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The future is now: index inclusion for Chinese bonds

By Jan Dehn and Romain Bocket

Chinese local currency government bonds enter the Bloomberg Ag next month. What does this mean for investors in developed bond markets? We estimate efficient allocations to Chinese bonds for USD, EUR, GBP and JPY-based investors using performance data for the past five and ten years.

We also estimate the efficient allocation to Chinese bonds for USD-based investors in a forward-looking framework and in USD-hedged portfolios. We find that Chinese bonds offer meaningful advantages to investors in all these contexts. We therefore expect significant participation as index inclusion gets underway.

Some USD 300bn is likely to flow into the Chinese bond market in the first rounds of index inclusion. This is roughly equivalent to one third of all outstanding bonds in the entire Dollar-denominated EM sovereign government bond market.

Introduction

It is the destiny of Chinese markets to replace US markets as benchmarks for global fixed income, currencies and stocks. This is a logical and, in our view, inevitable consequence of China's larger population, higher investment rates and much greater propensity to pursue structural reforms, financial and otherwise.

The next milestone on China's road to global financial hegemony will be achieved next month, when government bonds enter the Bloomberg Aggregate Index

China is racking up important milestones along its path towards global financial hegemony. The decision of the International Monetary Fund (IMF) in 2006 to include the Chinese Renminbi in the Special Drawing Rights (SDR) currency was an important milestone. The next milestone is likely to be achieved next month, when Bloomberg includes Chinese government bonds into its influential Bloomberg Aggregate Indices ('Bloomberg Ag') for the first time. Ashmore has anticipated this event for some time.[1]

What will index inclusion mean for investors? China is still a developing country, which faces many structural challenges, so investors should approach index inclusion from a medium to long-term view. This report therefore focuses on how Chinese bonds may influence performance of developed market bond portfolios over longer time horizons of five and ten years. When JP Morgan finally gets around to including Chinese bonds in its Emerging Markets (EM) fixed income benchmark indices, we will publish a similar analysis of the potential implications for EM-specific portfolios.

Index inclusion

China is an EM country with a near-developed country standard bond market. China's bond market is enormous; corporate and sovereign bonds make up about 48% of total EM fixed income and more than 10% of the global bond market.[2] The Chinese economy accounts for nearly 40% of EM GDP and more than 20% of the global economy (in PPP-adjusted terms).

As of November 2018, the Chinese bond market comprised CNY 14.1trn (USD 2.1trn) in government bonds and CNY 14.3trn (USD 2.1trn) in policy bank bonds (which have no explicit government guarantee). In addition, there is some CNH 86bn (USD 12.8bn) in outstanding offshore government bonds and CNH 20bn (USD 3.0bn) in offshore PBOC bills.[3] The size of China's markets means that these bonds will become a prominent – and eventually dominant – feature in both EM and developed market fixed income benchmark indices. Indeed, Bloomberg recently confirmed that 356 Chinese government bonds and bonds from three Chinese policy banks will enter the Bloomberg Ag initially. Over a 20 months period, starting in April 2019, China's weight in the index will grow in 5% increments until the index weight reaches just over 6%.[4]

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[1] See *'Chinese bonds in Developed Markets bond portfolios'*, The Emerging View, 18 May 2018 and *'How Chinese bonds can enhance your portfolio'*, The Emerging View, 16 March 2018.
[2] See *'The EM fixed income universe version 7.0'*, The Emerging View, 23 August 2018.
[3] The onshore government yield curve goes from 3 months to 50 years. Policy bank bonds have 1yr, 3yr, 5yr, 7yr and 10yr maturities. The offshore government curve goes out to 30 years, while PBOC bills trade out to 1 year.
[4] See https://www.bloomberg.com/company/announcements/bloomberg-add-china-bloomberg-barclays-global-aggregate-indices/

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This implies some USD 150bn in inflows. FT Russell will also include Chinese bonds at some yet to be specified time, which should result in a further USD 125bn in inflows. Finally, another USD 22bn is likely to enter the Chinese bond market when JP Morgan includes China in its GBI EM GD benchmark. In short, inflows to the Chinese domestic government bond market start at around USD 300bn, which is equivalent to about one third of the entire Dollar-denominated Emerging Markets sovereign bond universe of USD 1.1trn (as of end 2017).

China in developed market bond portfolios

The yield on Chinese bonds is generally higher than the yield on offer in developed markets, but lower than investors can obtain in many other EM countries. As such, the appeal of Chinese bonds tends to boil down to the full package, i.e. yield as well as correlation with other markets, and volatility. In general, we believe that institutional investors with medium to long-term investment horizons, such as pensions, insurance, central banks and sovereign wealth funds will be especially interested in Chinese bonds, while shorter-term momentum oriented investors, such as retail investors and hedge funds will have less interest.

To gauge the attractiveness of Chinese bonds for medium and long-term institutional investors, we have conducted traditional portfolio optimisation exercises for 5-year government bonds from Germany, UK, Japan, US and China. The objective of each exercise is to identify the optimal allocation to each of the bonds in the portfolio. Most of the exercises assume the perspective of a Dollar-based investor, because the bulk of global capital is sitting within Dollar accounts. However, we also carry out analyses from the perspective of EUR, GBP and JPY-based investors as well as forward-looking analysis and optimal allocations using USD hedged assets.

