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Foreign Investments in the Chinese Bond Markets

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Abstract

The Chinese bond market is the second largest in the world. However, studies on Chinese bond markets are very few, and especially there are no studies on foreign investments in the Chinese bond markets. This study fills the gap in the academic literature by focusing on foreign investments in the Chinese bond markets. By using the least-squares model with breaks, this study finds that although, in theory, the factors of exchange rate, yield spread, and yield correlation should play a significant role in attracting foreign investors to invest in the Chinese bond markets, the specific effects depend on the stage of the Chinese bond markets' open-up. Initially, the main foreign investors are central banks and similar institutions, and they primarily consider more strategic factors than pure return or risk factors. As more institutional investors have entered the Chinese bond markets, the considerations of enhancing risks and/or reducing risks become more significant. The increasing foreign investments will be beneficial to the Chinese bond markets such as more issuance of longer-dated bonds, thus helping China to establish its RMB bond yield curve, and improving the market efficiency. The Chinese authorities should launch more policy initiatives to attract foreign investors.

Keywords: Chinese bond markets; Foreign investor; Bond Connect.

1. INTRODUCTION

Since the launch of the game-changing (QIC, 2018) Bond Connect program on 3 July 2017, foreign investors have been continuously increasing their investments in the Chinese bond markets. As of the end of October 2018, the outstanding balance of foreign holdings of Chinese bonds is RMB 1,661 billion (equivalent to US\$ 239.9 billion), compared to just RMB 810.3 billion as of the end of June 2017 (equivalent to US\$ 125.5 billion).¹

The outstanding balance of the Chinese bond markets is RMB 84.4 trillion (equivalent to US\$ 12.3 trillion) as of December 7, 2018, having recently surpassed Japan's and just second to the United States'.² Unlike Chinese equity markets, the Chinese bond markets have attracted much less attention in the academic literature. A few studies have been focused on Chinese government bond markets such as the local government debt issues (Ang *et al.*, 2015): the government bond market microstructure (Bai *et al.*, 2013), government bond market efficiency (Liu, 2017), and government bond yield curves (Loechel *et al.*, 2016). A few studies have also examined the relations between bond yields and monetary policy (Porter and Cassola, 2011), convertible bond market (Fan *et al.*, 2017), and the role of ownership in bond offering (Klein and Weill, 2018), and bond covenants and the cost of debt (Gong *et al.*, 2017). However, there are no studies on foreign investments in the Chinese bond markets. This study fills the gap in the academic literature by focusing on the issue of foreign investments in the Chinese bond markets.

¹ Data source: Wind.

² Data source: Wind.

The structure of this paper is as follows: Section 1 presents a brief introduction on the Chinese bond markets' open-up and foreign investments in the Chinese bond markets. Section 2 examines the factors that affect foreign investments in the Chinese bond markets. Section 3 concludes this paper.

2. THE EVOLUTION OF THE CHINESE BOND MARKETS' OPEN-UP AND FOREIGN INVESTMENTS

The Chinese bond markets are segmented into two types of markets: the over-the-counter interbank bond market and the listed exchange-traded bond market. The main investors at the interbank bond market are large institutional investors, while small- and medium-sized institutional investors and individuals are mainly at exchange-traded bond markets. Except the repo transactions, the exchange-traded bond markets have become almost fully open to foreign investors. However, the interbank bond market is dominant (over 90%³) by contribution to primary issuance and share of outstanding bond market value. So, the level of China's interbank market's open-up to foreign investors matters the most.

China's interbank bond market firstly opened up to foreign investors in 2005. In 2010, the People's Bank of China (PBC, China's Central Bank) issued a document allowing three types of institutions to participate in the domestic interbank bond market: overseas central banks or monetary authorities, RMB clearing banks in Hong Kong and Macao, and participating banks of overseas cross-border trade RMB settlement. In March 2012, the PBC approved 18 Renminbi Qualified Foreign Institutional Investors to enter the interbank bond market. In March 2013, the PBC issued a document allowing qualified foreign institutional investors to apply for entry into the interbank bond market. In February 2016, the PBC announced the cancelling of the investment quota limit for foreign institutional investors defined by the PBC as long-term investors. In July 2017, the Bond Connect program was launched. The Bond Connect is a new mutual market access scheme that allows investors from Mainland China and overseas to trade in each other's bond markets through connection between the related Mainland and Hong Kong financial infrastructure institutions. The Northbound Trading commenced on July 3, 2017, allowing overseas investors from Hong Kong and other regions to invest in the Chinese interbank bond market through mutual access arrangements in respect of trading, custody, and settlement. Southbound Trading has not started yet.

