March 2019, Financial Times, *https://www.ft.com/content/520cb6f6-2958-11e9-a5ab-ff8ef2b976c7*

Asia's remarkable economic growth has been widely commented upon. But investors' chief interest historically has been in equities, for two fundamental reasons. First, investors have sought exposure to Asia's exponential growth. Secondly, there was little issuance of debt immediately after the 1997-8 financial crisis. However, the 2008-9 global financial crisis reshaped the landscape. The significant expansion and increased maturity of Asia's credit market, and the region's economic growth, even though its pace has slowed a little, make it timely to look afresh at Asia.

FIGURE 1: JP MORGAN ASIAN CREDIT INDEX MARKET CAPITALIZATION

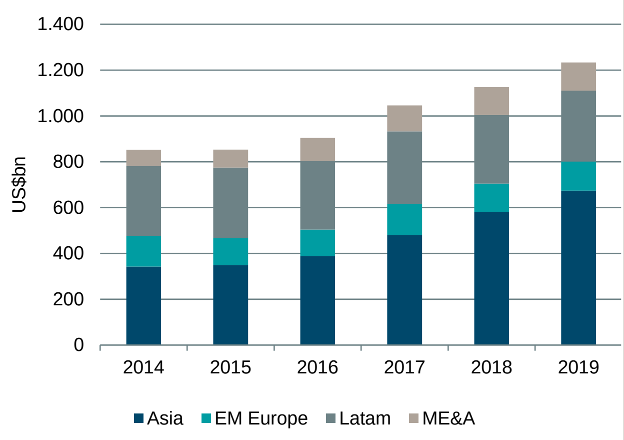


Source: JP Morgan, as of September 2019

Our analysis suggests that the fixed income investment landscape in Asia is changing in a number of fundamental ways. Perhaps most importantly, within hard currency credit markets (debt denominated in developed market currencies such as US Dollars), Asia appears best positioned among the various Emerging Markets (EM) regions to become a viable alternative to US and European markets for the global investor.

The Asian hard currency credit market, which includes quasi-sovereign and sovereign issuers, exceeded $1trn in size for the first time in July this year, more than quintupling since 2009 (Figure 1) and now within reach of the US Corporate High Yield (HY) market ($1.25trn)[9].

FIGURE 2: EM CORPORATE BOND STOCK BY REGION



Source: JP Morgan, Emerging Markets Corporate Strategy Presentation, as of September 2019

In part, this is a function of the increasing size of the Asian corporate debt market, which has accounted for around 87% of the total growth of the external EM corporate debt stock over the past five years[10]. Within the region China has been the most important growth engine but other countries, notably Indonesia, India, and South Korea, have also made meaningful contributions. The annualised growth rate of 19.85% witnessed over the period 2008 to Q3 2019[11] may not be sustainable, but with new issuance volumes running at a record on a year-to-date basis (Gross $205bn, Net $93.8bn[12]), it is reasonable to expect the absolute size of the market to continue to expand further.

Valuations

As is often the case with something new, assumptions vary. Investors approaching Asian hard currency credit markets expecting extraordinary spread compensation should, like a newcomer to the Hong Kong property market, be realistic about their expectations.

[9] Bloomberg Barclays US Corporate High Yield Index, as of 30 September 2019
[10] JP Morgan Emerging Markets Corporate Strategy Presentation, as of September 2019
[11] J.P. Morgan Asian Credit Index, 30 September 2019
[12] Source: Bond Radar, Bloomberg, J.P. Morgan estimates, 30 August 2019

FIGURE 3. INDEX CHARACTERISTICS OF US AND ASIA CORPORATE BONDS

	US IG Corporate	Asia IG Corporate	US HY Corporate	Asia HY Corporate
Effective Duration (years)	7.60	5.03	3.43	2.59
Average Rating	A3	A3	B1	BB3

The above markets are represented by the following BOFAML indices: C0A0, ACIG, H0A0, ACHY. Data as of 30 September 2019

