

Chinese bonds in Developed Markets bond portfolios

By Jan Dehn and Romain Bocket

Chinese bonds will enter the Global Ag index less than a year from now. How will this impact Developed Markets bond portfolios?

This report analyses the characteristics of Chinese bonds within the context of a portfolio of US, German, Japanese and UK bonds using ten years of data. The conclusion is that Chinese bonds will play an important role in developed market bonds portfolios regardless of the currency basis of the portfolio. This is due to the higher yields, low volatility and modest correlations of Chinese bonds.

This report complements the March 2018 Emerging View, which examined the same question from the perspective of an EM local currency government bond portfolio.

1. Introduction

Barclays/Bloomberg announced recently that Chinese government bonds will be included in the popular Global Aggregate fixed income index starting in April 2019, i.e. less than a year from now. Chinese stocks will also enter the MSCI index starting next month. This is a clear sign that China's integration into global financial markets is now accelerating. Indeed, it is likely that investors in the future will look back upon this moment as one of the pivotal developments in global financial history, rivalling the establishment of the modern Emerging Markets (EM) asset class in the early 1990s.

Chinese bonds are likely to transform the performance of global bond portfolios. It is already clear that Chinese bonds will significantly enhance the performance of EM local currency portfolios, especially during bear markets.¹ However, as this report will show, Chinese bonds are also likely to play an important part in portfolios of developed markets bonds. The main finding of this report is that Chinese bonds can enhance the performance of Developed Markets bond portfolios significantly due to a combination of higher yields, modest volatility and very low correlations with developed market bonds. Indeed, the report establishes that today the efficient allocation to Chinese bonds in a USD-denominated portfolio of US, UK, German, Japanese and Chinese bonds would be close to 40%. Chinese bonds would also add value to JPY, EUR and GBP-denominated portfolios. Quite aside from the beneficial portfolio characteristics of Chinese bonds, the case for allocating to China also draws support from superior macroeconomic factors, including the lowest debt levels among all other countries in the IMF's Special Drawings Right (SDR) basket of currencies, i.e. the countries, whose bonds and currencies make up the bulk of global central bank reserves.

Chinese government bonds are set to be included in the popular Global Aggregate fixed income index less than a year from now

2. Methodology

One way to arrive at an optimal allocation within a portfolio of assets is to maximise the portfolio's Sharpe Ratio, that is, the ratio of total return (net of a 'risk-free' rate) to volatility. This report maximises Sharpe Ratios for a simple portfolio of 5-year bonds from China, US, Germany, Japan and the UK subject to the constraints that allocations must be between 0% and 100% and that the combined portfolio weights cannot exceed 100%. The 'risk-free' rate is the US overnight LIBOR rate. There is sufficient historical data for these five bond markets to establish comprehensive *ex-post* efficient allocations for one, five and ten year investment horizons.²

Section 3 thus presents optimal allocations to Chinese bonds for investors with portfolios denominated in USD, such as US-based investors as well as central banks, sovereign wealth funds and others. Section 4 replicates the analysis for a ten-year investment horizon from the perspectives of EUR, GBP and JPY-based investors. Section 5 proposes an efficient forward-looking allocation to Chinese bonds for USD-based investors, given current yields to maturity and volatility and correlations over the past twelve months as well as a view on USDCNY going forward. Section 6 provides some basic macroeconomic context and Section 7 concludes.

3. China in a Dollar-denominated Developed Markets portfolio

Chinese bonds have consistently delivered significantly higher returns in USD-terms, lower volatility and very low correlations with developed markets bonds. The advantages of Chinese bonds have been so large that, based on USD-denominated returns, the optimal allocation to Chinese bonds in a portfolio of developed markets bonds has been between 80% and 100% over the past one, five and ten years, respectively, as shown in Figure 1. In fact, it has not been optimal for an investors measuring returns in USD-terms to allocate to UK, German or Japanese bonds at all over these periods and only over the full ten-year period has it been optimal to have a modest allocation (20% of the portfolio) in US bonds.

¹ 'How Chinese bonds can enhance your portfolio', The Emerging View, 16 March 2018.

² The analysis uses the following Barclays/Bloomberg indices BEGRG2 Index, BGILG2 Index, BEPAG2 Index and BEUSG2 Index for Germany, UK, Japan and US respectively. For China, we use the following JP Morgan indices JGCHUUSD Index, JGCHUEUR Index, JGCHUGBP Index and JGCHUJPY Index for USD, EUR, GBP and JPY base currencies, respectively.

