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China: dig the well before you're thirsty

An asset allocator's framework
August 2019

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未雨绸缪^{*}



*Dig the well before you are thirsty

- China is rapidly becoming one of the biggest decisions asset allocators must make.
- Allocation models suggest that China's emergence could substantially change investment portfolios.
- As China's weighting in major benchmarks grows, investors maintaining their existing allocation framework will be incrementally gaining more exposure to the country — but with little investment rationale supporting the allocation.
- Based on China's size, growth trajectory and distinctive characteristics, a separate allocation to the country may now be appropriate.

*Chinese Proverb: English translation: "Dig the well before you are thirsty". Here 未雨 (wèiyǔ) means before it rains. 未 (wèi) usually refers to something in the future, so in this case the rain. 绸缪 (chóumóu) means to bind something with silk. So the proverb literally means repair (bind with silk) your house before the rain comes.

General risks: The value of investments, and any income generated from them, can fall as well as rise.

Specific risk: Emerging market (inc. China): These markets carry a higher risk of financial loss than more developed markets as they may have less developed legal, political, economic or other systems.

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Introduction

China is fast becoming one of the key decisions asset allocators must make. The country already possesses the second-largest equity market and the second largest bond market. It is by far the largest single-country contributor to global growth and, within the next decade, the Chinese economy is forecast to outsize that of the US.¹

As China develops and opens to outsiders, investors are gradually acquiring more exposure (see Figure 1 'Eastern exposure'). Our analysis suggests that its emergence could substantially alter institutional portfolios. Given the country's long-standing lack of representation in global benchmarks, even those maintaining their current allocation framework will be making a significant active call on China, one way or the other.

Of course, to read a paper about rethinking allocations to China, you must have some belief in the future growth of the country and the potential flows of capital into this once highly restricted market. Barely a blip in the global economy 30 years ago, China transformed into the world's growth engine by becoming its manufacturing plant. The Middle Kingdom² is now in its second great transformation, characterised by a shift from volume

to value and quantity to quality. If successful, China's emergence promises to reshape the world order in ways the West has only just begun to appreciate.

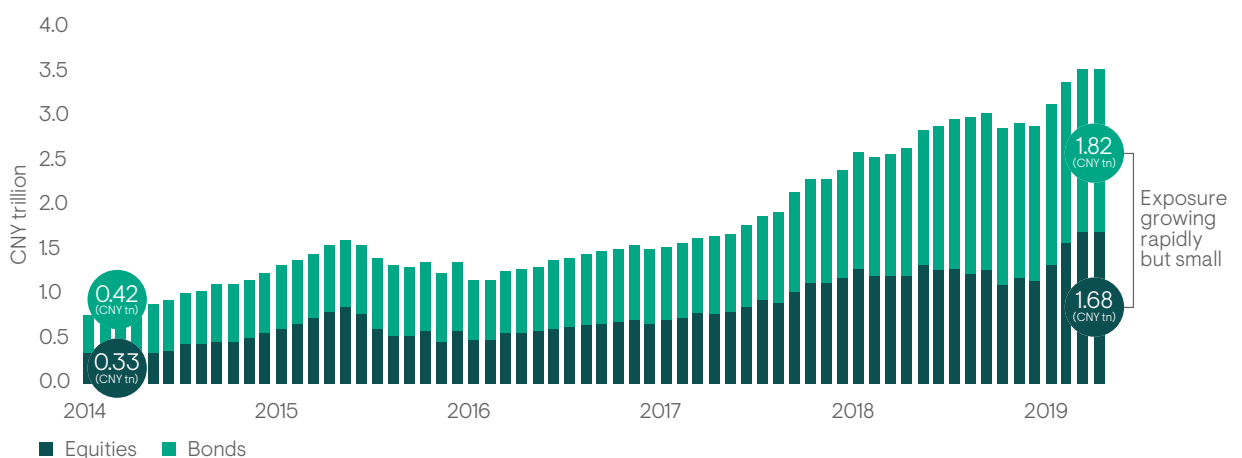
In this paper, we analyse China from an asset allocator's perspective. Specifically, we:

- Assess the characteristics and composition of modern China's investment markets, including the risks of a market unlike any other major power.
- Evaluate existing asset allocation approaches and consider whether China now warrants a separate allocation.

Finally, we apply a well-known asset allocation framework (the Black-Litterman model) to illustrate how China's emergence as a developed economic super-power might change a typical investment portfolio.

China's transformation could significantly reshape the world order

Figure 1: Eastern exposure: global investors are becoming more exposed to China



Source: People's Bank of China, April 2019

1. Source: Ninety One
 2. The term 'Middle Kingdom' is a translation of a historical name for China used by the Chinese. Conceptually it means the Chinese saw their country as central.

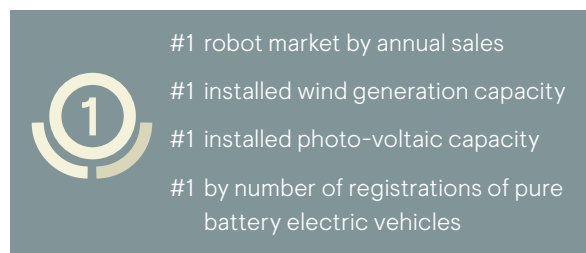
Rethinking asset allocation when a giant emerges

This isn't the first time an economic superpower has emerged onto the world stage. In the late nineteenth century, the US must have seemed an uncertain investment proposition. Fast evolving, weak on governance and with a banking sector that had not long emerged from what might charitably be described as a colourful period, the US of that time would have made many investors nervous. Yet those who recognised the rise of a dominant power would have aligned their portfolios with the central investment narrative of the next century and beyond.

China's emergence could substantially change institutional asset allocations

After a period of astonishing growth and transformation, China is on the cusp of becoming the world's largest economy and is progressing toward developed status.

The latter may be some years away, but parts of this vast and populous country are closer to achieving the milestone. It is interesting to note that this has often been accompanied by favourable investment environments (see overleaf: 'China in transition').



Placing China within an asset allocation is not just about accommodating its size — it also possesses some distinctive features that must be taken into consideration. For instance, the country leads in some key technologies, including robotics and electric vehicles.³ China is also one of the world's most digitally savvy societies. Its 750 million connected citizens spend an average of 27 hours online each week, and the digital economy now contributes a third of China's GDP.⁴ Underweight China, as broad benchmarks effectively do, and you are positioned against some of the sectors expected to propel global growth in the years ahead. We are not saying that is the wrong call. But it is certainly a call.

China's future is not assured. There are those who believe its growth story is concluding, and that Beijing will row back on reforms to open markets, and thus they have little reason to change current allocations. And there are others who, regardless of China's development trajectory, remain wary of allocating to China on concerns about its legal framework and governance standards. Among their primary concerns is the possibility that China may impose capital controls (see 'A question of trust: is China stable?').

But the Middle Kingdom makes no secret of its ambitions. President Xi dreams of his country becoming a fully developed nation by 2049, the hundredth anniversary of the founding of the People's Republic. If he succeeds, the protagonist of the investment narrative for the next decades could be China. Asset allocators need to start thinking now about what this might mean for them. As we explore in this paper, China's emergence could substantially change institutional asset allocations.

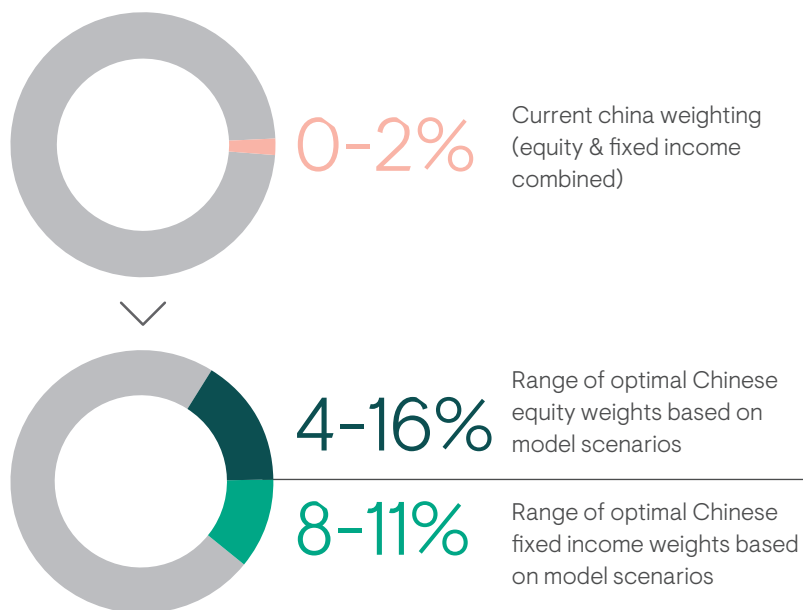
3. www.ninetyone.com

4. www.nielsen.com

Preview: Where could China fit?

Our analysis, based on a minimal set of assumptions and using the Black-Litterman asset allocation model (presented later in this paper and in the appendix), suggests a range of optimal weightings to Chinese assets, all of which are higher than the current weightings in typical US institutional portfolios.

Figure 2: Black Litterman model – Optimal suggested weight ranges for a traditional 60% equity / 40% fixed income portfolio (based on low/high return assumptions)

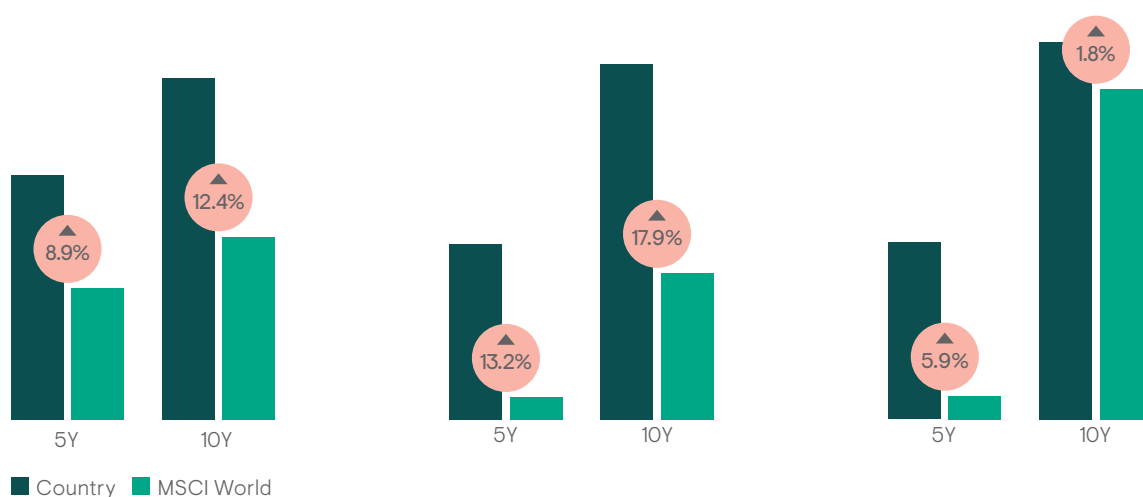


Source: Ninety One, June 2019. Chart shows the Model's range of optimal weightings to Chinese assets for a balanced US institutional portfolio, based on scenarios that vary the relative performance of Chinese asset classes and the potential for higher correlation as China integrates.

China in transition: the path from emerging to emerged

China is slowly progressing toward achieving developed-nation status. Several countries reached that milestone in the late twentieth century⁵, though none of China's size. The transition from emerging to developed was typically accompanied by a surge in foreign investment, strong stock markets and a fall in borrowing costs.

The figure below shows equity returns for the five and 10 years preceding the moment each country bridged the emerging/developed divide. Across all measurements, bar Portugal's 10-year performance, the soon-to-emerge nation's stock market outperformed the MSCI World Index.



1987

Japan

Social and economic reform in the immediate post-WW2 period, combined with a supportive international trading environment, fuelled growth that saw Japan become the world's second-largest economy in the late 1960s.

It was overtaken by China in 2011.

1993

Hong Kong

One of the four Asian Tigers, Hong Kong grew fast through the 1960s with a focus on export- oriented industries (including textiles and electronics), helped in part by the US' willingness to trade and public investment in infrastructure and education.

The UK handed Hong Kong back to China in 1997.