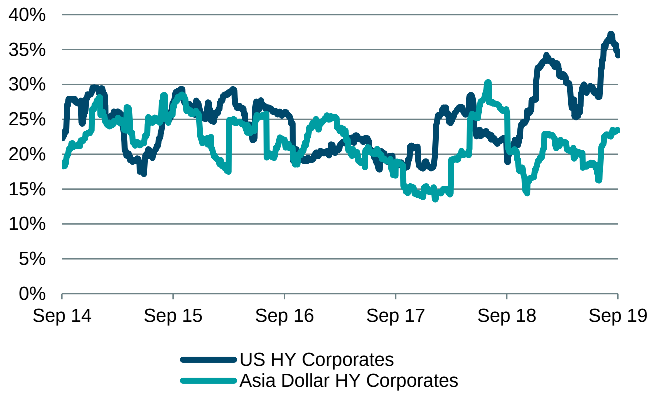
Against a challenging backdrop for global investors, where close to $14.8trn of debt (or 26% of global investment grade bonds) trades with negative yields[13], the JPM Asian Credit Index (JACI), which is split 77:23 in favour of Investment grade, trades at a spread to worst over US Treasuries of 210bps (30th September, 2019). By the same measure, Asian Investment Grade (IG) credit spreads were at 139bps, Asian High Yield at 559bps. The modest Asian credit risk premiums reflects the fact that Asia is fundamentally a high quality region. Indeed, most Asian countries have maintained their investment grade sovereign credit rating once achieved and only five markets - Sri Lanka, Pakistan, Bangladesh, Mongolia, and Vietnam - have a sub-investment grade rating at the sovereign level. Issuance from these countries represents merely 2.5%[14] of the JACI index.

However, while the absolute levels of Asian spreads may appear modest, they compare well to other fixed income markets. Investment Grade Asian corporate bonds offer a spread pick-up[15] of 24bps versus US Investment Grade Bonds, and Asian High Yield a pick-up of 231bps versus US High Yield. What is more, they do so with a lower level of interest rate sensitivity – equating to 2.6 years and 0.8 years less duration risk in the investment grade and high yield space respectively (Figure 3) relative to comparable markets in the US.

Risk

Some investors may perceive a higher level of risk for Asian credit but a closer look at various measures of risk suggests otherwise. The realised total return volatility of Asian corporate bonds compares favourably to the US corporate market, particularly in the investment grade space where the duration differential is most marked. Spread volatility (a cleaner measure of issuer credit risk) also shows no meaningful difference between the two high yield markets over the last five years (Figure 4). This is to say that investors in Asian fixed income benefit from higher yields, lower duration risk, vis-à-vis comparable US markets and, in the case of High Yield, comparable levels of spread volatility with a one notch rating pick up.

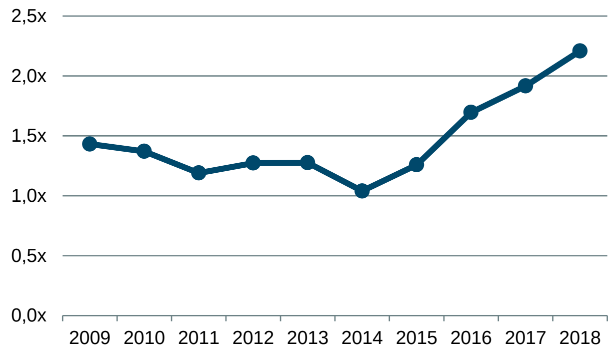
FIGURE 4: ROLLING 3 MONTH SPREAD VOLATILITY



	US HY	Asia Dollar HY
5Y ann vol	25.52%	22.48%

As of 30 Sept 2019. Pure corporate BOFAML indices

FIGURE 5: NET LEVERAGE/SPREAD (US IG OVER ASIA IG)



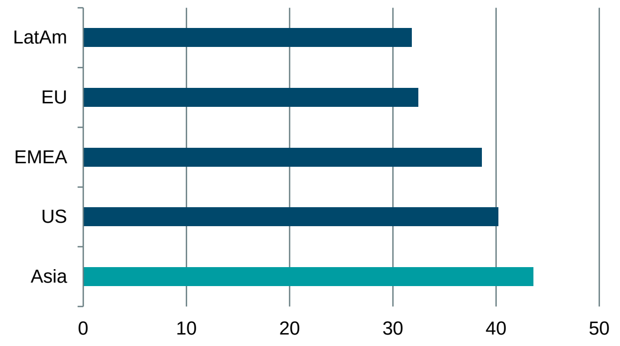
Data compares annual Net debt/EBITDA over SOT for US: JULI, for Asia: JACI IG. Source: JPM, August 2019.