Due to the increasing accessibility to China's bond markets for international investors, in March 2017, Bloomberg becomes the first index provider to include China bonds in its global indices offering by launching two new hybrid fixed income indices that include RMB-denominated China bonds on top of the global indices under the Bloomberg Barclays Benchmark Fixed Income Index family. In March 2017, Citi group, the former index provider of the FTSE Russell World Government Bond Index, announced that it would include China's onshore bonds in its emerging markets and regional indexes starting on February 1, 2018.

The history of Chinese bond markets' open-up can be divided into three stages. The first stage is before 2016 when the major foreign investors in the Chinese bond markets are foreign central banks, foreign monetary authorities, and sovereign wealth funds. The second stage is during February 2016–July 2017 (Bond Connect) when a much wider of institutional investors were granted access into the Chinese bond markets and investment quota limit was lifted for qualified investors. The third stage is after July 2017, which, as argued by QIC (2018), is the most significant step forward for the Chinese bond market. Until Bond Connect, foreign investors had to go through an onerous process of opening an account, applying for local currency quotas and finding an onshore clearing agent with international settlement capability. As QIC (2018) stated, after the Bond Connect, there is no longer a requirement to retain onshore deposits: investors can repatriate any surplus Renminbi (RMB) to Hong Kong automatically and daily. Similarly, investors can now hedge currency using both onshore and offshore derivatives. Previously, hedging was only allowed with offshore instruments. Moreover, foreign investors now can trade electronically, which allows for improved price discovery directly with China Foreign Exchange Trade System and National Interbank Funding Centre dealers, improved liquidity, and executable size. The risk management tool has also been improved as investors can use nondeliverable interest rate swaps to manage interest rate risk, as well as CNH (offshore yuan) futures and forwards for currency risk.

Exhibit 1 shows the foreign holdings in the Chinese bond markets.

³ Source: Wind.

Exhibit 1. Foreign Holdings in the Chinese Bond Markets (as of October 2018; Unit: RMB billion).

Chinese government bonds	Policy bank bonds	Non-negotiable certificate of deposit	Medium-term note	Corporate bonds	AMC financial bonds	Super and short-term commercial paper	Commercial bank bonds	Commercial paper	Agency bonds	In total
1,079.3	326.1	192.7	28.5	15.8	7.5	4.3	3.3	2.7	1.0	1,661.3

Source: Wind, China Bond Pricing Centre.

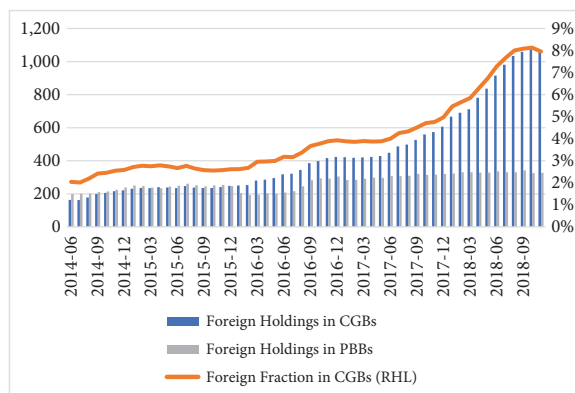
If considering the flow of funds, foreign investors also hold RMB 20 million green bonds as of October 2018.

The policy bank bonds are bonds issued by Chinese policy banks. The non-negotiable certificate of deposit refers to the book-entry time deposit certificate issued by the deposit-taking financial institutions in China’s interbank market (Liu, 2018a). A medium-term note is a debt note that usually matures in 1-10 years. An AMC financial bond is a bond issued by asset management companies in China.⁴ A super and short-term commercial paper (SCP) refers to a debt instrument issued by a higher credit rating entity with a term of less than 270 days. Standardized SCP can be 7 days, 14 days, 21 days, 1 month, 3 months, 6 months, and 9 months. Commercial banks’ bonds include financial, subordinated bonds, and hybrid securities bonds. A commercial paper is an unsecured promissory note with a fixed maturity of not more than 364 days (Liu, 2020a). There are two types of agency bonds, namely China Railway Construction Bonds issued by China’s Ministry of Railways and bonds issued by the Central Huijin company, the controlling shareholder for the “big four” state-owned banks.