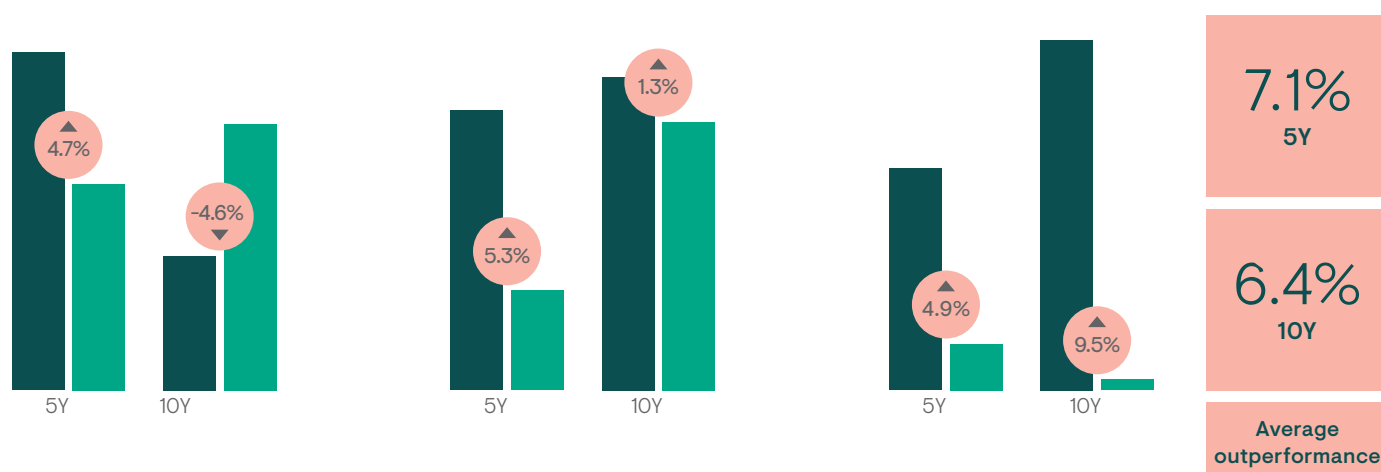
1994

Singapore

The export-driven growth of Singapore, another Asian Tiger, was bolstered by success in attracting foreign companies, including oil majors, and heavy investment in education.

In early 2019, Singapore's growth slowed to the lowest level in about a decade, partly due to US-China trade tensions.

5. Year of emergence based on reclassification by MSCI, FTSE or both. If emergence pre-dated MSCI's methodology, emerged status was based on GDP per capita reaching US\$20,000 (IMF data in current US dollar terms).



1997 Portugal

Portugal's per capita GDP rose from 38% of that of the major European economies in 1931 to over 56% in 1973 — thanks in part to export growth and diversification from the late 1950s particularly. Portugal's trading relationship with China stretches back to the early 1500s

China has invested billions of Euros in the country since the sovereign debt crisis in 2010.

2001 Greece

Greek growth averaged 7.7% from 1950 to 1973, the second fastest expansion over the period after Japan. Reaching developed status in 2001 masked the already deleterious state of Greece's public finances and occurred despite a long decline in international competitiveness.

Lack of transparency means China's indebtedness is more difficult to gauge.

2009 Korea

A relatively poor agricultural country in the 1960s, South Korea now ranks as the world's eleventh-largest economy (by GDP). Its export-driven success has been attributed in part to a focus on technology and innovation; it also ranks highly in an Ease of Doing Business index.

China is catching up fast on the former, but lags in the latter.

A question of trust: is China stable?

Despite the arguments for allocating separately to China, some investors worry that Beijing might one day impose restrictions to stop them getting their money out, perhaps in response to a domestic or international crisis. We address four common concerns here.

Q1. Could China impose capital controls on foreign investors?

A: While China limits the amount its own citizens and firms can take out of the country, it has never done so to foreigners. In our view, it isn't likely to. For one thing, China is steadily moving toward running a structural current account deficit, which it needs to fund. Some economists have estimated that, to do so, the country will need US\$210 billion of net foreign capital inflows per year from 2019 to 2030.⁶ Gating capital would strongly deter the inbound investment China requires.

Moreover, China has put tremendous policy muscle behind initiatives to internationalise the renminbi. Any outward capital controls on foreign investors would at a stroke negate years of efforts toward this objective and run counter to a policy being actively pursued by the current administration.

Q2. Could the political system collapse?

A: Another fear some foreign investors have is political regime change. Contrary to the beliefs of some Western commentators, China is politically stable. The number of major protests in China (defined as those involving more than 1,000 workers) has actually fallen in recent years.⁷

We believe that China's government has domestic legitimacy and oversees a system that is likely to endure. Looking outward, China is as concerned as any advanced nation with its international standing. Observance of contractual obligations to foreign parties is central to this.

6. "Facing current-account deficit, China looks abroad for capital," Morgan Stanley, 13 March 2019

7. <https://www.chinoiresie.info/chinas-labor-movement-in-transition/>

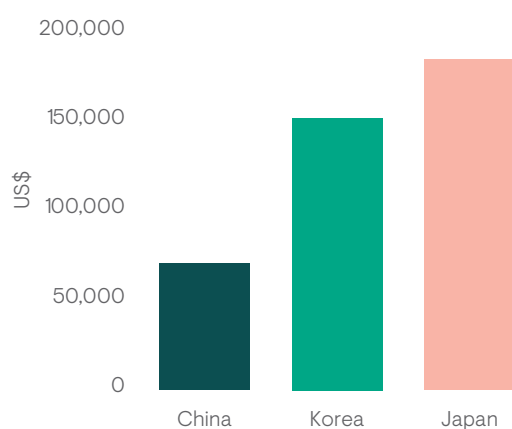
Q3. Could over-indebtedness undermine stability?

A: Investors also sometimes ask whether Chinese stability is at risk from China's huge stock of debt, which reached almost 270% of GDP by the end of 2018. For one thing, we think China is well placed to manage the risks. Tight capital controls and the fact the banking system is state-owned should enable Beijing to avert a crisis should pressures start to build.

Also, unlike in advanced economies, where much of the recent debt build-up has been spent on tax cuts and social spending, a hefty portion of Chinese borrowing has been used to increase productive capacity. Railroads, bridges, modernised housing, hospitals — all these can serve China for many years to come.

We would also point out that China's capital stock per capita (see Figure 3) is still less than half of Korea's or Japan's, which implies there is a great deal of investment left to go. In any case, debt growth has slowed and deleveraging has taken place across the financial system.

Figure 3: Capital stock per capita; China compared to Korea and Japan



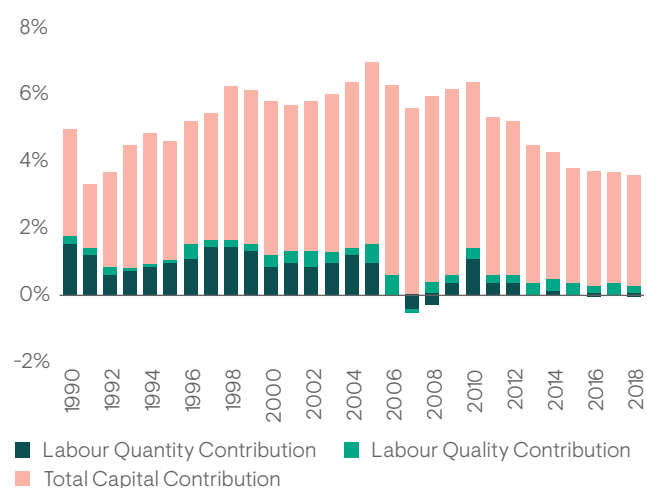
Source: Peen World Tables as at end December 2017.

Q4. Could a demographic timebomb destabilise China?

A: Finally, some people fear Chinese stability could be undermined by a demographic crisis – in other words, that it may grow old before it grows rich.

But while China is undoubtedly aging, labour has been an increasingly negligible component of its growth story. Advances in labour productivity and increases in capital investment have been more important. Far from being an economy at risk of stagnation, we think China's expansion story has much further to run.

Figure 4: Labour productivity and capex major source of growth

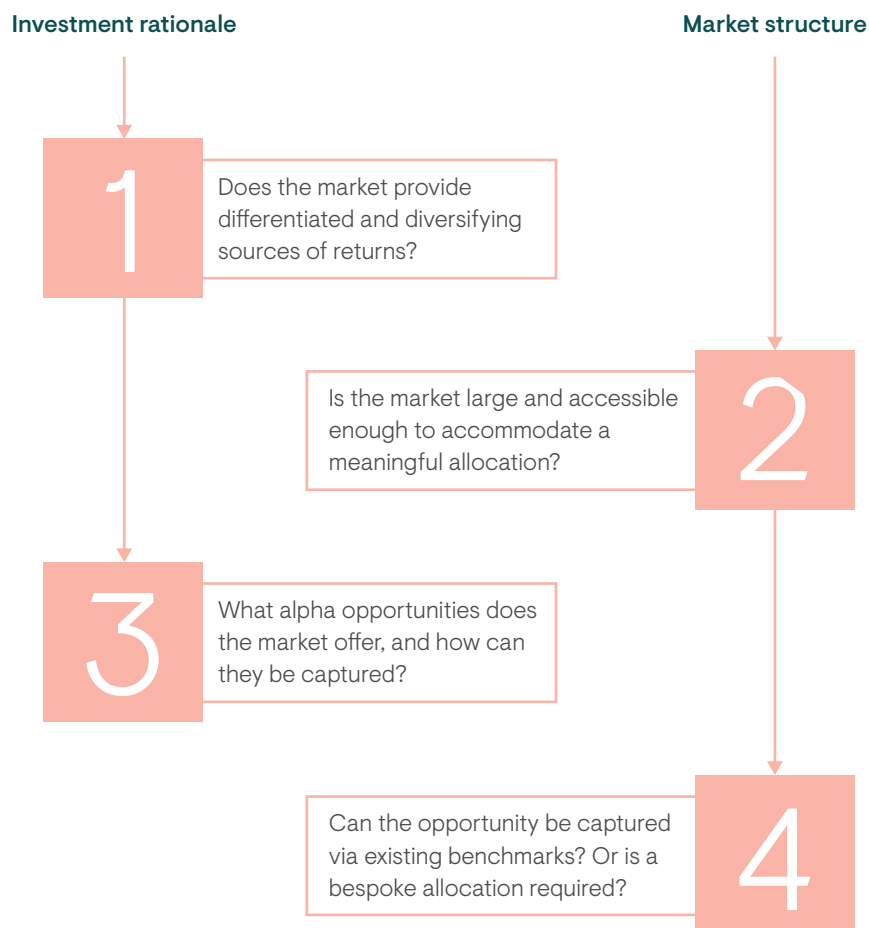


Source: The conference board, as at end December 2018.

Placing China in an asset allocation framework

Among the most pressing issues for asset allocators today is what to do about China — which bucket does it fit in? Here, we offer a practitioner's perspective on how a committee might work through the decision.

We outline **four** tests to help frame where a market fits within an overall asset allocation, and whether it warrants a separate allocation.



1. Does the market provide differentiated and diversifying sources of returns?

Each core building block of a multi-asset portfolio must justify its position by offering an attractive risk premium over the long term, and by being sufficiently independent from the rest of the portfolio to be considered a distinct asset class. To provide differentiated or diversifying returns, a market can't merely be a slight variant of a larger asset class or easily proxied via, say, international or emerging allocations.

Attracting international portfolio inflows is key to China's aim of developing more advanced debt and equity capital markets; it is unlikely to succeed in this unless investors can earn competitive risk premia in its markets.

In this test, we investigate the drivers of expected returns in China and how they differ from those investors can get elsewhere.

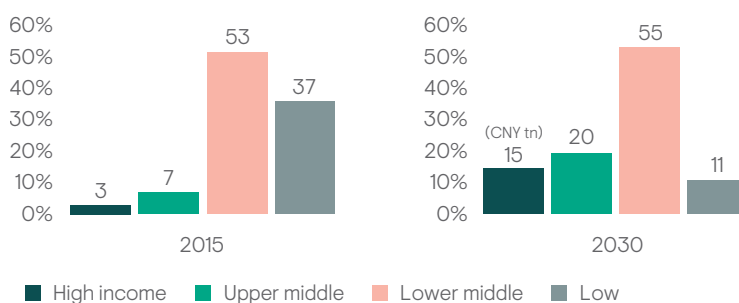
Test 1

Equities

Potential return drivers

Fuelling economic expansion, the spending power of Chinese consumers is rising. By 2030, the middle class is expected to represent 75% of China's population and have equivalent spending power to the US middle class.