Another useful metric of risk compensation used by investors when assessing market risks is the spread to leverage ratio. A measure of an issuer's operational flexibility, this ratio indicates the level of compensation (i.e. spread) investors demand per unit increase in leverage. Here again, Asia looks attractive with markedly lower levels of business leverage per unit of spread than in the US. Over 2018, US IG and HY net leverage per unit of spread was 2.2 times and 1.15 times that

[13] Bloomberg Barclays Global Negative Yielding Debt Index, 30 September 2019
[14] Bangladesh is not part of the JPM Asian Credit Index. Data as of 30th September 2019.
[15] Compares spread to worst of representative indices from BOFAML. Asian dollar corporates is represented by ACIG and ACHY, and US corporate indices are represented by C0A0 and H0A0. Data as of 30 September 2019.

of Asia IG and HY respectively[16]. Perhaps unsurprisingly, given lower operating leverage, defaults in Asia HY have also been lower than in US HY over the past decade, averaging 2.13% vs 3.75% from 2009-2018, with recovery levels in Asia the best globally (Figure 6). This is at least in part a reflection of the fact that according to Moody's Asia's covenant "quality is much stronger than the global average and the averages for the Americas and EMEA"[17] (Figure 7).

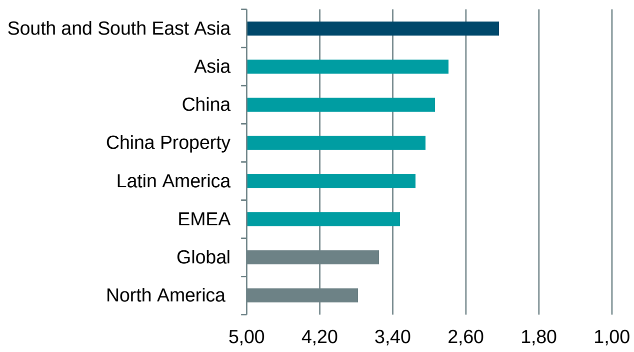
FIGURE 6: HIGH YIELD DEFAULT RECOVERY RATES*



Senior Unsecured Recovery Rate, 2009 - Sep 2019. Source: Bank of America Merrill Lynch. *Based on price 1 month after default

A real-world example of the ability of the Asian hard currency bond market to weather a downturn occurred in 2018, when the region was at the centre of prolonged market volatility. Concerns about a possible acute slowdown in China, as well as the opening skirmishes of the Sino-US trade conflict, coupled with rising rate expectations and idiosyncratic credit events, weighed on Asian markets. In the end, however, the Asia Dollar Corporate IG returned 0.04% for the year, and the Asian High Yield Corporate Bond market was down by -3.34%[18], despite the high yield market effectively being closed to new issuance for several months. Over the same period US Corporate IG fell by -2.25% and US HY Corporate by -2.26%[19]. Asia's credit performance was therefore not dissimilar to that seen in the US market. This underlines the evolution that has been taking place in Asia in recent years: volatility has been declining, while issuance and participation from the Asia region has been increasing, as we examine below. The net effect is that the Asian region is increasingly showing developed market characteristics.

FIGURE 7: COVENANT QUALITY SCORE BY REGION



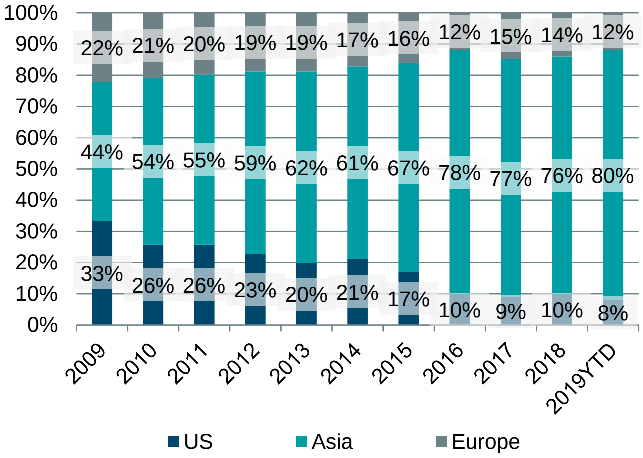
Excludes High Yield Life Bonds. Average scores reflect scores from January 1st 2011 to Jun 30th 2019. Source: Moody's Investor Services

Changing Ownership Structure

With the region's household incomes among the fastest growing of the emerging markets and its savings ratio well above the global average[20], Asian households, whether directly through personal investments, or indirectly via insurance policies and pension plans, are an increasingly powerful investor constituent. And, as is the case in established developed markets, investors in Asia, at least initially, have tended to prefer their home regions for investment opportunities. As a result, more and more wealth generated in Asia is remaining within the region, making Asian investors the dominant investor segment[21]. Figure 8 illustrates this point. The chart breaks out the allocation of Asian credit new issuance by investors' region of domicile. As of September this year, Asian investors are estimated to have accounted for 80% of Asian new issuance, up from under 50% ten years ago. These numbers are even more striking when China is considered in isolation. Asia's take up of new issuance of Chinese dollar credit is over 90%[22]. While secondary market holdings are unlikely to match primary allocations precisely, it is reasonable to suppose that the ownership patterns are similar.