Exhibit 1 shows that foreign investors mainly invest in Chinese government bonds and policy bank bonds. Exhibit 2 shows the size of foreign holdings in Chinese government bonds and policy bank bonds and the foreign fractions in Chinese government bonds.

Exhibit 2 shows that during the past 4 years, foreign investors have significantly increased their investments in Chinese government bonds, from just RMB 163 billion in June 2014 to RMB 1,061 billion in October 2018. At the same time, the fraction of foreign investments in Chinese government bonds *m* has increased from just 2% to 8.0% during this period.

Exhibit 2. Foreign Holdings in Chinese Government Bonds (CGBs) and Policy Bank Bonds (PBBs) (Unit: RMB billion) and the Foreign Fractions in Chinese Government Bonds (RHL, %) during June 2014–November 2018.



Source: Wind, China Bond Pricing Centre.

⁴ Before China’s entry into WTO in 2001, China restructured its heavily-debt four major state-owned commercial banks by stripping their non-performing loans to four asset management companies (AMC). These AMCs receive special policy treatments from regulatory authorities such as issuing AMC bonds.

3. EMPIRICAL ANALYSIS

In this section, the factors that have contributed to foreign investments in the Chinese bond markets are examined. As foreign investors mainly invest in Chinese government bonds and other types of bond investments are marginal, the data on foreign investments in Chinese government bonds are used.

The dependent variable is the foreign fraction in Chinese government bonds. As to independent variables, it is argued that investors will primarily consider two factors in their portfolio management, namely enhancing yield and/or reducing risk. Regarding enhancing yield, the primary concern will be the yield spread between Chinese government bond and foreign government bond. Here, the representatives are China's 10-year government bond and the US 10-year Treasury yield. Also, the exchange rate is a consideration. The USDCNY, that is, the equivalent USD value for one unit of CNY (onshore Chinese RMB), is used as one independent variable. Regarding reducing risk, the variable is the correlation between Chinese 10-year government bond yields and US 10-year Treasury yields. A smaller correlation means a higher diversification effect, thus reducing portfolio risks. Specifically, the past 200-trading day correlation coefficient is obtained through a series of analysis. All datasets are stationary. The model specification is as follows:

$$\text{Foreign Fraction}_{i,t} = \delta_0 + \delta_1 \Delta \text{USDCNY}_{i,t} + \delta_2 \Delta \text{Yield Spread}_{i,t} + \delta_3 \Delta \text{Correl}_{i,t} + \varepsilon_{i,t} (1)$$

However, the empirical results (see Appendix 1 for details) show that all independent variables are insignificant. The explanatory power is also very weak (with an adjusted R -squared of 0.6%). These results do not make sense. Although the standard linear regression model assumes that the parameters of the model do not vary across observations, structural change (the changing of parameters at dates in the sample period) plays an empirically relevant role in time series analysis. As discussed in Section 1, there are different stages of foreign investments in the Chinese bond markets. There might be breakpoints in regressions. So, breakpoint tests are necessary. Exhibit 3 shows the results of multiple breakpoint tests.

EViews (2017) describes an intuitive approach for obtaining estimates for more than one break. The procedure involves sequential application of breakpoint tests. The first step is to perform a test of parameter

Exhibit 3. Multiple Breakpoint Tests. Bai–Perron Tests of $L + 1$ versus L Sequentially Determined Breaks. Sample: 06.2014–11.2018. Included Observations: 54. Breaking Variables: Δ in USDCNY, Δ in Yield Spread, and Δ in Correlation. Break Test Options: Trimming 0.15, Max. Breaks 5, Significance Level 0.05.