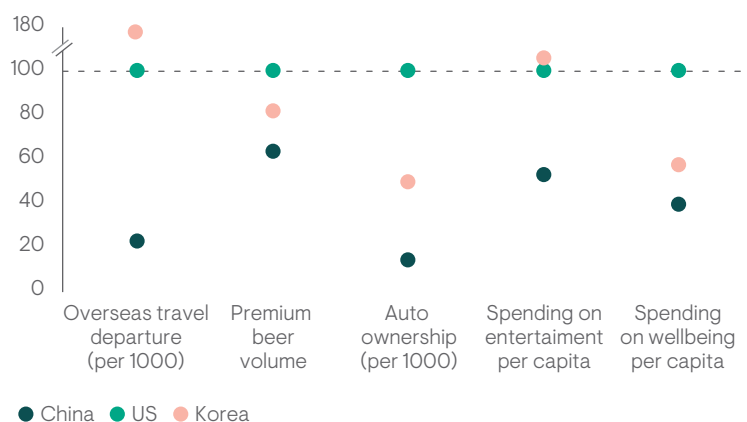
Figure 5: Spending power: per capita annual disposable income (% of population)



Source: The Economist Intelligence Unit December 2018

Chinese equities offer exposure to markets with strong growth potential, in absolute terms and relative to some developed markets, as indicated by low consumer product penetration (Figure 6). Overall, China accounts for about one-third of global GDP growth, making it hard for any growth-focused portfolio to ignore.⁸

Figure 6: China's consumer product penetration vs. US and Korea



Source: UNWTO, CEIC, Euromonitor, IWSR, Canadean, UBS, Goldman Sachs, Bernstein, Data rebased: US = 100%, as of 31 July 2017.

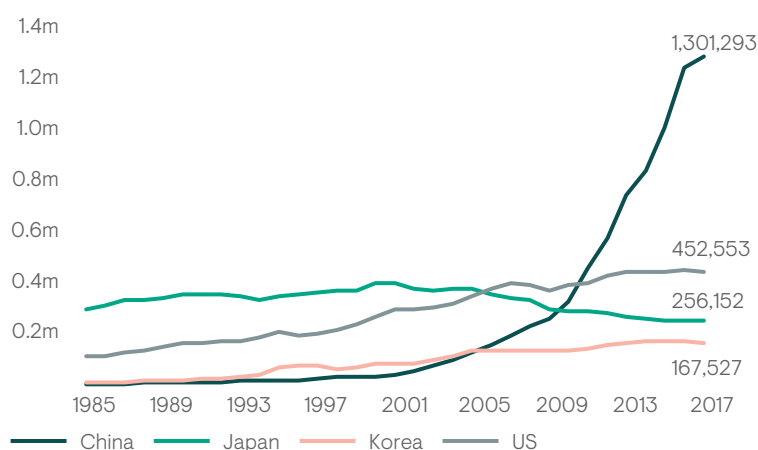
8. Source: www.visualcapitalist.com

Access to key sectors

China leads in some of the key technologies expected to propel industrial advancement in the years ahead. In many cases, China's onshore market provides the only meaningful exposure to Chinese companies in these sectors.

China's technology ambitions are reflected in the sharp rise in Chinese patent applications (Figure 7). Tech-led industries dominate Beijing's 'Made in China 2025' strategy, its roadmap for industrial development and move up the value chain.

Figure 7: Patent applications



Source: WIPO statistics database, December 2018.

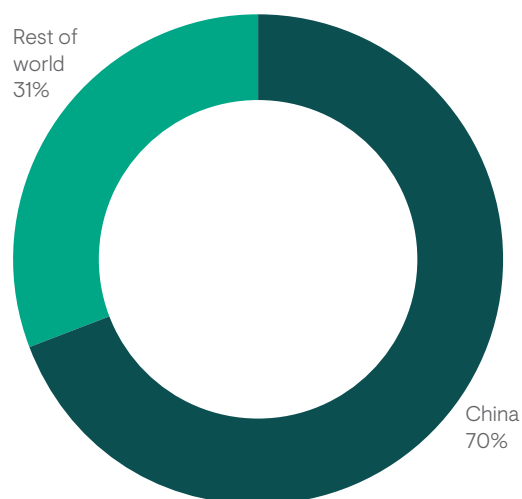
AI ambitions

China is pushing for global dominance in artificial intelligence (AI) and on some metrics already leads the US. Some 85% of Chinese companies are actively engaged in AI, a much bigger proportion than in rival nations. And China is investing more than anyone else in the sector,⁹ capturing two-thirds of the money invested in AI globally from 2013-2018.¹⁰

One big advantage China has is data. With 1.4 billion citizens, relatively lax privacy laws and an extensive surveillance infrastructure, China is rich in the raw material needed to drive AI development.¹¹ Another advantage is strong state backing. The Chinese government launched a wide-ranging plan to develop AI across industries in 2017.¹²

In 2017, global AI investment reached US \$39.5 billion, including 1,208 investment transactions, with China alone posting US \$27.7 billion of investment and 369 investment transactions. China's AI represented 70% of global AI investment and 31% of global AI investment transactions.

Figure 8: Worldwide AI investment



Source: China AI Development Report 2018, Tsinghua University

9. www.bcg.com; www.marketwatch.com

10. www.sppm.tsinghua.edu.cn

11. www.inc.com

12. flia.org

Low correlations to both EM and DM

China's onshore equity market – the China A shares market, which until recently has been largely closed to foreign investors – exhibits low correlations with other major asset classes, including developed and emerging markets (Figure 9). The better-known offshore stock market (China H) is more correlated, particularly with Asia and emerging market indices, of which it forms part.

Figure 9: China A shares correlation to major asset classes

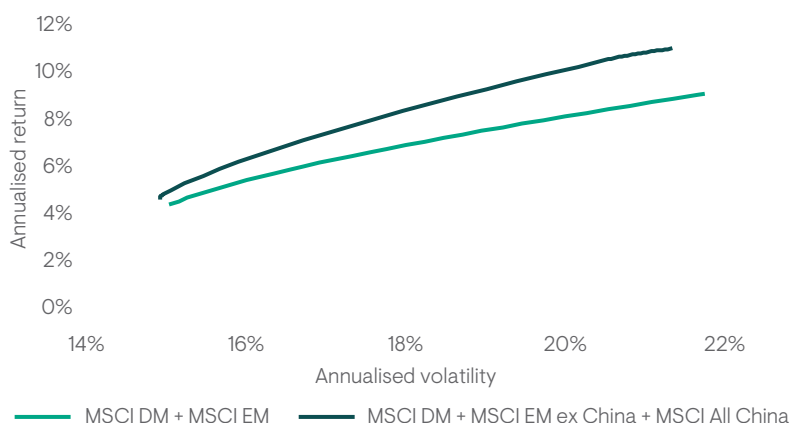
Indices	MSCI China	MSCI India	MSCI Asia Pacific	MSCI Em	MSCI Thailand	Shanghai Composite	Shenzhen Composite	MSCI AC World	MSCI Japan
MSCI China	1	0.6	0.8	0.9	0.6	0.6	0.4	0.7	0.6
MSCI India		1	0.7	0.7	0.5	0.2	0.1	0.6	0.5
MSCI Asia Pacific			1	0.9	0.6	0.4	0.3	0.8	0.8
MSCI EM				1	0.6	0.4	0.3	0.8	0.5
MSCI Thailand					1	0.2	0.1	0.5	0.4
Shanghai Composite						1	0.9	0.3	0.3
Shenzhen Composite							1	0.2	0.2
MSCI AC world								1	0.6
MSCI Japan									1

Source: Bloomberg, 31 March 2019

Potential efficiency gains

Due to Chinese equities' correlation profile, a dedicated China allocation can be complementary to both developed and emerging market investments. Blending an index that includes Chinese stocks with emerging and developed benchmarks can result in a more efficient portfolio (Figure 10).

Figure 10: Blended Developed / Emerging Markets Portfolios 2001-2019



Source: Bloomberg, Ninety One as at 30 April 2019. Dates for all indices are January 2001 to April 2019. Synthetic MSCI All China: Pre 2008 35% MSCI A Shares 65% MSCI China. Post 2008 100% MSCI All China. For further information on indices, please see the Important Information section.

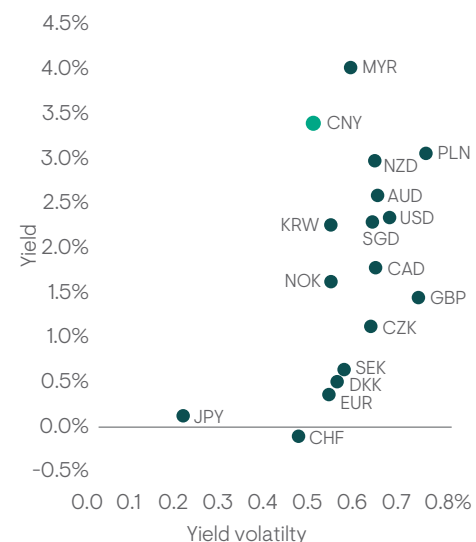
Fixed income

Robust domestic policy framework

China's policy framework is characterised by stable demand-side management. Financial risks remain, but regulatory coordination and communication have improved significantly.

China's government bond market is less volatile than many developed fixed income markets, offering one of the strongest risk and return profiles to add to a global bond allocation (Figure 11). Generally, the Chinese bond market offers developed-market-level defensiveness and volatility but is at an emerging-market level in terms of market infrastructure, which demands higher risk premiums.

Figure 11: Average 10 year government bond yields vs. annualised volatility (5 years to 30 June 2019)



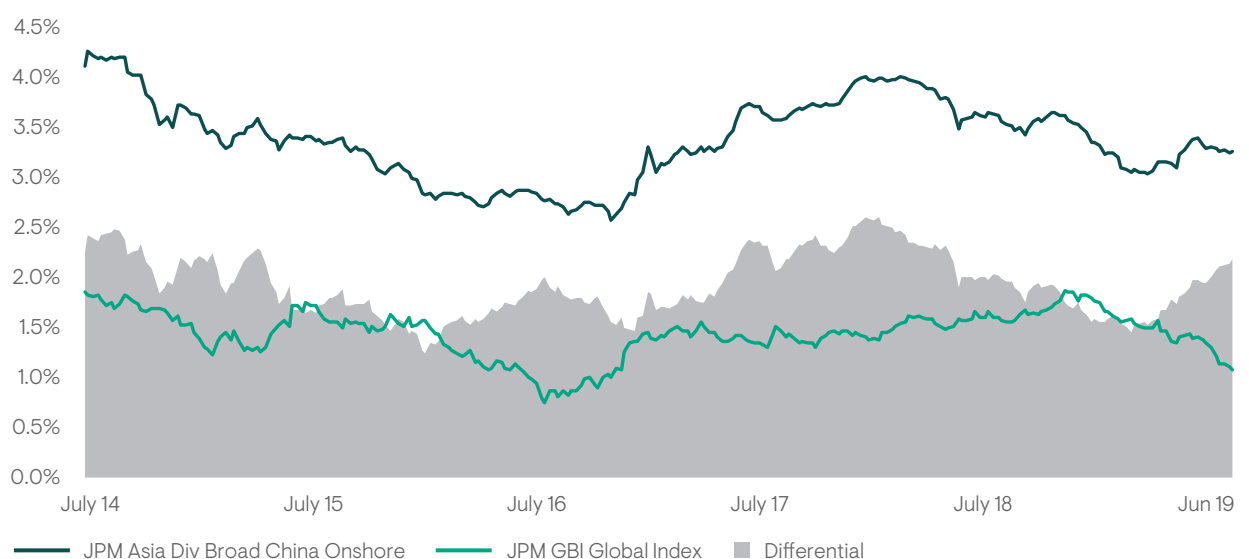
Source: Bloomberg, Ninety One calculations, June 2019

Higher yields

Historically, Chinese bonds have offered higher yields relative to similarly rated government securities in other markets (Figure 12).