[16] Source: JP Morgan, August 2019
[17] Moody's Investor Services, Research Announcement: Moody's – Covenant quality of Asian high-yield bonds weakened in Q2, but remained above record low, July 8th 2019
[18] Asia corporate market performance is based on BOFAML Asia Dollar IG Corporate index (ACIG) and BOFAML Asia Dollar HY Corporate index (ACHY).
[19] US corporate market performance is based on BOFAML US Corporate Index and BOFAML US High Yield Index.
[20] World Bank Data (Gross Savings as a % of GDP Philippines 42%, China 2017 46%, Indonesia 32%, Korea 35%, India 31%, East Asia & Pacific (ex high income) 43%) World 25%.
[21] Asia represented 80% of new issues allocation as of 3Q 2019. Source: JP Morgan, 20 September 2019
[22] Asian investors took up 91% of China credits as of September 2019. Source: JPM, Bond Radar.

FIGURE 8: ASIA CREDIT: NEW ISSUANCE ALLOCATION BY REGION



Source: JPM, Bond Radar, September 2019

A corollary of the rising take up by domestic investors of Asian credit is that the proportion of bonds held by US and European investors has shrunk over time. Just a few years ago a majority of Asian issuers were far more dependent on European and North American investors for funding, with the two regions taking more than half of Asian new issues. This persists in Latin America, where 55% of new corporate bond issuance is estimated to have been subscribed to by US-based investors in 2018, and just 13% allocated to Latin American investors[23]. By contrast Asia has become far less dependent on external financing, arguably reducing its reliance on fast money portfolio flows and carry tourists. These changes in ownership structure therefore represent a profound departure from previous norms.

Anecdotal evidence also suggests that Asian institutional investors, who need to match the growing liabilities of a rapidly ageing workforce, are natural buyers of duration and more likely to hold on to their investments through bouts of volatility. It is the emergence of Asian institutional investors as the region's marginal buyer that may have helped dampen asset class volatility and improve risk-adjusted returns, which have been the best of the big three emerging market regions (EMEA, Asia, and Latin America). See Figure 9.

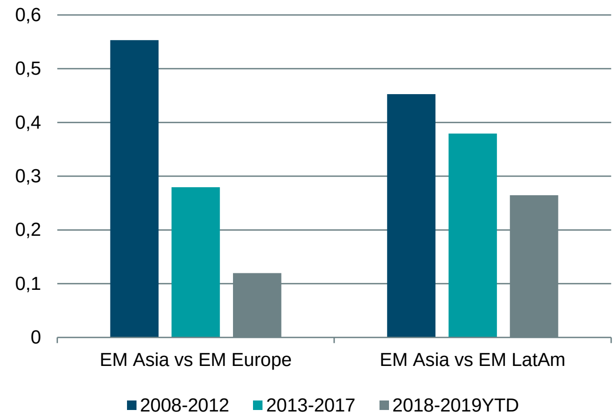
FIGURE 9: ANNUALISED RISK AND RETURN OF EM CREDIT BY REGION

Performance over 13 yrs	EM Asian Credit	EM Europe Credit	EM LATAM Credit
Annualised Return	5.9%	7.2%	6.6%
Risk (volatility)	6.9%	12.5%	8.5%
Risk-Adjusted Return	0.86	0.57	0.79

Past performance is not a reliable indicator of future returns. Risk (volatility) is calculated on monthly total return data over 13 years, annualised. As of: September 30, 2019. Source: DWS Int. GmbH and JPMorgan Securities .LLC.

One further effect of differing regional ownership patterns, is likely to be the relatively low, and declining, correlation of Asian credit to US fixed income markets as well as other emerging market regions, as observed in Figures 10 and 11. In the case of Asia versus the US, differing investor bases and sectoral compositions go some way towards explaining the weak correlations between both regions, especially within the high yield markets. This suggests that as Asia continues to develop as a unique and separate asset class it might be able to offer important diversification benefits for investors' portfolios.