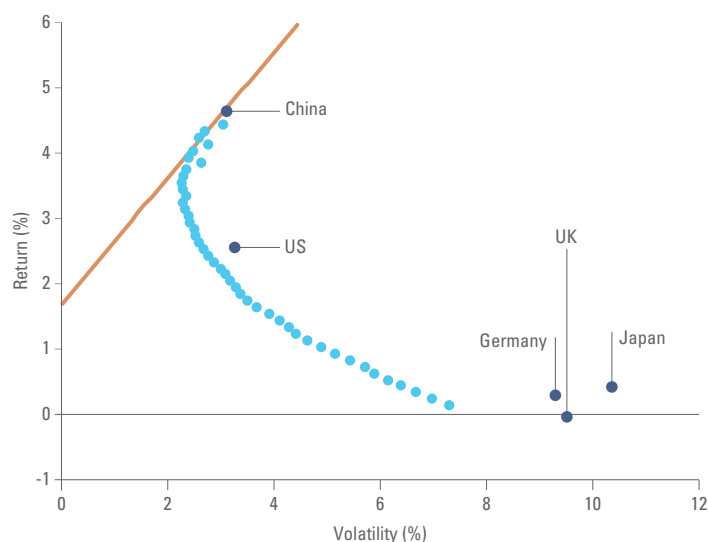
Fig 1: Optimal allocations by country and time period (USD-based investors)

INVESTMENT HORIZON (EX-POST)												
	1 Year				5 Years				10 Years			
Sharpe Ratio	2.7				0.3				1.0			
Portfolio return	12.7%				2.6%				4.2%			
Portfolio volatility	4.1%				3.4%				2.6%			
	Optimal allocation	USD annualised return	Annualised volatility	Correlation with Chinese bonds	Optimal allocation	USD annualised return	Annualised volatility	Correlation with Chinese bonds	Optimal allocation	USD annualised return	Annualised volatility	Correlation with Chinese bonds
Germany	0%	5%	7%	26%	0%	-1%	8%	16%	0%	0%	9%	10%
UK	0%	3%	7%	19%	0%	-1%	9%	16%	0%	0%	10%	9%
Japan	0%	1%	7%	15%	0%	-1%	9%	15%	0%	0%	10%	7%
US	0%	-2%	2%	-4%	0%	1%	2%	3%	20%	3%	3%	1%
China	100%	13%	4%	100%	100%	3%	3%	100%	80%	5%	3%	100%

Source: Ashmore, JP Morgan, Barclays/Bloomberg, Bloomberg.

Figure 2 shows the capital markets line and efficient frontier for the five-asset portfolio over the past ten years. The straight capital markets line depicts the rates of return for the efficient portfolio, while the curved efficient frontier has been estimated based on 100,000 randomly chosen portfolio weights and the portfolio volatility and return, which maximises the Sharpe Ratio.³ The proximity of Chinese bonds to the capital markets line illustrates the superiority of Chinese bonds compared to other developed markets bonds.

Fig 2: Capital markets line and efficient frontier (10 years)



Source: Ashmore, JP Morgan, Barclays/Bloomberg, Bloomberg.

The optimal allocation to Chinese bonds in a portfolio of developed markets bonds was between 80% and 100% over the past ten years

There is a perception that there is no cost to performance if the base currency is volatile. This perception is wrong

4. China bonds in non-USD portfolios

When investors choose a base currency for their portfolios, their choice is often motivated by liquidity concerns. After all, the more liquid a currency, the more easily and cheaply investors can buy and sell securities. There is also a perception that there is no cost to performance if the base currency is volatile. This perception is wrong. Depreciation of a base currency does not show up in the returns, but the value of the fund, in terms of its purchasing power vis-à-vis goods and services in other currencies, declines. For example, a USD-based pension fund may not record any P&L implications of, say, a 10% decline in the USD, because they are a Dollar-based investor, but the pensioner will eventually find that his or her pension buys 10% fewer imports. If imports are, say, 30% of the consumer basket the pensioner will be 3% poorer as a result of the 10% decline in the Dollar.

Investors in Europe, the UK and Japan tend to denominate their funds in their home currencies. Hence, when they look to invest in Chinese bonds, their primary concern is whether adding Chinese bonds makes sense in local currency terms. For this reason, we now replicate the analysis from Section 3 for a ten-year investment period from the perspective of investors with EUR, GBP and JPY-denominated portfolios, respectively.

a) **EUR-based investors:** Over the past ten years, it would have been efficient for a EUR-based investor to have 7% in Chinese government bonds and the balance in German bonds (Figure 3). The efficient allocation to UK, Japanese and US bonds would have been zero. The main benefit of German bonds from a EUR-based investor is low volatility, given the absence of FX risk. Chinese bonds have had the same volatility as US bonds (10%), but they have had much higher annualised returns (8% versus 5% for US bonds) and only about a quarter of the correlation (28% vs. 82% for US bonds).