In addition, over the cycle the credit spreads of Chinese companies are 70-200 basis points wider than their US BBB rated peers.¹³

Figure 12: Onshore CNY government bond yields versus DM government bond yields (%)

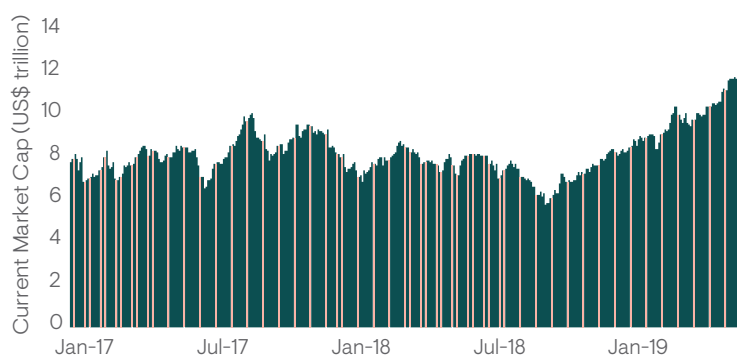


13. Source: JPMorgan, June 2019.

Escape from negative yields

With the global stock of negative yielding debt climbing sharply since October 2018, the positive yields and low volatility on China bonds are potentially appealing for cautious fixed income investors that require yield.

Figure 13: Global stock of bonds with negative yields



Source: Bloomberg Barclays Global Aggregate Negative Yielding Index, April 2019

Safe-haven qualities

From an external perspective, China's foreign currency issuer ratings (as measured by Moody's, S&P and Fitch) are high relative to its global peers. Internally, some of China's rating agencies have been accused of inflating the ratings on bonds in the local market to meet regulatory requirements (a bond requires a rating of AA or higher to be sold to the public). To improve credit rating standards, the authorities are opening up the domestic rating scene to foreign competition.

Figure 14: Foreign currency issuer ratings

	Moody's	S&P	Fitch
Canada	Aaa	AAA	AAA
Germany	Aaa	AAAu	AAA
US	Aaa	AA+u	AAA
UK	Aa2	AAu	AA
France	Aa2	AAu	AA-
Korea	Aa2	AA	AA-
China	A1	A+	A+
Japan	A1	A+u	A
Poland	A2	A-	A-
Malaysia	A3	A-	A-
Mexico	A3	BBB+	BBB
Italy	Baa3	BBBu	BBB

Source: Bloomberg, June 2019

Low correlations to both EM and DM

Historically, China's government bond market has exhibited low correlation with major risk asset classes, suggesting the potential to help defend a portfolio against downturns in global stock markets.

Moreover, Chinese fixed income exhibits low correlations with both developed and emerging bond markets (Figure 15). Domestic policy determines Chinese growth and inflation dynamics to a greater extent than in many other markets, which tend to be influenced more by global trends.

Figure 15: Correlation between Chinese fixed income and other asset classes

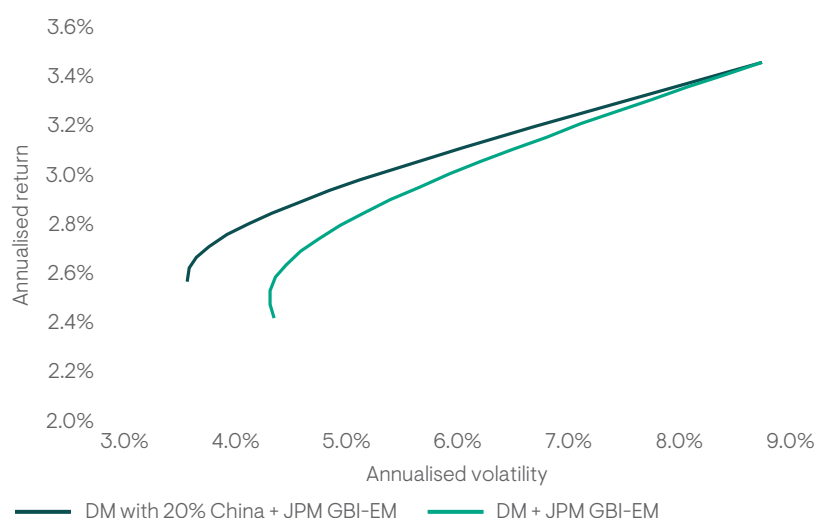
	Offshore CNH Bonds	Offshore USD China Bonds	Global DM Bonds	Global DM Equities	Global EM Local Bonds	Global EM USD Bonds	Global EM Equities
Onshore CNY Bonds	0.77	0.09	0.29	0.17	0.08	0.23	0.11
Offshore CNH Bonds		0.42	0.31	0.45	-0.11	0.39	-0.13
Offshore USD China Bonds			0.33	0.53	0.02	0.67	-0.07
Global DM Bonds				0.15	0.06	0.56	0.09
Global DM Equities					0.06	0.55	-0.03
Global EM Local Bonds						0.11	0.86
Global EM USD Bonds							0.03

Source: Bloomberg, June 2019. Correlations calculated based on monthly returns data, from 2H2009 to 1H2019. For details of the indices please see the indices section of the end of this document.

Potential efficiency gains

Due to the aforementioned correlation profile, blending a China bond allocation with a US and emerging market fixed income allocation can increase portfolio efficiency (Figure 16).

Figure 16: Adding China to a DM portfolio would have improved the efficient frontier of a DM+EM portfolio over the past decade



Source: JP Morgan, Bloomberg, Ninety One as at June 30 2019.

Test 1 observations

China is a highly distinctive market, offering attractive potential returns which are differentiated and provide useful diversification to a portfolio. Less impacted by quantitative easing (QE) than other major markets, correlations within Chinese equity and bond markets have also tended to be lower. It has therefore been easier in the QE era to build efficient balanced China portfolios than equivalent US and European portfolios.

China's historically idiosyncratic profile has in part been the result of a very tightly controlled capital account. Looking ahead, correlations may rise as China opens its markets and integrates more fully with global capital markets. This process will take place over a number of years, so a step change in correlation characteristics is unlikely. Furthermore, the main drivers of returns in the equity and bond markets should ensure that Chinese assets continue to offer strong fundamental diversification.

| From an allocator's perspective, this period of low correlations may be an opportune time to capture the diversification and return potential China offers

2. Is the market large enough and accessible enough to accommodate a meaningful allocation?

In theory, risk and return are all that matter in asset allocation. In the real world, investors face the practical constraints of liquidity and market access.

To play a meaningful role in a portfolio, a market must offer deep liquidity across a wide range of tradable securities.

In this test, we explore the dimensions and accessibility of China's equity and bond markets.

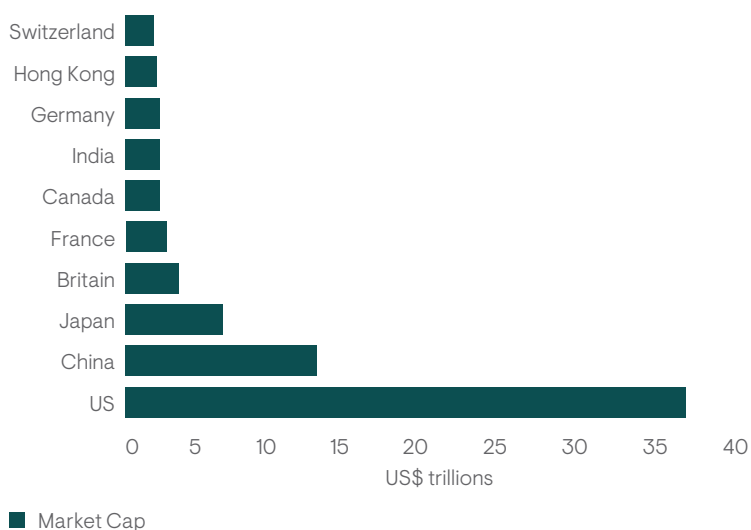
Test 2

Equities

The second-largest equity market

China possesses the second-largest equity market, after the US and ahead of Japan (Figure 17). However, foreign participation remains low. Overseas ownership of onshore equities was prohibited until 2003, and only opened thereafter to qualified investors subject to quotas.

Figure 17: Market cap of major economies

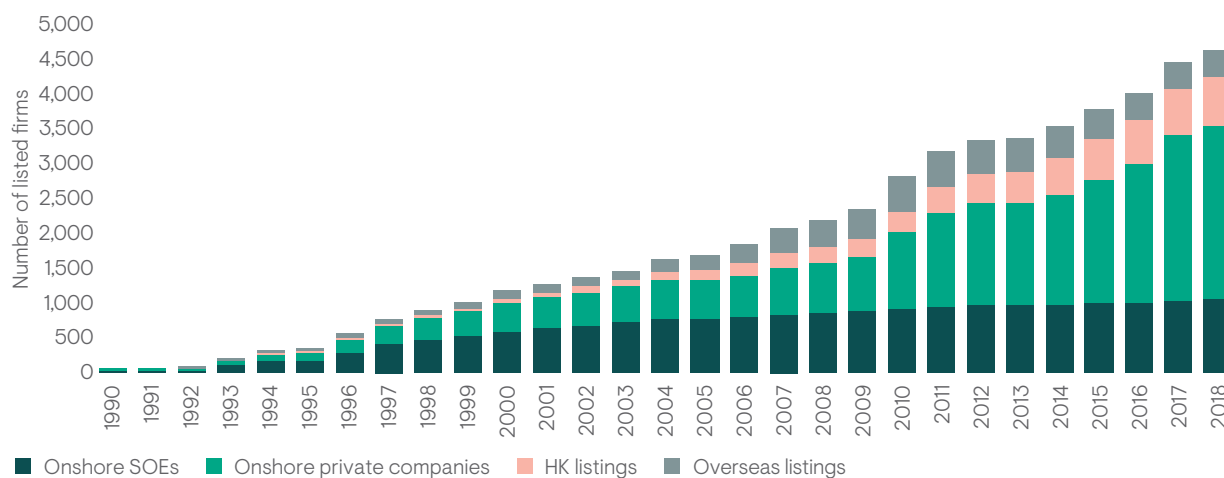


Source: Bloomberg, May 2019

A growing onshore private sector

As of February 2019, about 4,905 Chinese firms were listed on stock exchanges (Figure 18); only India has more listed businesses. Onshore equities give investors access to the full breadth of China's growing private sector, which contributes 60% of China's GDP, 70% of innovation, 80% of urban employment and 90% of new jobs.¹⁴

Figure 18: China's listed firm population



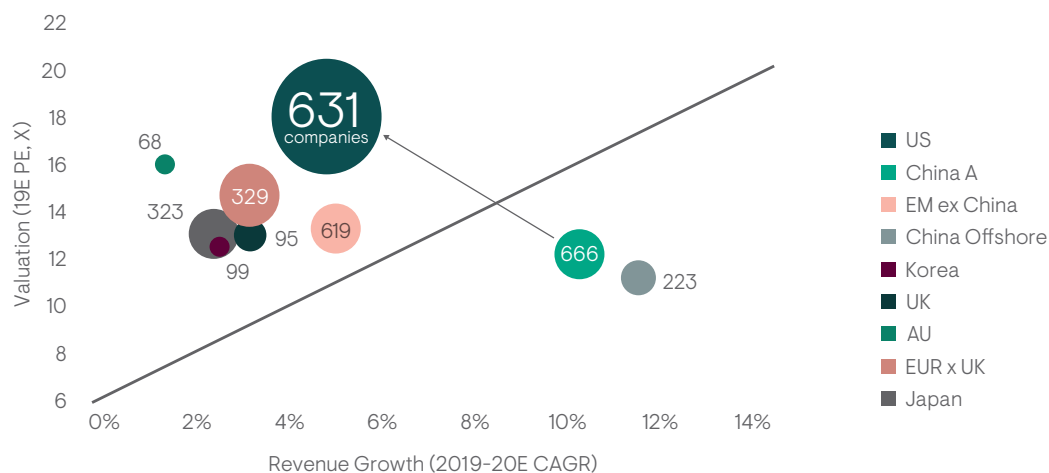
Source: Wind, Bloomberg and Ninety One as at December 2018

14. www.weforum.org

Many large and liquid firms

The number of investable onshore private firms with an accessible market-cap greater than US\$2 billion is increasing. Data from Gavekal now suggests there are close to 600 firms above this level with sufficient liquidity to allow investors to enter or exit a 2% position within 10 days without exceeding 30% of daily volume. From a valuation perspective, we see potential for China's liquid large-cap companies to re-rate in the direction of their US peers (Figure 19).