FIGURE 10: PERIODIC CORRELATION OF EM ASIA VS EM LATAM AND EM EUROPE



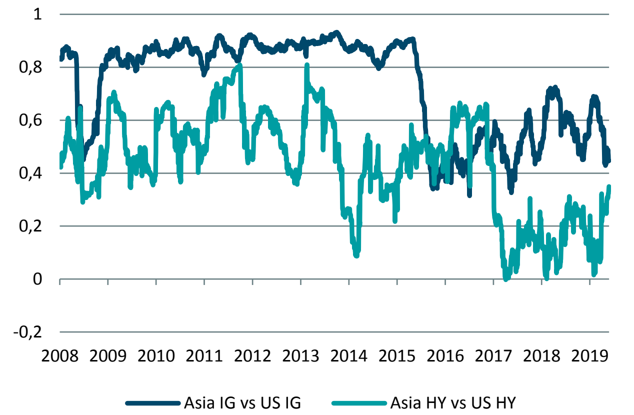
Source: CEMBI Broad regional sub-indices, Bloomberg, DWS Int. GmbH. September 30, 2019. Based on daily data.

However, in spite of its size, unique ownership characteristics and diversification potential, global asset allocators have tended to use Asia as a funding region within their portfolios. It would appear they have typically maintained structural overweight positions in higher-yielding, more commodity-

[23] Source: JP Morgan, Bond Radar, September 2019

dependent regions, especially Latin America. Research by JP Morgan based on holdings analysis of 496 global emerging market fixed income funds, shows that Asian corporate bond holdings amount to just 29% of these funds' emerging market corporate bond allocation, while Latin America made up 39%[24]. Yet Asia's market cap within the widely followed CEMBI, CEMBI Broad and CEMBI Broad Diversified JPM family of emerging market corporate indexes, amounts to 47%, 49%, and 37%, respectively[25]. Investors' underweight position in Asia has been visible for some time and seems to represent a more generalised preference for non-Asian markets. This is difficult to reconcile with Asia's growing development and market depth.

FIGURE 11: ROLLING 3-MONTH CORRELATION OF ASIA VS US CORPORATE INVESTMENT GRADE AND HIGH YIELD



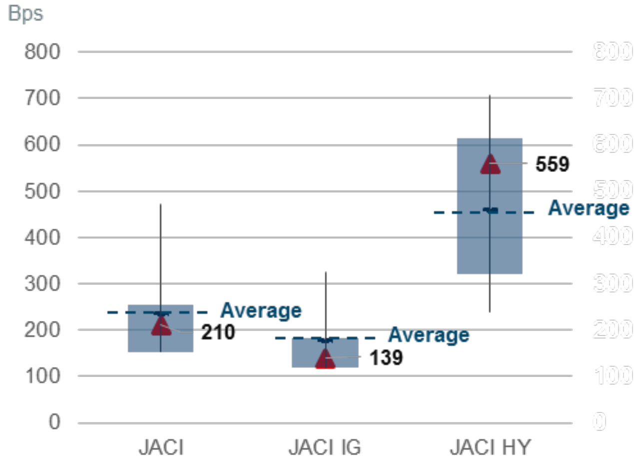
Source: BOFAML Indices – C0A0, ACIG, H0A0, ACHY, DWS Int. GmbH. September 30 2019. Based on daily data.

A Maturing Market

Some of the most important drivers at play in Asian credit markets are evident in Figure 12 which shows historic spread ranges for JACI and its two sub-indices, high yield and investment grade, over different time periods.

What is notable is that the high/low spread ranges for the higher quality segments of the market (JACI and JACI IG) have narrowed sharply in recent years, with the three year high/low spread range at the lower end of the longer-term range. By contrast, high yield spreads remain volatile, with the 3 year range pretty close to the longer-term peaks and troughs.

FIGURE 12: SPREAD TO WORST – CURRENT LEVELS AND HIGH/LOWS SINCE 2011 AND OVER 3 YEARS



	JACI	JACI IG	JACI HY
Spread High / Low, since Jan 2011	472 / 153	326 / 119	708 / 240
Spread High / Low, last 3Yrs	255 / 153	182 / 119	615 / 322
September 30th 2019	210	139	559

Source: JPM Morgan Markets, DWS Int. GmbH. As of: September 30, 2019. * Vertical black line indicates the spread range from 03/01/2011 to 30/9/2019, blue rectangular blocks of varying sizes indicate 3Y spread range 30/09/2016 to 30/09/2019, solid red triangle shows current level. Blue dotted line for each sub index shows historical average level since 3 Jan 2011. Past performance is not a reliable indicator of future returns.