³ The simulations do not produce volatility estimates for all the combinations of truncated returns, which is why the efficient frontier line consists of dots rather than a smooth line.

Fig 3: Optimal allocations by country and time period (EUR-based investors)

EUR-BASED INVESTORS				
Sharpe Ratio	1.5			
Portfolio Return	3.3%			
Portfolio Volatility	2.5%			
	Optimal allocation	EUR annualised return	Annualised volatility	Correlation with Chinese bonds
Germany	93%	3%	2%	28%
UK	0%	3%	9%	42%
Japan	0%	3%	13%	52%
US	0%	5%	10%	82%
China	7%	8%	10%	100%

Source: Ashmore, JP Morgan, Barclays/Bloomberg, Bloomberg.

b) **GBP-based investors:** Investors with funds in GBP should have allocated 8% of their portfolio to Chinese bonds over the past decade (Figure 4). Returns for Chinese bonds have been more than twice as high as UK bonds with the same or lower volatility as Japanese and US bonds. Chinese bonds deliver genuine diversification benefits, since correlation with UK bonds is far lower compared to other developed market bonds (28% compared to 47%-83% for developed market bonds).

Fig 4: Optimal allocations by country and time period (GBP-based investors)

GBP-BASED INVESTORS				
Sharpe Ratio	1.6			
Portfolio Return	4.0%			
Portfolio Volatility	2.8%			
	Optimal allocation	GBP annualised return	Annualised volatility	Correlation with Chinese bonds
Germany	0%	4%	9%	47%
UK	92%	4%	3%	28%
Japan	0%	4%	14%	62%
US	0%	6%	11%	83%
China	8%	9%	11%	100%

Source: Ashmore, JP Morgan, Barclays/Bloomberg, Bloomberg.

Returns for Chinese bonds have been more than twice as high as UK bonds with the same or lower volatility as Japanese and US bonds

c) **JPY-based investors:** Japanese pension funds and other institutional investors in Japan should consider a 3% allocation to Chinese bonds based on ten-year performance trends (Figure 5). Returns to Chinese bonds in JPY-terms have been five times as high as returns to Japanese bonds, but Chinese have been eleven times as volatile in JPY terms (1% versus 11%). Still, correlations between the two markets have been negative (-8%), which is why Chinese bond allocations are more efficient than allocations to other developed market bonds.

Fig 5: Optimal allocations by country and time period (JPY-based investors)

JPY-BASED INVESTORS				
Sharpe Ratio	1.7			
Portfolio Return	1.1%			
Portfolio Volatility	0.9%			
	Optimal allocation	JPY annualised return	Annualised volatility	Correlation with Chinese bonds
Germany	0%	1%	11%	57%
UK	0%	0%	13%	62%
Japan	97%	1%	1%	-8%
US	0%	3%	10%	84%
China	3%	5%	11%	100%

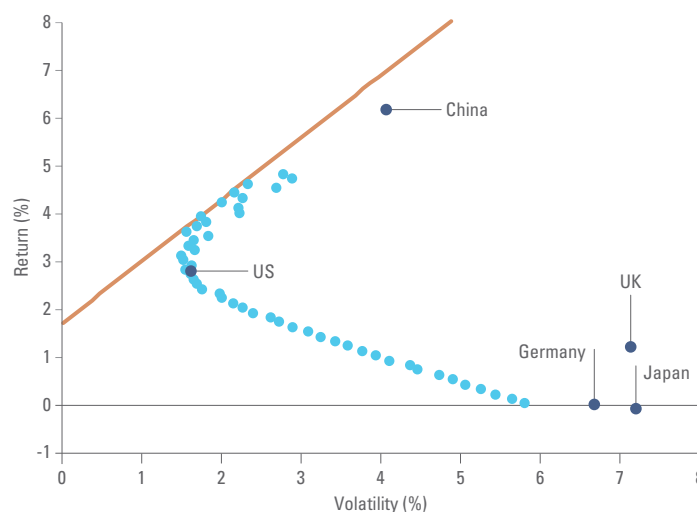
Source: Ashmore, JP Morgan, Barclays/Bloomberg, Bloomberg.