Figure 19: Size of the opportunity and room for liquid large caps to re-rate



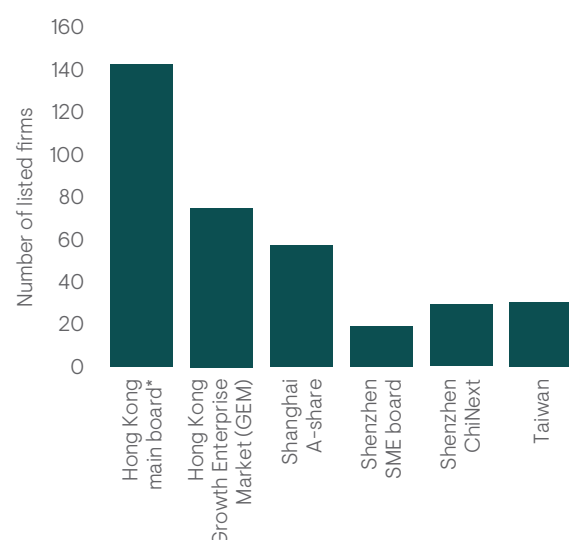
Bubble size indicates the total listed market caps for the stock universe in different markets. Universe: All active stocks with listed market cap >US\$2bn. Note: Aggregate growth and valuations are calculated based on full-listed shares. Source: FactSet, I/B/E/S, MSCI, Ninety One, May 2019

Looking ahead to STAR Board

In July 2019, China launched a Nasdaq-style technology board – the Science and Technology Innovation Board, or ‘STAR’ market – on which the first 25 companies have listed, raising \$7.1 billion. The first movers ended the first day trading on average 140% up, a scenario that would not occur on the other main exchanges as, on the STAR board, there are no share price movement limits for a stock's first five days of trading.

The opportunity for IPOs is clear, as it is expected there will be a shortened time for listing with a registration based system. In 2018, 143 companies went public on Hong Kong's main board, compared to 57 on the Shanghai A-share market (Figure 20). This capital-market reform, in our view, is another step toward a more open and market-driven equity market.

Figure 20: 2018 IPOs by stock exchange



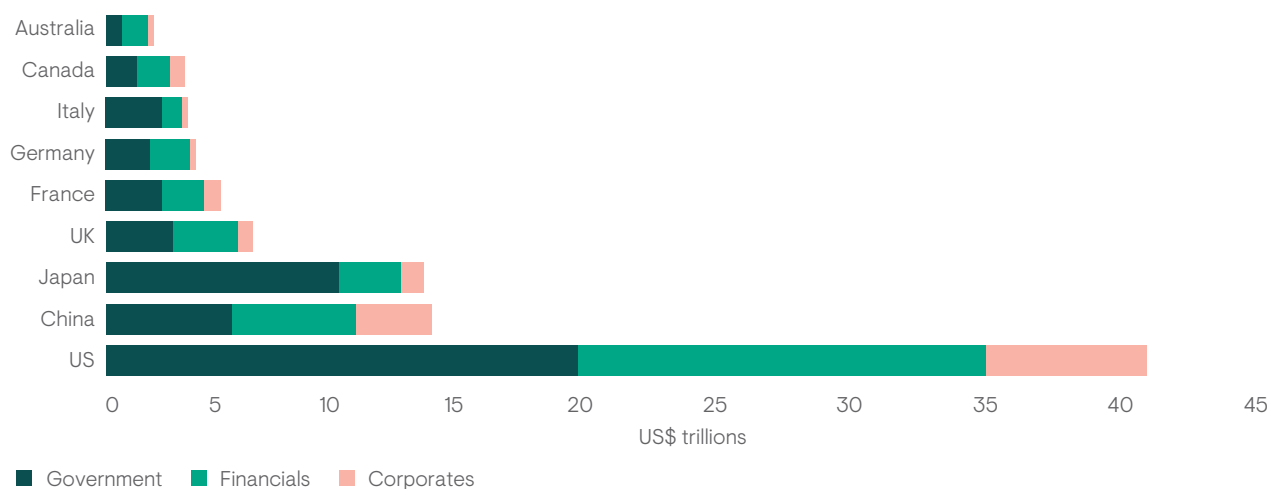
*Including listing by introduction and switch from GEM to main board without raising funds in Hong Kong: 13 in 2018. Source: PwC research.

Fixed income

The second-largest bond market

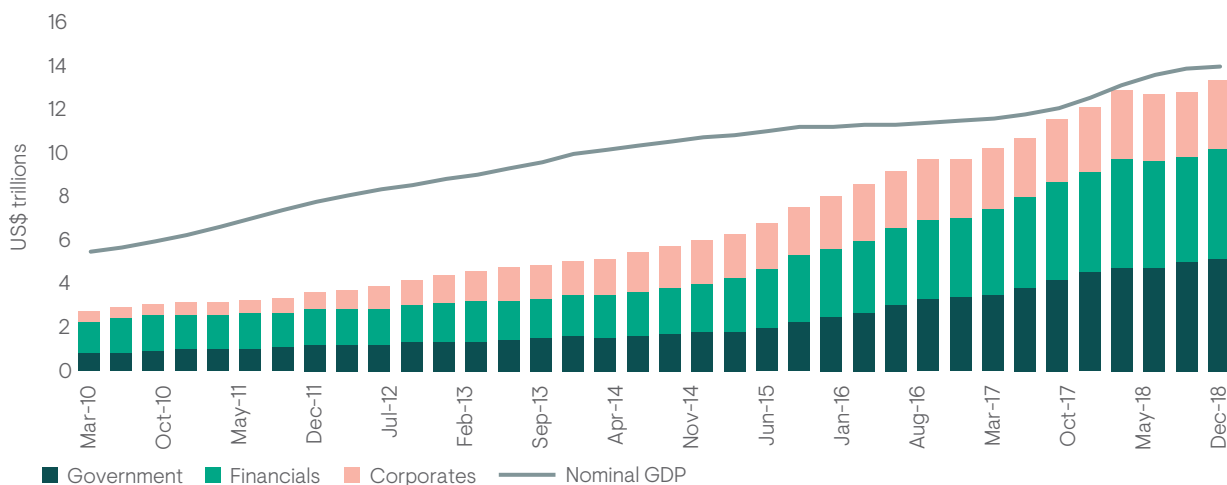
China's bond market is the second-largest globally (Figure 21), having recently overtaken Japan. Figure 21 shows the growth of the market by issuer type. Of note is the growth of corporate bond issuance, providing fixed income investors with access to China's growing private sector (Figure 22).

Figure 21: Total debt securities



Source: Bank for International Settlements, December 2018

Figure 22: China's bond market by issuer type (US\$ trillions)

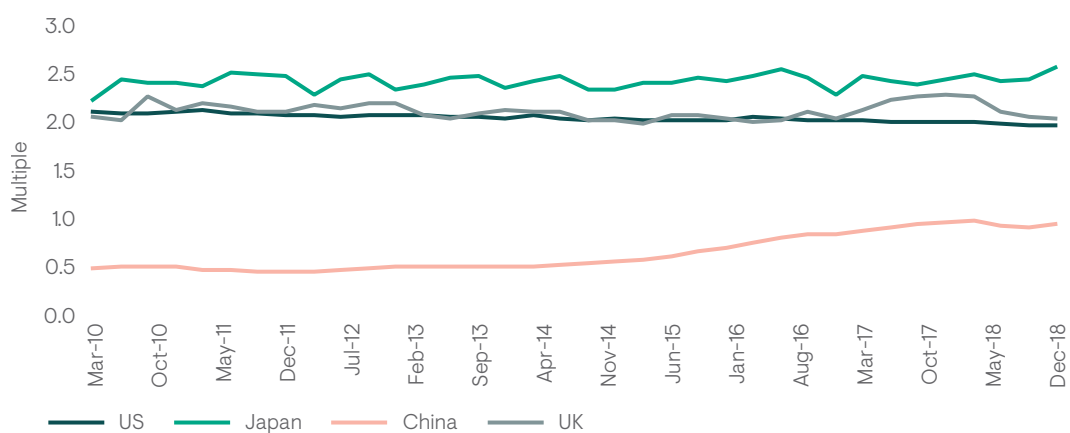


Source: Bank for International Settlements, December 2018

Further growth potential

Even after a period of strong growth, China's bond market has considerable room for further expansion, given its still-modest size relative to nominal GDP.

Figure 23: Size of bond market relative to nominal GDP (multiples)

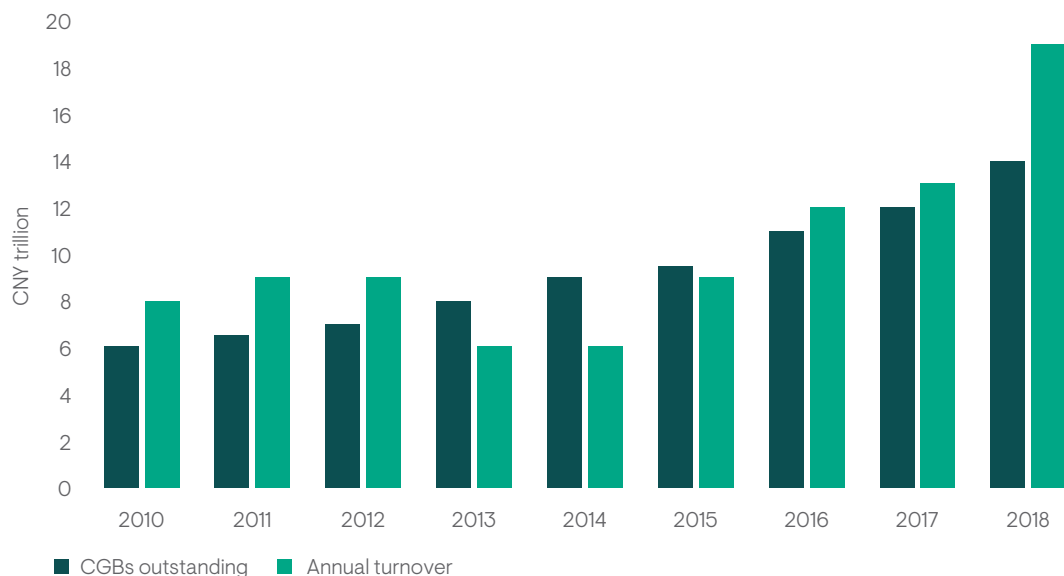


Source: Bank for International Settlements, Bloomberg, Ninety One December 2018

Rising trade volumes

China's bond market is becoming more liquid, with trading volumes rising.

Figure 24: Bond market outstanding and annual turnover in CGBs (CNY tn)



Source: J.P.Morgan, 'A Guide to China's Local Bond Market', May 2019

Test 2 observations

China's markets are already large, with the country possessing the second-largest equity and bond markets, and they have the potential for significant further growth. To date, however, they have been largely untapped by foreign investors, with overseas participation low in comparison to other large markets. That is starting to change as China opens to international investors.

A market of China's relative importance has not emerged within living memory. Following reforms and structural change, notably the growth of the private sector, Chinese equity and bond markets can accommodate large separate allocations. We think they also provide adequate liquidity to manage strategic China allocations.

| China's markets are already
| large and have the potential for
| significant further growth





3. What alpha opportunities does the market offer, and how can they be captured?

An additional consideration in evaluating a standalone allocation to a market is whether capturing the alpha opportunity is likely to require specialist expertise or can be achieved as part of a wider international or emerging markets mandate.

In this test, we look for the factors that may make a market a rewarding hunting ground for active investors.

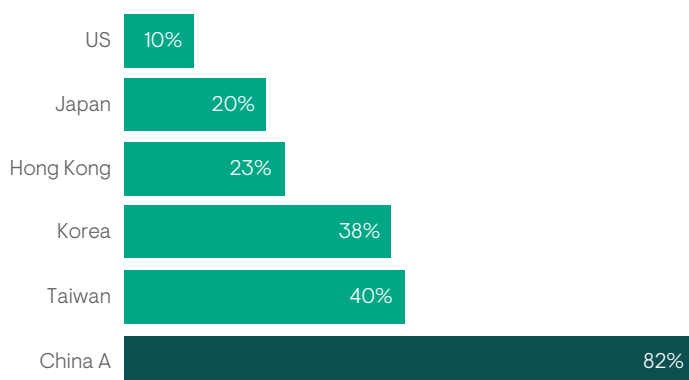
Test 3

Equities

Retail distortions

Chinese equity markets are relatively volatile and prone to periods of euphoria and herding (Figure 26), suggesting opportunities for active managers. One reason for this is that retail investors own around three quarters of the onshore market's overall free float (Figure 25 shows retail participation by turnover). Their trading behaviour tends to generate pricing inefficiencies that improves the scope for active managers to add value.