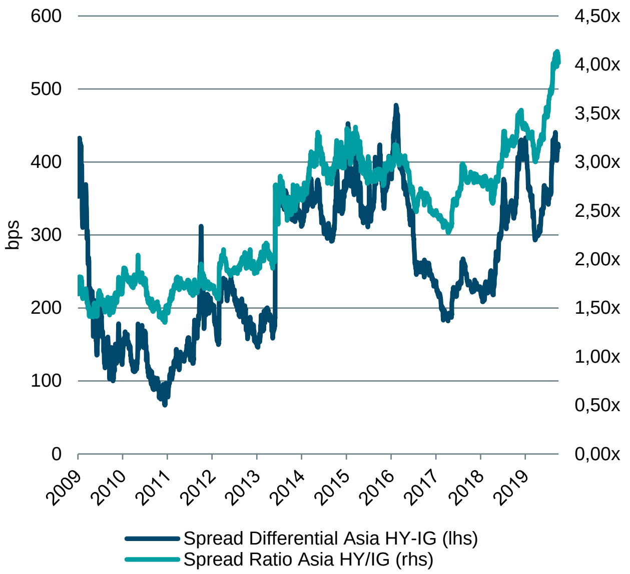
We read the bifurcation between investment grade and high yield as evidence of rising discrimination from investors, who are increasingly mindful of the risks as well as the rewards on offer within Asia high yield. Current heightened high yield spread levels are likely to reflect concerns about high year-to-date new issuance volumes and escalating trade tensions, while the investment grade market remains buoyed by falling US Treasury yields. The trend though for increased differentiation between the two markets has been evident for some time.

Figure 13 illustrates the point. Here we show the ratio between Asian high yield and investment grade credit spreads widening beyond highs last seen in 2015, when energy markets collapsed. At an index level, high yield spreads are more than four times investment grade spreads. While absolute yield levels are lower now than they were in 2015, the differential between the two segments has rarely been bigger than it is today. The result is an increasingly differentiated, nuanced market, with multiple different possibilities available to investors.

[24] Source: JP Morgan, Emerging Markets Corporate Strategy Presentation, September 2019

[25] JPM, as of 30 September 2019

FIGURE 13. SPREAD TO WORST DIFFERENTIAL BETWEEN ASIA HY AND IG



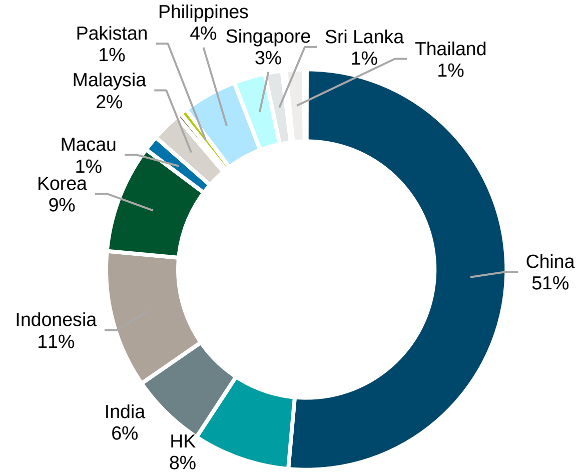
Source: DWS Int. GmbH and, JPM, 30/09/2019. Past performance is not a reliable indicator of future returns.

The beauty is in the details – from context to investment

While index level data can help outline the investment opportunity, completing the picture is more art than science and requires a deeper understanding of the underlying drivers in the market. For instance, the high yield market has been dominated by issuers from the Chinese property sector, which have accounted for 82% of new issuance year to date[26]. This is a sector which, at the time of writing, is adjusting to a more capital-constrained environment and challenged by a shorter refinancing cycle as average bond tenors fall. Strategic investments in this area should therefore be made with caution, and investors may prefer to focus on the larger listed issuers with access to multiple financing channels.

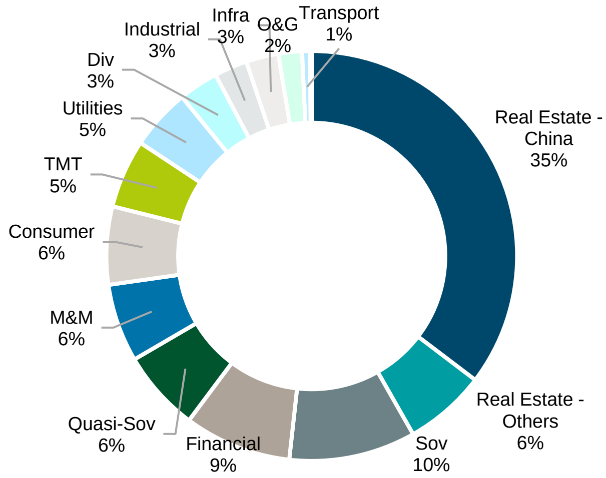
These risks within the market should not be ignored. Investors tracking market capitalisation weighted indices risk acquiring unwanted country, sector, security, and duration concentrations. Figures 14a and 14b illustrate the current dominance of Chinese issuers within JACI and the prominence of the Chinese property segment within JACI High Yield. China's growing heft and the importance of the real estate sector are clear but it is not obvious that investors would want to replicate such large sectoral and country concentrations.