The optimal allocation in a five-asset portfolio of German, UK, Japanese, US and Chinese bonds is 39% to Chinese bonds on forward-looking basis

5. Forward-looking analysis

Yields have recently increased significantly in the US, but they remain lower by about 1/3 than yields on Chinese bonds of similar duration. We use current yields as an estimate of future return. We also expect CNY to appreciate by about 3% per year versus the USD for the foreseeable future. We assume that the volatility and correlation over the past year will be a good guide to the future. Volatility was 2% for US bonds and 4% for Chinese bonds and the correlation between the two markets was -4% (see first panel in Figure 1). Based on these inputs, we find that the optimal allocations in a five-asset portfolio of German, UK, Japanese, US and Chinese bonds are 0% to German, UK and Japanese bonds, 61% to US bonds and 39% to Chinese bonds. This result is from the perspective of a USD investor. This portfolio will produce a Sharpe Ratio of 1.3, 4.1% return (in USD) and portfolio volatility of 1.8% (Figure 6).

Fig 6: Efficient frontier and capital markets line: forwarding looking analysis



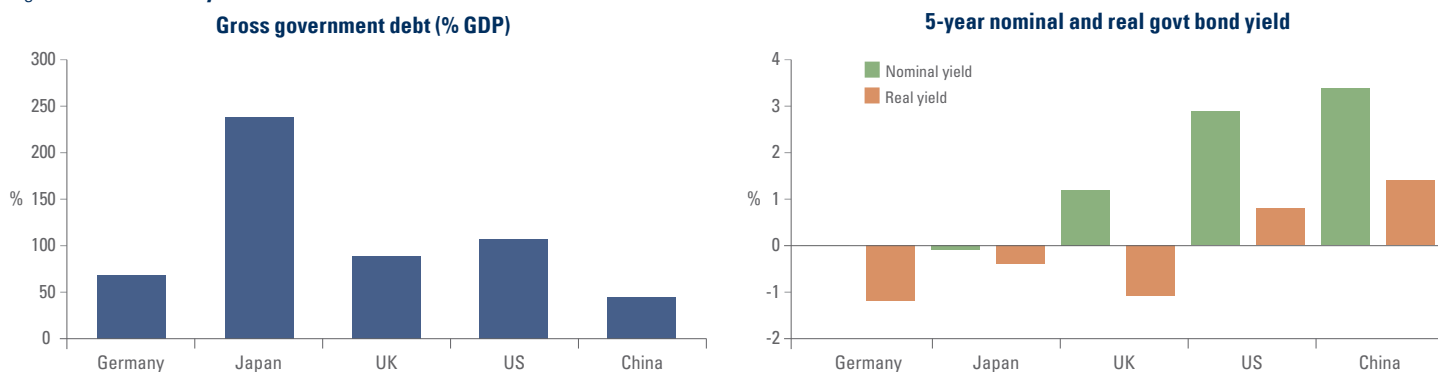
Source: Ashmore, JP Morgan, Barclays/Bloomberg, Bloomberg.

6. Macroeconomic context

The preceding analysis does not take account of the macroeconomic backdrop due to the complete lack of macroeconomic underpinnings in finance theory. In reality, the macroeconomic situation is going to impact returns materially. China has the lowest level of government debt and the highest real and nominal yields of all the countries in the global reserve currency basket as shown in Figure 7. The US has just approved an unfunded tax cut worth 7-8% of GDP. If all these bonds are placed within the US economy the resulting increase in real yields will trigger a stock markets crash and a recession from

which the US will struggle to extricate itself. Alternatively, the Dollar declines in which case EM central banks will be able to buy the bonds as their reserves rise. Which of these two methods end up being used is the single most important question in global macroeconomics and finance today. We suspect that the Dollar will continue to fall, which should support the Treasury market, but only by eroding the purchasing power of the Dollar. The decline of the Dollar will only further enhance the attractiveness of CNY, the world's future benchmark currency.

Fig 7: Debt levels and yields



Source: Ashmore, IMF, JP Morgan, Bloomberg.

Conclusion

On any reasonable projection, the Chinese government bond market will replace the US Treasury market as the world's largest and most liquid bond market within the next few decades. By the middle of this century the Chinese bond markets will be orders of magnitude larger than the US bond market. This means that Chinese bonds are destined to become the world's preferred benchmark for fixed income. As the middle of the 21st Century now enters the investment horizon of most pension funds, insurance companies and sovereign wealth funds it is likely that allocations to Chinese bonds will increase steadily in the coming years. Moreover, Chinese government bonds will enter the Bloomberg-Barclays Global Ag by April

next year. As shown in this report, Chinese bonds already compete successfully with bonds in fully developed economies. This fact has not escaped many central banks and sovereign wealth funds, who, as early investors, already enjoy the attractive features of Chinese bonds. It is likely that some of these features, particularly volatility and correlations, will decline over time, but investors will benefit significantly from allocating to China for many years to come. After all, China still qualifies as an Emerging Market economy in terms of per capita GDP and the state of her financial markets, so most institutional investors are starting from very low allocations indeed to Chinese government bonds.

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

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