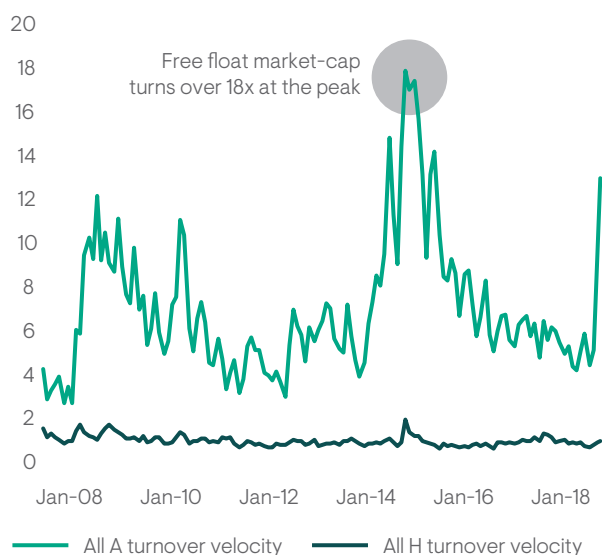
Figure 25: Retail investors as a % of market turnover



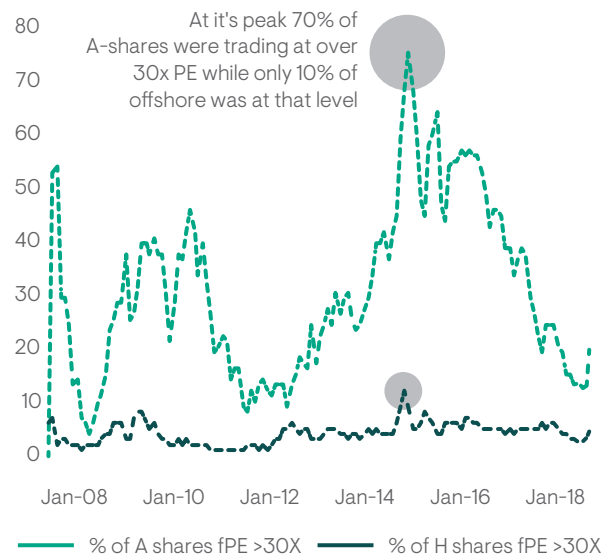
Source: HKEx, SSE, Wind, Bloomberg, Japan Exchange Group, Goldman Sachs Global Investment Research

Figure 26: Retail behaviour in China A-shares

Retail investors drive significantly higher turnover in A-shares



Retail investors drive up PE valuations to irrational levels

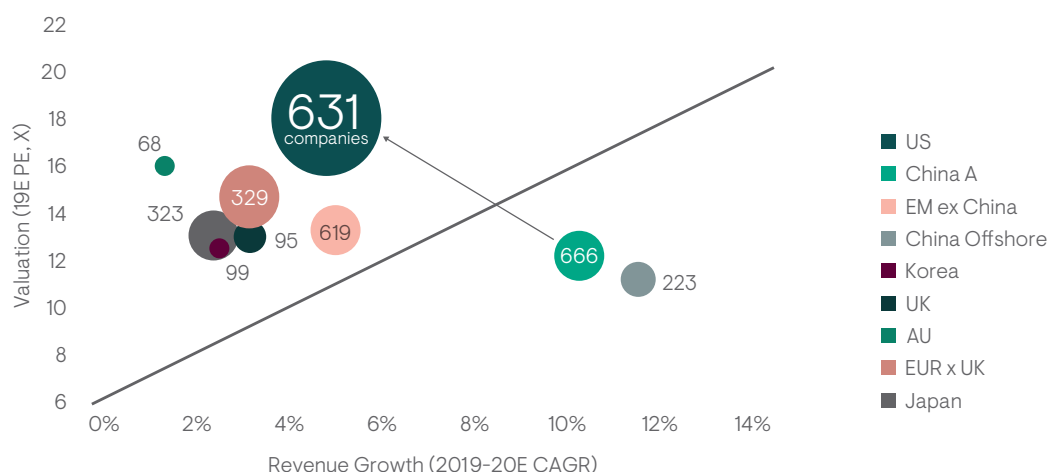


Source: FactSet, Bloomberg as at 28 February 2019. fPE = forward price to earnings. For further information on indices, please see the Important Information section.

High scores for growth and value

A large number of Chinese firms score well on growth and value metrics, offering a rich opportunity set for active equity investors. Having made solid progress cleaning up balance sheets, Chinese authorities' determination to rein in financial risk and leverage is also highlighted by positive trends in dividend payout ratios and capital expenditure relative to sales. We revisit Figure 19 from test 2 outlining the vast potential to select strong companies at much better valuations than are available in other markets.

Figure 27: Size of the opportunity and room for liquid large caps to re-rate



Bubble size indicates the total listed market caps for the stock universe in different markets. Universe: All active stocks with listed market cap >US\$2bn. Note: Aggregate growth and valuations are calculated based on full-listed shares. Source: FactSet, I/B/E/S, MSCI, Ninety One, May 2019

Active potential to manage ESG risk

Addressing governance concerns is another reason some investors prefer active approaches in China. However, asset managers may require a local presence and specialist knowledge to do this successfully. According to the Asian Corporate Governance Association (ACGA), 59% of foreign investors say they are unclear how corporate governance operates in China; 68% describe engaging with A-share firms as “very difficult”.¹⁵

An active China allocation can also be a way to invest in the E (environment) of ESG. As we explored in our ‘Energy 3.0’¹⁶ series, the world has embarked on its third energy transition: a relatively rapid shift in favour of low-carbon energy. China is at the forefront of some of the sectors at the heart of this transition, including renewable energy and electric vehicles.

15. www.ft.com

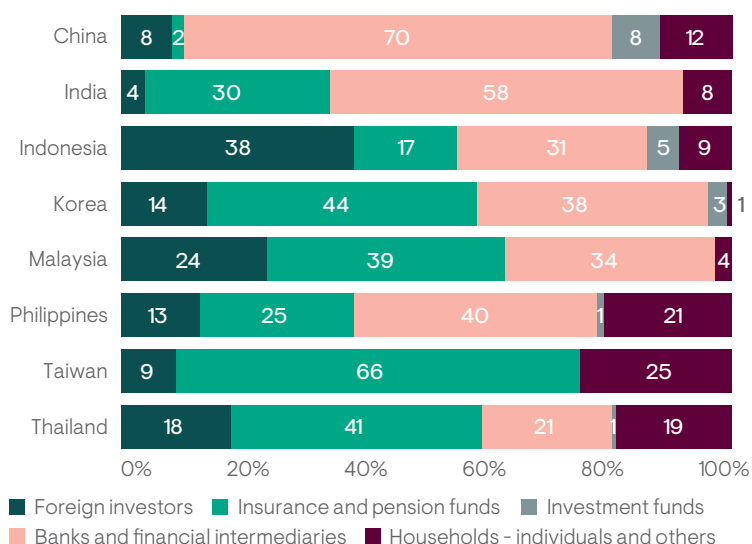
16. www.ninetyone.com

Fixed income

Developed market dynamics

Domestic commercial banks own about 70% of Chinese government bonds, primarily on a hold-to-maturity basis (in contrast to the high retail ownership of Chinese equities). Because domestic investors dominate China's bond markets, their dynamics tend to mirror those of developed markets, rallying on bad economic news as investors dial down risk.

Figure 28: Domestic investors dominate



Source: J.P.Morgan, 'A Guide to China's Local Bond Market', May 2019

A diverse opportunity set for active managers

China's bond markets offer a diverse opportunity set for managers with the specialist knowledge to access the range of securities available (see 'Test 2'). The opportunity includes:

- Onshore CNY-denominated bonds: CNY-denominated bonds issued onshore by public and private Chinese issuers. Potential growth given current heavy reliance on traditional bank lending for credit.
 - Panda bonds: CNY-denominated bonds issued in China by non-Chinese issuers. Potential growth as more foreign entities raise CNY financing for China-based subsidiaries or to conduct business in China.
 - Kung Fu bonds: USD-denominated bonds issued outside China by Chinese issuers. Seven years ago, just US\$100 billion of Chinese dollar bonds were outstanding; there are now about US\$590 billion of these bonds.¹⁷
 - Dim Sum bonds: CNY-denominated bonds issued outside China by Chinese or non-Chinese issuers.
- See overleaf for relative sizes.

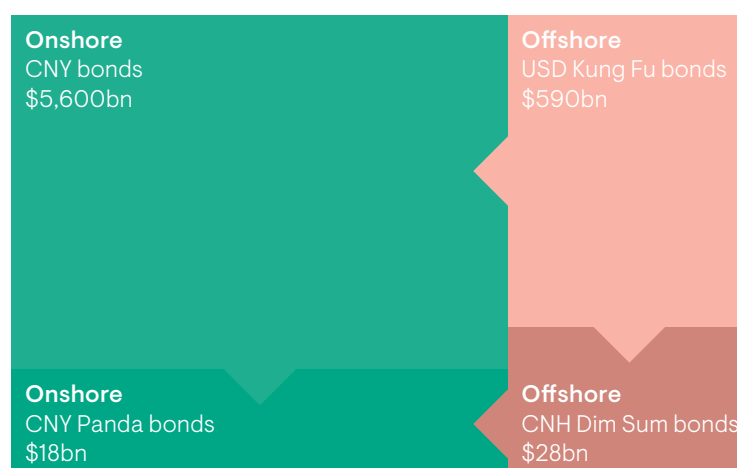
17. J.P.Morgan

A diverse opportunity set for active managers (cont)

Tapping the full opportunity set of Chinese fixed income provides opportunities to create a portfolio that better represents the Chinese economy and offers better balance by sector.

Source: Onshore CNY bonds: Bloomberg Barclays China Aggregate Index; Onshore Panda bonds: Bloomberg; Offshore USD bonds: JPM Asia Credit Index (China, HK, Taiwan, Macau); Offshore CNH bonds: ICE BofAML China Offshore Broad Market Index. 1 July 2019.

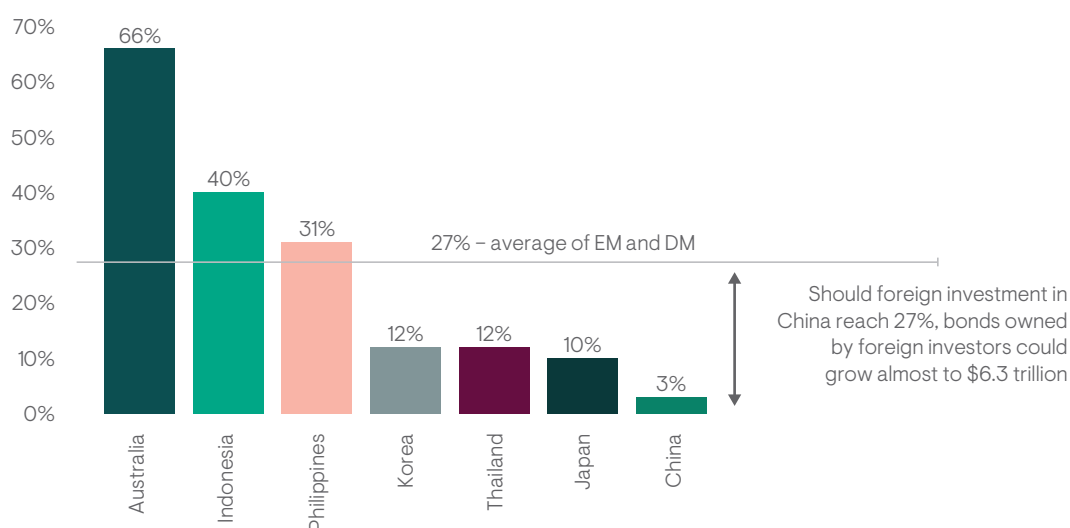
Figure 29: Holistic All China approach



Potential fillip from foreign ownership

Foreigners own just 8% of Chinese government bonds and a mere 2% of China's overall fixed income market.¹⁸ Rising foreign ownership is a potential tailwind for China's bond markets, driven in part by the inclusion of onshore Chinese debt in global benchmarks. From April 2019, over 350 onshore bonds are being added to the Bloomberg Barclays Global Aggregate Index over 20 months.¹⁹ That could bring US\$150 billion of foreign inflows into Chinese bond markets, by some estimates.²⁰

Figure 30: Foreign ownership potential



Source: www.bloomberg.com

18. markets.jpmorgan.com

19. www.cnbc.com

20. ftalphaville.ft.com

Test 3 observations

China's equity market today exhibits low levels of professional investment; a large and lively retail investment sector with a tendency to cause (or exacerbate) pricing inefficiencies; regulatory interventions that sometimes distort markets; and a rich opportunity set.