FIGURE 14A. JACI MARKET WEIGHT BY COUNTRY



Source: JP Morgan, as of 30 September 2019

FIGURE 14B. JACI HY MARKET WEIGHT BY SECTOR

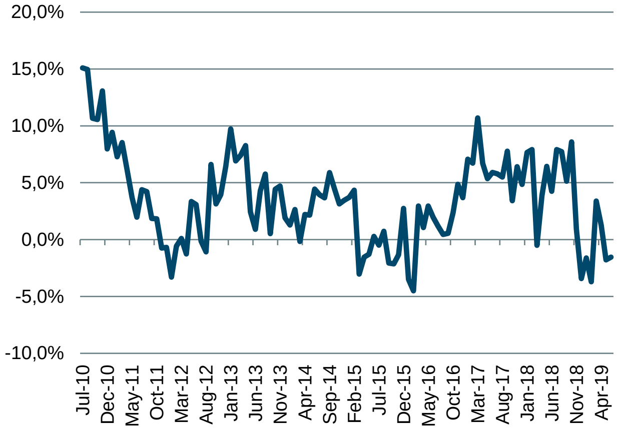


Source: JP Morgan, as of 30 September 2019

Moreover, within Asian credit markets, there remain areas that lack transparency and there is evidence to suggest that, as in other corporate bond markets worldwide, liquidity is becoming more concentrated. Furthermore, the export-oriented development model which has thus far underpinned Asian growth is also beginning to show signs of rising pressure (see Figure 15) and managing the transition to more consumption-led growth is not without difficulty. A pragmatic and flexible approach may therefore best serve investors' interests in this dynamic asset class.

[26] Refers to Moody's rated issuance only, Moody's Investor Services, June 30th 2019

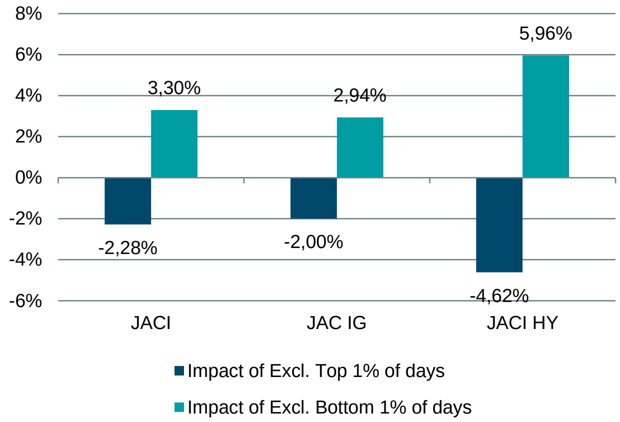
FIGURE 15. YOY GROWTH IN EM ASIA TRADE VOLUME



Source: World Trade Monitor, 30/06/2019
Past performance is not a reliable indicator of future returns.

A flexible investment approach can be particularly helpful in avoiding drawdowns, whether caused by adverse credit selection, swings in macro sentiment, or some other factor. This is important as historically avoiding the worst 1% of days in terms of performance has had a more significant impact on relative returns than missing out on the best 1% of days for the market. Figure 16 illustrates this point. Using the JACI HY index as an example, it can be seen that the annualised underperformance relative to benchmark of missing out on the top 1% of days was -4.62%, while the outperformance from avoiding the bottom 1% of days was 5.96%. In this context, careful bottom-up research to avoid negative credit events, combined with astute management of macro risks, are likely to prove powerful performance drivers over the longer term. As such, we believe it is a market well-suited to active management.

FIGURE 16. INDEX ANNUALISED INDEX RELATIVE PERFORMANCE WITH TOP AND BOTTOM PERFORMING 1% OF DAYS OMITTED



Note: Index annualized returns are calculated with top and bottom 1% of daily returns excluded and compared with index. Past performance is not a reliable indicator of future returns. Source: JPM Indices, Bloomberg, DWS Int. GmbH. Period: 30 Sept 2005 – 30 Sept 2019.

Conclusion

As Asian economies continue to grow, global investors need to become more aware of the opportunities they offer. Once a playground for volatile short-term investments, Asian economies have matured, and so too has the region's corporate debt market.