Sequential F -statistic determined breaks:			2
		Scaled	Critical
Break test	F -statistic	F -statistic	Value**
0 vs. 1 *	63.79881	255.1952	16.19
1 vs. 2 *	16.14026	64.56102	18.11
2 vs. 3	1.070151	4.280605	18.93
* Significant at the 0.05 level.			
** Bai–Perron (Econometric Journal, 2003) critical values.			
Break dates:			
	Sequential	Repartition	
1	2017M11	2016M08	
2	2016M08	2017M11	

constancy with unknown break with the full sample. At each stage, breakpoints in breakpoint tests is tested in each subsample. A breakpoint will be added whenever a subsample null is rejected. If any of the tests are rejected, the specified breakpoint is added to the current set. Second, the procedure is repeated until all of the subsamples do not reject the null hypothesis, or until the maximum number of breakpoints allowed or maximum subsample intervals to test is reached. Third, refinement is performed so that breakpoints are re-estimated if they are obtained from a subsample containing more than one break. This procedure is required so that the breakpoint estimates have the same limiting distribution as those obtained from the global optimization procedure.

Exhibit 3 shows that the breakpoint tests are significant within a 5% confidence level. Also, the break dates are 2016M08 and 2018M11. Exhibit 4 shows the results of regression with breakpoints.

Exhibit 4 shows that the regressions with breaks work much better than regressions with no breaks.

First, the regressions with breaks have much stronger explanatory power than regressions without breaks. The adjusted *R*-squared has greatly improved from just 0.6% to 92.9%, indicating the significance of the existence of structural change.

Second, the three breaks from the regressions are consistent with the three stages of the Chinese bond markets' open-up. Before July 2016, the main foreign investors in the Chinese bond markets are foreign central

Exhibit 4. Regression Results for the Factors That Have Contributed to Foreign Investments in Chinese Government Bonds. Dependent Variable: Foreign Fraction in Chinese Government Bonds Methods: Least Squares with breaks. Sample: 06.2014-11.2018. Included Observations: 54. Break Type: Bai-Perron Tests of $L + 1$ versus L Sequentially Determined Breaks. Break Selection: Trimming 0.15, Significance Level 0.05. Breaks: 2016M08, 2017M11.

Variable	Coefficient	Prob.
06.2014-07.2016 – 26 obs		
<i>C</i>	0.03	0.000
Δ in USDCNY	-0.59	0.516
Δ in yield spread	0.0006	0.913
Δ in correlation	0.003	0.694
08.2016-10.2017 – 15 obs		
<i>C</i>	0.04	0.000
Δ in USDCNY	0.15	0.888
Δ in yield spread	0.01	0.456
Δ in correlation	-0.01	0.041
11.2017-11.2018 – 13 obs		
<i>C</i>	0.06	0.000
Δ in USDCNY	-0.99	0.276
Δ in yield spread	-0.05	0.000
Δ in correlation	-0.03	0.000
Adjusted <i>R</i> -squared	0.929	

banks, monetary authorities, and sovereign wealth funds. During August 2016–October 2017, a much wider range of institutional investors had entered the Chinese bond markets. After November 2017, the Bond Connect program and inclusion of Chinese government bonds into international indices have greatly changed the game. Accordingly, the significance of the factors that have affected foreign investments in Chinese bonds has changed.

Third, the effect of exchange rate, yield spread, and yield correlation on foreign investments in the Chinese bond markets varies. For example, during the first stage when the main foreign investors are foreign central banks, monetary authorities, and sovereign wealth funds, these factors are all insignificant. The main reason is that these foreign sovereign investors consider more strategic factors such as establishing links with the Chinese bond markets and regulatory authorities than pure economic factors such as return and risk. For example, the Reserve Bank of Australia (RBA, Australia's Central Bank) stated that the main consideration of the RBA's allocation of Chinese RMB assets is the growing importance of China in the global economy and the broadening financial relation between Australia and China (RBA, 2014).

During the second and third stages, as more institutional investors entered the Chinese bond markets, the yield correlation begins to play a more significant role. The coefficients of *Yield_Correl* are both significantly negative, suggesting that a negative change of yield correlation (lower correlation) is significantly associated with a higher fraction of foreign investments in the Chinese government bond markets. It is consistent with the general theory that a lower correlation can improve the diversification effect, thus reducing risks and improving risk-adjusted returns. Furthermore, at the third stage when the Bond Connect program was launched and the Chinese government bonds are included in international bond indices, the significance level of *Yield_Correl* has improved. For example, for one standard deviation drop of yield correlation between Chinese government bond and US Treasury bond, there will be 0.03 standard deviation increase of foreign fraction in Chinese government bonds, compared to just 0.01 standard deviation at the second stage.