All of that suggests potential for active equity strategies. Another possible advantage of an active approach to Chinese equities is the potential to address some of the governance and legal concerns some investors have about investing in China. As we have noted elsewhere²¹, an active governance debate has started in China. While change is happening, active management may help investors traverse the potential pitfalls.

Chinese equity markets are less efficient than some of the world's other major markets, suggesting alpha potential; they are also relatively volatile, with high dispersion between winners and losers. The equity opportunity set features many companies with above-average growth and that rank strongly on quality metrics.

Bond markets also offer a diverse set of potential investments, enabling active managers to pursue a range of investment approaches. A broad active investment strategy can seek to unlock relative value opportunities across the universe of offshore and onshore Chinese bonds, positioning for rates, credit and F/X. In contrast to the equity markets, China's onshore bond markets are a lower-risk proposition with characteristics more similar to developed markets than emerging markets. Though many investors would initially approach Chinese fixed income as part of an emerging bond allocation, we would expect them to increasingly consider China part of a core global bond allocation.

Chinese equity markets are less efficient than some of the world's other major markets, suggesting alpha potential

21. <https://www.ninetyone.com/united-kingdom/professional-investor/en-gb/insight/understanding-china/corporate-governance-advocacy-and-engagement-in-china-winds-of-change>





4. Can the market be captured via existing benchmarks?

Or is a bespoke allocation approach required?

Today, most investors are exposed to China via global equity or bond allocations, emerging markets holdings or other parts of their portfolios.

In this test we assess whether asset allocators can rely on off-the-shelf benchmarks or asset allocation models.

Test 4

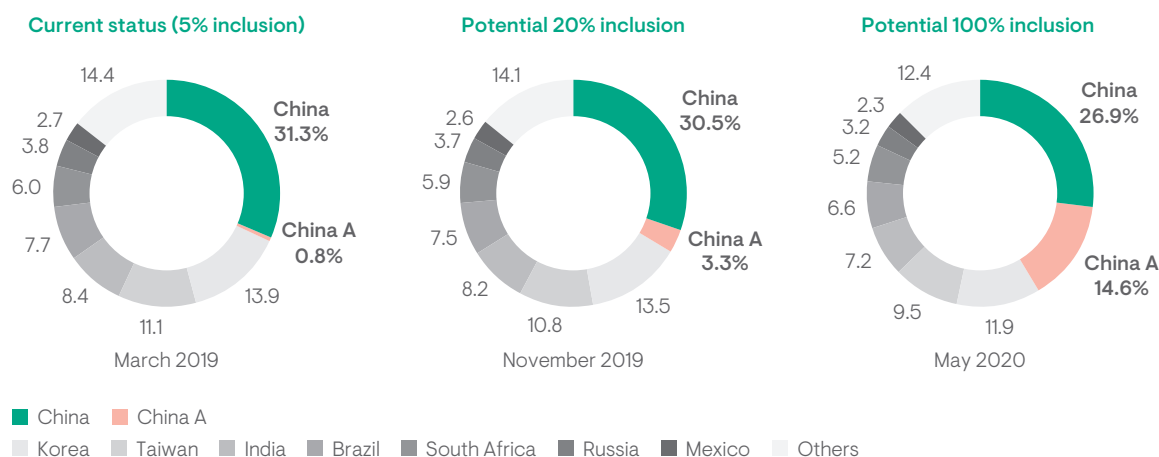
Equities

Index inclusion offers only partial representation

Overseas investors have been able to invest in Chinese stocks for many years, but were barred from holding A shares (onshore Chinese equities) until 2002.²² After that date, China's onshore equity market was restricted to qualified investors via programmes that limited allocations. Major index providers started to include A shares in their benchmarks from the middle of this decade.

Index providers including MSCI, FTSE Russell and S&P Dow Jones are gradually increasing the weighting of China A shares. By November 2019, there will be 253 large-cap and 168 mid-cap China A shares in the MSCI Emerging Markets Index, representing a weighting of about 3.3%, up from about 0.8% now.²³ However, the index will still include only one-fifth of the market capitalisation of large-cap Chinese A-share companies. That will leave investors gaining exposure to China via broad benchmarks substantially underweight relative to the size of China's stock market.

Figure 31: Potential MSCI index inclusion roadmap of China A-shares



Note: assuming the initial step is to add 233 selected A shares and Inclusion factor = 5%, and then inclusion universe is expanded to all the 424 MSCI China A Intl Index constituents. Source: FactSet, MSCI, Goldman Sachs Global Investment Research, 19 March 2019.

22. www.ipe.com

23. www.msci.com

Fixed income

Index inclusion has some way to go

In April 2019, China's onshore bond market was represented in the Bloomberg Barclays Global Aggregate Index for the first time. The inclusion process is being staggered over 20 months. When fully incorporated, local Chinese bonds will be the fourth-biggest constituent of the benchmark, after dollar, Euro and yen issues.²⁴ Other index providers (J.P. Morgan, FTSE) have yet to follow suit but are monitoring CNY-denominated debt for potential inclusion.

For the J.P. Morgan GBI-EM Global Diversified and Narrow Diversified indices, full eligibility is "predicated on investors' ability to replicate the benchmark exposure seamlessly".²⁵

Full inclusion could lead to flows of US\$250-US\$300 billion into Chinese debt. For now, investors in the major fixed income benchmarks will remain underweight Chinese bonds.

Figure 32: Index inclusion – China's share of the world

	J.P.Morgan	Bloomberg	FTSE Russell WGBI
Status	Under consideration	Included local currency China government bonds and policy bank debt from April 2019	Under consideration
Hurdle	Ability to replicate	Staggered weighting through to Nov 2020	On watchlist for inclusion, conditional on China achieving a Level 2 FTSE fixed income country classification
Next step	Consultation in Q3 2019		Also considering China onshore corporate for World Broad Investment-Grade Bond
Potential Weight	7-10%	5-6% when fully included	Not disclosed

Although inclusion will encourage flows, most balanced portfolios will be underweight

Source: Ninety One

24. www.ipe.com

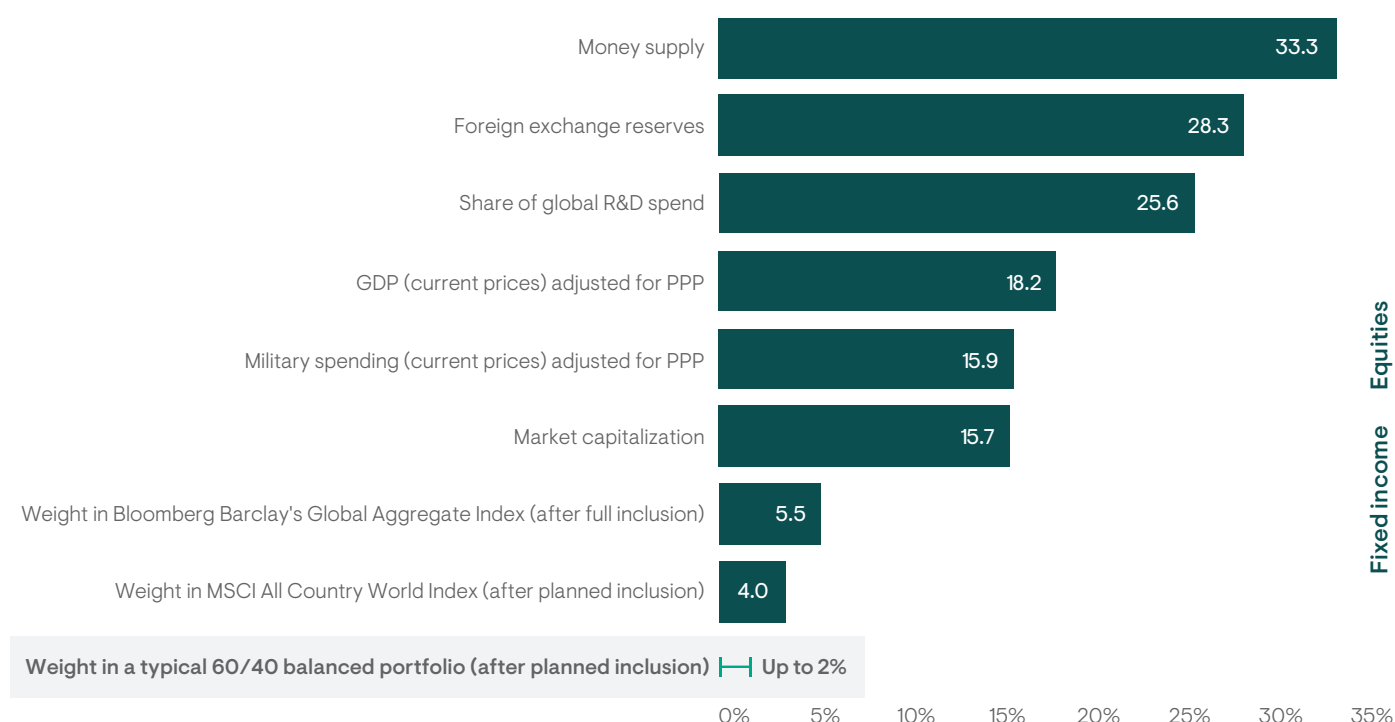
25. markets.jpmorgan.com

Can the China opportunity be captured via existing benchmarks or is a dedicated allocation required?

China's share: placing China in context

The chart below offers perspectives on China's size, highlighting the low weighting afforded the country by current benchmarks and typical allocation frameworks.

Figure 33: China's share of the world



Source: BofA Merrill Lynch Global Research, IMF, SIPRI, MSCI, Bloomberg, FactSet, Haver, Wikipedia. Notes: World is represented by the countries in MSCI All Country World Index. Market capitalisation for China include A, B and H shares. *World includes all countries, Chinese RMB-dominated bonds will be included in this index over a 20-month period starting April 2019. The weighting denotes the indicative weight of Chinese bonds when fully accounted for in the Global Aggregate index, using data as of 31 January 2018. See 'Asia FI Strategy Watch: China: Q&A on bond connect 04.27.18' from China rates strategies.

Test 4 observations

Getting exposure to China via broad benchmarks will typically underweight Chinese assets, even after current programmes to further integrate Chinese securities are completed.

Generally, the inclusion of new markets in indices is cautious by design. Index providers tend to wait for institutional and structural development to comfortably exceed the minimum criteria before considering a potential constituent for inclusion. Index weights are also inherently backward looking as they are based on current market values. Consequently, indices may not offer a good representation of fast-developing markets such as China.

| Indices may not offer a good
| representation of China

Summary: placing China in an asset allocation framework

These four pragmatic asset allocation tests suggest:



This analysis makes a strong case for maintaining separate allocations to Chinese equities and bonds. The investment industry may be heading in this direction anyway: if China reaches its potential, it seems likely that 'Emerging markets ex-China' will eventually become an established asset class in its own right, just as Asia ex-Japan did following Japan's emergence as an economic power in the second half of the 20th century.

We also note that there is very little single-name duplication between China's onshore and offshore equity and bond markets. Consequently, a separate China allocation focused on the onshore markets should not overlap existing allocations (to emerging

markets benchmarks) that include China exposure. One final consideration for asset allocators is that, as China grows and integrates with global capital markets, it will eclipse the other constituents of an emerging market allocation and diminish the potential contribution of these holdings. A separate allocation may help to avoid this.

Though Chinese equities and fixed income are currently distinct from other markets, they are likely to converge over time as they mature and develop, and as index inclusion and Chinese growth increase their weighting in the universe of global investments. This indicates a potential early-mover advantage for those realigning their asset allocations now.

Where does China fit?

An asset allocator's framework

Based on our analysis of China's markets, there is a compelling case for considering a discrete allocation to Chinese equities and bonds within a diversified portfolio.

To make such an allocation, an investor must first consider;

- How to size positions
- Which existing exposures should be displaced
- The overall impact on portfolio risk and return

These questions can only be fully addressed in reference to the objectives and parameters of a real investment portfolio. Our aim here is to suggest a potential framework, and a reasonable starting point, for constructing a standalone China allocation.