Over the past decade the hard currency Asia corporate bond market has quintupled, driven not only by Chinese growth but also by the growing maturity of other Asian economies. At the same time there has been a significant shift in the ownership structure of the corporate debt market. Domestic Asian investors now account for more than three-quarters of new issuance take-up and are the dominant investor constituency.

Asian corporate bonds, moreover, possess many qualities that are highly attractive to global investors. They offer appealing relative yields and spreads, healthier corporate leverage fundamentals than their US peers, and low levels of correlation to risk assets in developed markets as well as other non-Asian emerging market regions. A further plus is that it is a market in which flexible, risk-focused active managers can prosper.

The many positive market factors and the expectation that Asia will continue to propel global growth means international investors can ill afford to ignore the huge potential of Asian corporate bonds.

Rolling 5-year performance	09/14 - 09/15	09/15 - 09/16	09/16 - 09/17	09/17 - 09/18	09/18 - 09/19
J.P. Morgan JACI Composite Total Return	2.84%	10.55%	2.17%	-1.01%	10.80%
J.P. Morgan JACI Investment Grade Total Return	3.20%	9.63%	1.21%	-0.88%	11.43%
J.P. Morgan JACI High Yield Total Return	1.65%	14.37%	5.89%	-1.39%	8.89%
S&P 500 Index	-2.65%	12.93%	16.19%	15.66%	2.15%
ICE BofAML US Diversified Crossover Corporate Index	0.02%	10.71%	5.18%	0.11%	11.09%
ICE BofAML US Corporate Index	1.36%	8.50%	2.26%	-1.11%	12.89%
ICE BofAML US Cash Pay High Yield Index	-3.54%	12.79%	9.04%	2.87%	6.37%
ICE BofAML Current 10-Year US Treasury Index	6.03%	5.59%	-4.62%	-4.03%	15.17%
ICE BofAML Current 5-Year US Treasury Index	4.09%	2.56%	-1.94%	-2.04%	9.18%
ICE BofAML Asian Dollar High Yield Corporate Index	-0.86%	17.68%	6.30%	-1.29%	9.03%
ICE BofAML Asian Dollar Investment Grade Corporate Index	3.28%	8.49%	1.55%	-1.02%	11.67%
Bloomberg Barclays US Agg Credit Avg OAS	0.53	-0.29	-0.35	0.04	0.09
Bloomberg Barclays EM Asia USD Credit High Grade Average OAS	0.42	-0.56	-0.24	0.23	-0.06
Bloomberg Barclays US Corporate High Yield Average OAS	2.06	-1.50	-1.33	-0.31	0.57
Bloomberg Barclays EM Asia USD Credit High Yield Average OAS	1.33	-2.51	-0.69	1.53	0.86
J.P. Morgan CEMBI Broad Latin America Index Level	-11.07%	18.18%	11.56%	-0.11%	12.68%
J.P. Morgan CEMBI Broad Mideast Index Level	3.36%	7.75%	2.95%	0.07%	8.77%
J.P. Morgan CEMBI Broad Asia Index Level	3.05%	9.75%	2.50%	-1.06%	10.64%
J.P. Morgan CEMBI Broad Europe Index Level	4.35%	14.92%	6.41%	-4.43%	15.38%
J.P. Morgan CEMBI Broad Africa Index Level	-4.74%	16.14%	10.49%	2.09%	11.32%
J.P. Morgan CEMBI Broad Composite Index Level	-1.86%	12.99%	6.00%	-0.93%	11.50%
J.P. Morgan JACI composite Blended Spread	65.43	-64.73	-19.66	22.90	21.25
J.P. Morgan JACI Investment Grade Blended Spread	61.51	-48.39	-27.19	14.97	8.30
J.P. Morgan JACI Non-Investment Grade Blended Spread	131.78	-127.10	-52.98	67.36	73.10
US Generic Govt 5 Year Yield	-0.40	-0.21	0.79	1.02	-1.41
ICE BofAML US Corp 3-5yr	2.4%	4.8%	1.9%	-0.5%	8.8%
ICE BofAML US Corp BBB 3-5yr	1.4%	5.5%	2.6%	-0.3%	9.1%
J.P. Morgan JACI Investment Grade Yield-to-Maturity	0.19	-0.97	0.48	0.98	-1.28
J.P. Morgan JACI composite Yield-to-Maturity	0.23	-1.14	0.57	1.06	-1.15
J.P. Morgan JACI Non-Investment Grade Yield-to-Maturity	0.89	-1.78	0.29	1.49	-0.64

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CRC 071003 (10/2019)