Specifically, simulations 1 and 2 show the optimal allocations to Chinese bonds using historical performance data for the past five and ten years. Simulation 3 estimates optimal allocations on a forward-looking basis using one-year historical correlations and volatility and current yields to maturity. Simulations 4-6 estimate efficient allocations to Chinese bonds using ten years of historical data for EUR, GBP and JPY-based investors. Finally, we simulate optimal allocations over various time-periods for Dollar-hedged portfolios in order to isolate the contribution of Chinese bonds beyond Renminbi's correlation with the Dollar (simulation 7).

Simulation 1:

Five-year performance characteristics of Chinese bonds for USD-based investors

The optimal allocation to Chinese bonds based on returns, volatility and correlations over the past five years is 100% with 0% allocated to US, Japanese, UK and German bonds (Figure 1). This strong result arises due to the superior returns of Chinese bonds as well as the fact that Chinese bonds have half the volatility of European and Japanese bonds. US bonds have had better returns and lower volatility than European and Japanese bonds, but these advantages have not been substantial enough to outweigh Chinese bonds, where performance is negatively correlated with US bonds. Overall, the portfolio delivers a Sharpe Ratio of 0.1 with an average annual return of 2.9% and portfolio volatility of 3.6%.

Fig 1: **Optimal allocation to China over 5-year investment horizon**

	5 year		
Sharpe ratio	0.1		
Portfolio return	2.9%		
Portfolio volatility	3.6%		
	Optimal allocation	**USD annualised return**	**Annualised volatility**	**Correlation with Chinese bonds**
Germany	0%	-3%	8%	17%
UK	0%	-3%	9%	16%
Japan	0%	-2%	9%	14%
US	0%	1%	2%	-1%
China	**100%**	**3%**	**4%**	**100%**

Source: Ashmore, Bloomberg.

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Simulation 2:

Ten-year performance characteristics of Chinese bonds for USD-based investors

The optimal allocation to Chinese bonds based on returns, volatility and correlations over the past ten years is also 100% (Figure 2). The Sharpe ratio is 0.3 with a portfolio return of 3.5% and volatility of 3.1%. US and Chinese bonds have zero correlation. Chinese bond volatility is the same as US bond volatility, but multiple times lower than the volatility of other developed market bonds. Chinese bond returns have been superior to all the other bonds, including US bonds.

The efficient allocation to Chinese bonds in a developed market fixed income portfolio over the past 5 and 10 years has been 100%

Fig 2: **Optimal allocation to China over 10-year investment horizon**

	10 year			
Sharpe ratio	0.3			
Portfolio return	3.5%			
Portfolio volatility	3.1%			
	Optimal allocation	USD annualised return	Annualised volatility	Correlation with Chinese bonds
Germany	0%	0%	8%	12%
UK	0%	2%	8%	10%
Japan	0%	-1%	9%	10%
US	0%	2%	3%	0%
China	100%	3%	3%	100%

Source: Ashmore, Bloomberg.

Simulation 3:

Forward-looking performance characteristics of Chinese bonds for USD-based investors

The optimal allocation to Chinese bonds going forward is 69% with 31% in US bonds (Figure 3). The risk free rate of 2.4% overnight LIBOR means that the very low bond yields currently on offer in Europe and Japan make bonds in these countries unattractive in global bond portfolios, which are denominated in Dollars. The forward-looking analysis uses current yields to maturity in the five bonds as well as one-year correlations and volatility. It also embeds an assumption that exchange rates are stable.

Fig 3: **Optimal allocation to China in a forward-looking perspective**

	Fwd			
Sharpe ratio	0.1			
Portfolio return	2.8%			
Portfolio volatility	3.0%			
	Optimal allocation	USD annualised return	Annualised volatility	Correlation with Chinese bonds
Germany	0%	0%	6%	24%
UK	0%	1%	7%	11%
Japan	0%	0%	6%	5%
US	31%	2%	2%	-11%
China	69%	3%	4%	100%

Source: Ashmore, Bloomberg, JP Morgan.

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Simulation 4:

Ten-year performance characteristics of Chinese bonds for EUR-based investors

Based on market performance in the past ten years, the optimal allocation to China for Eurozone-based investors is 4% and 1% in UK, but with nothing in US or Japanese bonds (Figure 4). The correlation between a German bond and Chinese bonds is lower than in the other countries, while Chinese bonds pay the highest yield. It is likely that the optimal allocation to China for EUR-based investors rises in a forward-looking context, since the capital gains in European bonds in the future are unlikely to match those racked up during the peak QE (Quantitative Easing) years.

Fig 4: **Optimal allocation to China for long-term EUR-based investors**

	EUR-based			
Sharpe ratio	1.2			
Portfolio return	2.2%			
Portfolio volatility	2.2%			
	Optimal allocation	**USD annualised return**	**Annualised volatility**	**Correlation with Chinese bonds**
Germany	95%	2%	2%	30%
UK	1%	3%	8%	43%
Japan	0%	1%	11%	49%
US	0%	4%	9%	82%
China	**4%**	**5%**	**9%**	**100%**

Source: Ashmore, Bloomberg.