Our analysis focuses exclusively on Chinese financial assets. In modelling a theoretical allocation, we have restricted ourselves as much as possible to these asset classes, rather than presenting views on the other components of a global portfolio. We believe that return forecasting is prone to large estimation errors and is an unreliable way to make asset allocation decisions. Our methodology seeks to minimise the number of forecasts and explicitly recognises the uncertainty around forecasts.

Black-Litterman model

We have used an approach based on the Black-Litterman asset allocation model (the 'Model'), which takes the total market portfolio as the starting point.²⁶ From this, it generates an implied set of expected returns for each asset class. These expected returns can then be combined with subjective views on individual asset classes (in absolute or relative terms), with a confidence level attached to each view.

We have taken representative benchmark portfolios for an institutional investor as the starting point and, using historical volatility and correlation inputs, incorporated scenarios for the performance of Chinese equities and bonds relative to the benchmark allocations.

The precise values generated by the optimiser are less important than what this exercise says about the significance of China's emergence to asset allocation.

Simply put, integrating Chinese assets will likely require a meaningful change in global portfolios.

Figure 34: Black Litterman model – Optimal suggested weight ranges for a traditional 60% equity / 40% fixed income portfolio (based on low/high return assumptions)



Source: Ninety One, June 2019. Chart shows the Model's range of optimal weightings to Chinese assets for a balanced US institutional portfolio, based on scenarios that vary the relative performance of Chinese asset classes and the potential for higher correlation as China integrates.

26. The original paper on this model is Black and Litterman (1990). It was expanded in Black and Litterman (1991, 1992) and discussed in greater detail in Bevan and Winkelmann (1998), He and Litterman (1999) and Litterman (2003)

Central scenario

Our central scenario is for Chinese equities to modestly outperform over the long term relative to US and international equity indices, and for Chinese bonds to do the same relative to US aggregate bond indices. (Note that this modelling is in the context of a benchmark allocation and so only considers returns from an index or benchmark perspective. In this paper, we have set out why we believe the opportunity for alpha generation is higher in Chinese equity and bond markets than in many other markets, but we do not explicitly incorporate this into our quantitative modelling.)

For Chinese equities, this scenario is based on our forwardlooking analysis of the unique opportunity that exists for Chinese companies as part of the 'Second Great Transformation'.²⁷ The precise degree of outperformance cannot be predicted, but we can draw on historical examples of countries that have undergone comparable transitions and development in their capital markets as a guide. Across the six historical examples we have identified, these markets outperformed global equities by an average of 7% per annum over the 5-year period and 6.4% over the 10-year period leading up to the attainment of developed status. To be conservative, the central scenario assumes that Chinese equities will outperform by half as much; i.e., 3% per annum.

For Chinese bonds, our starting point for the central scenario is that the best single predictor of long-run future nominal returns for default-risk-free bonds is their yield. There is a substantial body of evidence for this finding and many more sophisticated models do little to improve the accuracy of long-run return

forecasts. Since we are concerned with the relative performance of Chinese bonds, we use the difference between the yields on Chinese and US bond indices, which is currently 0.4%.²⁸ This assumption only holds for nominal returns in the local currency. To turn this into a forecast in US dollars, we need to make the additional assumption that the US dollar-Chinese renminbi exchange rate is essentially unchanged from the start to the end of the period. We view a stable exchange rate as the most likely outcome over the long term. The methodology constrains the allocation to Chinese asset classes to one third of the equity and one third of the bond allocation for each benchmark.

Confidence levels

We recognise that there is significant uncertainty around these forecasts and that they will not be precisely accurate. The Black-Litterman model allows us to reflect this uncertainty by assigning a confidence level to scenarios. We accept that there are both higher and lower potential return outcomes, and so assign each scenario a 33% confidence level.²⁹

Based on relatively conservative assumptions, the portfolio implications are substantial in every case, with the proposed allocations far in excess of those implied by the index weights. Across the various types of portfolio, the weighting to Chinese equities ranges from 5% to 16%. The optimiser shows a strong preference for Chinese bonds based on their higher yields and lower volatility, suggesting in each case that a constrained one third of the bond portfolio is allocated to Chinese bonds.

27. www.ninetyone.com

28. As at 30 April 2019. This yield differential has varied significantly over time but the median value over the last 15 years is similar, at 0.5%.

29. The confidence level differs from the probability of the outcome occurring. Rather, it is a parameter used in the model to incorporate the scenario alongside the historical asset relationships. Further detail on the calculations can be provided.

Output: a substantially different allocation

The output of the Model based on the central scenario is shown below. This table shows the weights of standard benchmarks for US institutional portfolios with different risk profiles and the optimal weights (and percentage change) suggested by the Model.

Figure 35: Benchmark versus proposed weights for different risk profiles (% weights)

Risk Profile	US equity			Intl.Equity			China equity			US bond			US HY			China bond		
	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged
Conservative	14	12	-2	5	3	-2	1	5	+4	64	44	-20	16	16	0	0	20	+20
Moderate	28	25	-3	11	8	-3	1	7	+6	48	32	-16	12	12	0	0	16	+16
Balanced	42	38	-4	16	12	-4	2	10	+9	32	21	-11	8	8	0	0	11	+11
Growth	56	51	-5	22	16	-6	2	13	+11	16	11	-5	4	4	0	0	5	+5
Aggressive	70	63	-7	27	20	-7	3	16	+14	0	0	0	0	0	0	0	0	0

As with any portfolio optimisation exercise, our Model relies on historic relationships between asset classes and assumes that these relationships hold in the future. This may appear to be the weakest point of this analysis, given that China is undergoing such significant change. Indeed, we have argued that the process of opening to greater institutional and international involvement in China's equity market in particular is likely to lead to lower volatility (as retail investors make up a much-reduced component of total trading volumes) and higher correlation with global equities (as China becomes more reliant on the same flows of global capital that drive other markets).

However, we do not expect a step-change in behaviour and think that these changes will be part of a gradual and measured process over a period of years. Lower volatility and higher correlation are also somewhat offsetting forces, which also means that future relationships between asset classes are less likely to diverge dramatically from historic experience. In the appendix, we consider alternative scenarios for both returns and correlations and show their impact on the output of the asset allocation Model.

| We regard the precise values generated by the Model as less important than the direction of travel. We believe the results underline the importance of taking the rise of China seriously and starting the process of adjusting portfolios without delay.

Conclusion: dig the well before you're thirsty

China appears on track to overtake the US as the world's largest economy and continues to progress toward developed status. Investors may need to reassess how to position the country within their overall asset allocations.

Potential drawbacks of current frameworks

As China grows and opens to outsiders, the weighting of Chinese securities in broad benchmarks will continue to rise. Global investors will naturally gain more exposure to China without changing their allocation frameworks. However, our analysis suggests that a laissez-faire allocation approach has several potential drawbacks:

- Broad benchmarks evolve slowly and tend to underweight China.
- Investors are likely to have little exposure to some of the cutting-edge industries in which China is a leader, such as robotics and electric vehicles.
- China-focused benchmarks offer an imprecise representation of the Chinese market.
- As China grows, it will increasingly eclipse some of the other exposures included within broad benchmarks, most notably emerging market holdings.

Considering China separately

With China growing and widening market access, Chinese equity and bond markets have become large and diverse enough to accommodate a sizeable standalone allocation. Allocating separately to China could help to overcome the challenges listed above and may offer some advantages:

- Chinese markets have distinctive characteristics. Via a separate allocation, investors will have better access to a differentiated and potentially diversifying source of returns.
- Chinese markets tend to be relatively inefficient. A standalone allocation to an active China strategy may help investors tap their alpha potential.

Toward a discrete China allocation

The sizing and positioning of a standalone China allocation will clearly depend on the objectives and parameters of the investment portfolio into which it is placed. Nevertheless, applying the Black-Litterman model — a well-known asset allocation framework — to a typical US institutional portfolio offers insights that asset allocators should find useful.

The changes to the sample portfolios are substantial in every case. The allocation to Chinese equities rises by between 4 percentage points and 14 percentage points; and to Chinese bonds by up to 11 percentage points.

未雨綢繆

Across a range of risk profiles from conservative to aggressive:

Chinese Equity allocation up 4-14%

Chinese Bond allocation up 5-20%

If nothing else, this exercise shows that China is rapidly becoming too big for asset allocators to ignore.

Whatever solution investors ultimately choose, we suggest a pro-active approach may be preferable to allowing the evolution of China allocations to be dictated by index providers.



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- China's bond (r)evolution
- China's renminbi: keeping an eye on the prize

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Appendix – scenario analysis

Alongside the central scenario already considered, we have modelled optimistic and pessimistic return scenarios and considered the impact of the correlations of Chinese equity and bond markets with the rest of the world converging on the higher levels common in other developed markets. (For completeness, we also include a lower-correlation scenario, although we do not think this to be a likely outcome).

The confidence level used for each scenario remains at 33% and all other parameters are unchanged. In each case, the maximum potential allocation to Chinese assets is constrained to one third of the equity and bond portfolios respectively. The assumptions used in these different scenarios are:

- **High return:** Chinese equities outperform US and international equities by 6%; Chinese bonds outperform US Aggregate bonds by 0.8%.
- **Low return:** 0% return differential between Chinese, US and international equities; 0% return differential between Chinese bonds and US Aggregate bonds.
- **High correlation:** All pairwise correlations of Chinese, US and international equities are 85%; correlation of Chinese bonds and US Aggregate bonds is 85%.
- **Low correlation:** All pairwise correlations of Chinese, US and international equities are 0%; correlation of Chinese bonds and US Aggregate bonds is 0%.

We show results for these scenarios applied to the 'Balanced portfolio' benchmark only (60% equities, 40% bonds). In all these scenarios, the Model again

recommends increased exposure to both Chinese equities and bonds although, unsurprisingly, the range of outcomes is much wider.

The low-return scenario suggests only a small increase in both allocations. But it is noteworthy that, even for an investor who does not think that Chinese equities or bonds will outperform at all in the future, this Model still suggests doubling the weight of Chinese equities in the strategic asset allocation and making Chinese bonds almost 8% of bond exposure.

The high-return scenario requires the most dramatic reorientation of the portfolio in favour of Chinese assets. This scenario should not be dismissed as totally unrealistic. The equity returns assumed are in line with the average of our historical analogues and the scale of the opportunity in China today arguably dwarfs any of these instances. The high-return scenario could also reflect an outcome where index-level outperformance is accompanied by higher alpha from active management in Chinese markets.

The high-correlation scenario suggests a smaller increase in Chinese equity exposure than the central scenario, but a larger increase in bond exposure. This highlights the sensitivity of the optimisation process to the inputs used. In this scenario, Chinese equities become a less diversifying asset class and remain relatively high volatility, so only justify a relatively low weight despite a somewhat higher expected return. Chinese bonds, on the other hand, become an even more diversifying asset class and, given their higher expected return than US bonds (the other diversifying asset class), the optimiser sees no reason not to allocate the maximum potential exposure to Chinese bonds.

Figure 36: Allocation weightings of scenarios, varied by return and correlation parameters (% weights)

	US equity			Intl.Equity			China equity			US bond			US HY			China bond		
	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged	Benchmark	Proposed	Charged
Base case scenarios																		
Balanced	42	38	-4	16	12	-4	2	10	+9	32	21	-11	8	8	0	0	11	+11
High return	42	35	-7	16	9	-8	2	16	+15	32	21	-11	8	8	0	0	11	+11
Low return	42	41	-1	16	15	-1	2	4	+2	32	24	-8	8	8	0	0	8	+8
High correlation	42	40	-2	16	15	-1	2	4	+3	32	21	-11	8	8	0	0	11	+11
Low correlation	42	38	-4	16	12	-4	2	10	+8	32	21	-11	8	8	0	0	11	+11

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Indices (from Figure 15)

Onshore CNY Bonds: JP Morgan Asia Diversified Broad China Index TR; Offshore CNH Bonds: Markit iBoxx Asia Local Bond Index China Offshore TR Index Unhedged; Offshore USD China Bonds: JP Morgan Asia Credit Index China TR; Global DM Bonds: JP Morgan Government Bond Index Global Unhedged USD; Global DM Equities: MSCI World Index; Global EM Local Bonds: JP Morgan GBI-EM Global Diversified Composite Unhedged USD; Global EM USD Bonds: JP Morgan EMBI Global Diversified Composite; Global EM Equities: MSCI Emerging Markets Index.

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