Surprisingly, the effect of yield spread is not significant at the second stage and negative at the third stage. It shows that yield spread does not discourage foreign investments in the Chinese government bond markets. For example, during November 2017–November 2018, the yield spread between 10-year Chinese government bond and 10-year US Treasury bond has dropped from 1.57% to just 0.31%. At the same time, the foreign fraction in Chinese government bonds has increased from 4.8% to 8.0%. It shows the game-changing nature of the Bond-Connect program. These new institutional investors do not intend to hold the bond investments for yield change, but rather pursue price change. That can explain why foreign fraction in Chinese government bonds has increased after the price spread has increased (yield spread drops). It may also be argued that foreign investments also have an effect on this yield spread. However, Granger Causality test shows that this hypothesis is rejected (results not reported, but available upon request).

The effect of the change of exchange rate between RMB and USD on foreign investments in Chinese government bonds has always been insignificant for all three stages. These results are not surprising as institutional investors can use a variety of tools to manage and hedge their exchange risk as discussed previously.

Fourth, the main reason why foreign investors have doubled their investments in the Chinese bond markets within just 16 months after the Bond Connect program, that is, during June 2017–October 2018, is the drop of yield spread, which represents the hike of Chinese bond price, and drop of yield correlation, which shows the positive incentive of diversification effects.

4. CONCLUSION

The Chinese bond markets have become the second largest in the world, and foreign investors have been increasing their investments in the Chinese bond markets. After the Bond Connect program was launched in July 2017 and the following inclusion into international bond indices, the Chinese bond markets have significantly changed. At the same time, no studies have ever examined the issue of foreign investments in the Chinese bond markets. From this point of view, this study makes an original contribution to our understanding on foreign investments in the Chinese bond markets.

Simple statistics show that foreign investors are mainly investing in Chinese government bonds, followed by policy bank bonds. Other types of bonds are marginal. Although, in theory, the factors of exchange rate, yield spread, and yield correlation should play a significant role in attracting foreign investors to invest in the Chinese bond markets, the results based on a least-squares model with breaks show that the specific

effects depend on the stage of the Chinese bond markets' open-up. Initially, the main foreign investors are central banks and similar institutions, and they primarily consider more strategic factors than pure return or risk factors. As more institutional investors have entered the Chinese bond markets, the considerations of enhancing risks and/or reducing risks become more significant. For example, this study shows that the yield spread and yield correlation between Chinese government bond and US Treasury bond plays a significant role in foreign investors' decision of investing in the Chinese bond markets.

The increasing foreign investments will be beneficial to the Chinese bond markets. For example, more demands on Chinese bonds will lead to more issuance of longer-dated bonds, which will help China to establish its RMB bond yield curve (QIC, 2018). Although, as of June 2017, Chinese government bonds markets are not efficient (Liu, 2017), more diversified investors will also help to improve the market efficiency of the Chinese bond markets. The Chinese authorities should launch more policy initiatives to attract foreign investors. First, a global-standard credit-rating industry should be established. Second, a greater monetary policy clarity is also desired including clearer communication style from the PBC, regular rather than outside of scheduled policy parameters adjustments, and reducing the complexity of policy rates open market operations. Third, a unified regulatory framework rather than a segmented market will reduce the compliance and operation costs. Although the US–China trade war is ongoing (Liu, 2018b; Singh, 2019; Liu, 2020b), more foreign investments in the Chinese bond markets including from US investors will provide cushion for further escalation of economic and political conflict between these two largest economies in the world.

One limitation of this study is the relatively small number of observations. When more data spanning a longer time horizon are available, alternative models can be applied.

Conflict of Interest

None.

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Appendix 1.

Regression Results for the Factors That Have Contributed to Foreign Investments in Chinese Government Bonds. Dependent Variable: Foreign Fraction in Chinese Government Bonds. Methods: Least Squares with No Breakpoints. Sample: 06.2014-11.2018. Included Observations: 54

Variable	Coefficient	Prob.
<i>C</i>	0.04	0
Δ in USDCNY	-1.11	0.496
Δ in yield spread	-0.02	0.256
Δ in correlation	-0.01	0.416
Adjusted <i>R</i> -squared	0.006	

Author's Biography

Kerry Liu (Mr.) is an Associate at the China Studies Centre, University of Sydney, Australia. He holds a PhD in Finance from the University of Melbourne, Australia.