Simulation 5:

Ten-year performance characteristics of Chinese bonds for GBP-based investors

The efficient allocation to Chinese bonds for GBP-based investors over the past ten years has been 2% (Figure 5). The reasons are roughly the same as for EUR-based investors: higher yield and lower correlation.

Fig 5: **Optimal allocation to China for long-term GBP-based investors**

	GBP-based investors			
Sharpe ratio	1.3			
Portfolio return	2.7%			
Portfolio volatility	2.4%			
	Optimal allocation	**USD annualised return**	**Annualised volatility**	**Correlation with Chinese bonds**
Germany	0%	1%	8%	48%
UK	98%	3%	2%	28%
Japan	0%	0%	12%	58%
US	0%	3%	9%	83%
China	**2%**	**4%**	**10%**	**100%**

Source: Ashmore, Bloomberg.

It has also been efficient for European, UK and Japanese investors to allocate to Chinese bonds

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Simulation 6:

Ten-year performance characteristics of Chinese bonds for JPY-based investors

The two main attractions of Chinese bonds to Japanese investors over the past ten years has been five times higher yield and negative outright correlation. Volatility has been ten times higher in China than in Japan.

Fig 6: **Optimal allocation to China for long-term JPY-based investors**

	JPY-based investors			
Sharpe ratio	1.7			
Portfolio return	0.8%			
Portfolio volatility	0.7%			
	Optimal allocation	**USD annualised return**	**Annualised volatility**	**Correlation with Chinese bonds**
Germany	0%	2%	10%	56%
UK	0%	3%	11%	60%
Japan	97%	1%	1%	-7%
US	0%	3%	9%	84%
China	**3%**	**5%**	**10%**	**100%**

Source: Ashmore, Bloomberg.

Simulation 7:

Optimal allocations to China for FX-hedged investors over various time horizons

The appeal of Chinese bonds extends beyond Renminbi's historical correlation with the Dollar

Renminbi's peg to the Dollar for much of the last ten years certainly contributed to the edge of Chinese bonds over European and Japanese bonds from the perspective of USD-based investors. To neutralise this effect, we optimised allocations across Dollar-hedged total return indices for Chinese, German, UK and Japanese bonds as well as (unhedged) US bonds (Figure 7). Chinese bonds still feature prominently in all portfolios even after Dollar-hedging. This underlines that Chinese bonds have appeal far beyond the tailwind from Renminbi's correlation with the Dollar.

Fig 7: **Optimal allocations to Chinese bonds in USD hedged portfolios**

Forward-looking	Forward-looking	1-year	5-year	10-year
Germany	0%	8%	22%	53%
UK	0%	0%	0%	0%
Japan	0%	13%	0%	0%
US	1%	0%	0%	0%
China	**99%**	**79%**	**78%**	**47%**
Sharpe Ratio	0.55	5.61	0.90	0.46
Portfolio return	3.01%	7.62%	3.56%	3.32%
Portfolio volatility	1.12%	0.93%	1.30%	2.02%

Source: Ashmore, Bloomberg.

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Discussion

Based on the results presented above, investors in developed bond markets are likely to embrace Chinese bonds when they enter the Bloomberg Ag next month. The benefits to US, Japanese, UK and European investors from adding Chinese bonds include higher yields and very low correlations. The rewards to early entrants will be greatest, because the advantages of adding Chinese bonds to a portfolio of developed market bonds are maximised at the start of the index inclusion process before correlations with developed bonds market creep higher.

We expect Chinese bonds to continue to offer material advantages if Europe and Japan ever scale back QE, because ending QE might push yields higher in both regions. Chinese bonds already pay higher yields than US bonds.

Currency is likely to matter for performance. We believe that the Dollar is overvalued against most other currencies, including Renminbi and EUR. If the Dollar declines broadly, we would still expect Chinese bonds to perform better than European bonds due to yield differentials and low correlations.

Annex:

Methodology

We solve for the most efficient allocations in portfolios comprising German, UK, Japanese, US and Chinese bonds.

Some 100,000 portfolio permutations were generated using Monte Carlo analysis. The analysis maximises the Sharpe Ratio across these portfolios subject to the non-negative allocations to individual bonds and a fully invested portfolio (the percentage allocations to the five bonds always sum to exactly 1). We use total return indices (USD hedged and unhedged versions) from Bloomberg.

Contact

Head office

Ashmore Investment Management Limited
61 Aldwych, London
WC2B 4AE

T: +44 (0)20 3077 6000

 @AshmoreEM

www.ashmoregroup.com

Bogota
T: +57 1 316 2070

Dubai
T: +971 440 195 86

Jakarta
T: +6221 2953 9000

Mumbai
T: +9122 6269 0000

New York
T: +1 212 661 0061

Riyadh
T: +966 11 483 9100

Singapore
T: +65 6580 8288

Tokyo
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