

Chinese & American Bond Market

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ABSTRACT

The global economy is in a phase of rapid development. The bond market is undoubtedly an important part of the economic environment, and both China and the United States have some of the largest bond markets in the world. In this work, the differences between the bond markets in two countries are discussed. By focusing on the government bond market, this paper looks at the effects of yield, policy, and market regulation on the two bond markets. Compared with the United States, the Chinese bond market is more influenced by national policies and market supervision, which may lead to increased risks and reduced predictability in China's bond market. At the same time, the Chinese bond market is not liquid, and the Chinese bond yield does not play the role of market pricing like the US bond yield. This paper is a reference for the study of the respective characteristics of the economic development of the two countries.

Keywords: Government bond, economy development, yield to maturity, differences, liquidity.

1. INTRODUCTION

1.1 government bond

A government bond is basically a debt security often issued by the government in light of supporting the various spending and obligations of the particular government. In other words, a government bond refers to some form of debt offered or issued by the government and gets sold to investors who in return support the overall spending of the government. With a government bond, periodic interest payment often identified as coupons could be paid as these types of bonds are always considered as low-risk type of investments since the government that issues them backs them as well. Governmental bonds could be issued by the federal state, local governments and corporations as well. Generally, there are three basic types of bonds as highlighted by Andritzky (2012), which is "treasury securities, municipal bonds and corporate bonds." [1] While treasury securities are issued by the treasury department through the bureau of public debts, and municipal bonds are issued by a state or local governments in order to fund constructions such as schools and highways. As for corporate bonds, they are issued by corporations and are largely utilized in the funding of large capital

investments or for business expansion purposes.

1.2 Reason for issuing bond

According to Blake, Boardman and Cairns (2014), "most governments issue bonds for quite a number of reasons. Firstly, governments issue these bonds in order to ensure they raise money or the finances required to initiate projects or even accelerate the day to day activities of a given state or country. Some of the projects that could be initiated by governments include infrastructure, the building of libraries or even parks. Secondly, when government bonds are repurchased by federal reserves, money supply tends to increase in most cases throughout the economy of a given country." [2] This is evident as most sellers receive funds that they can use to spend or invest in the market, eventually resulting to increased fund deposits in banks which in return loan these finances to companies or interested individuals, enabling a boost in the economic activities of a given country.

1.3 make-up

"The bond market basically gives a description of the marketplace where various investors purchase debt securities which are in turn brought to the market by

entities related to the government or corporate institutions” (Harford & Uysal, 2014) [3] . There are several attributions that make up the bond market. Some of these include.

Maturity- refers to the actual dates when the principal of the bond is paid out to investors and the ending of an organization’s obligation bond. In other words, the maturity serves to define the lifespan of a bond.

The liquidation preference - this refers to a clause in a contract that serves to dictate the payout order in a case where a company liquidity. Basically, the investors or stockholders get their money back before other individuals.

Coupon- this is a representation of the interest amount often paid to bondholders, in either an annual or semi-annual mode.

2. YIELD

Bond yield is commonly used to measure the return of a bond investment. There are many types of bond yields, including current yield and yield to maturity. Current yield is an investment's annual income (interest or coupons) divided by the current price of the bonds. Current yield can be recognized as how much money people invested come back as coupon. However, this paper going to focus on yield to maturity. Yield to maturity (YTM), also known as the final yield, is the internal rate of return (IRR) of investment in bonds. It is the discount rate at which the present value of future cash flows obtained by investment in bonds is equal to the current market price of bonds. In other words, YTM is equivalent to the average annual rate of return that investors can obtain when they buy at the current market price and hold until maturity, which implies that the cash flow of investment income in each period can be reinvested in accordance with the rate of return to maturity. To show how to get yield to maturity, we take the example in John C. Hull's book *Option Futures And Other Derivatives* (2015) [4], which he assume a two-year Treasury bond, \$100 invested, pays coupon per annum semiannually with a rate of 6%. The different zero rate for the bond in different maturity is 5% for the first half year, 5.8% for the second half year, 6.4 % for the third half year and 6.8% for the last half year. By the formula:

$$3 * e^{(-0.05 * 0.5)} + 3 * e^{(-0.058 * 1.0)} + 3 * e^{(-0.064 * 1.5)} + 103 * e^{(-0.068 * 2.0)} = \$98.39 \quad (1)$$

So the present value is known. After that, by the formula:

$$3 * e^{(-y * 0.5)} + 3 * e^{(-y * 1.0)} + 3 * e^{(-y * 1.5)} + 103 * e^{(-y * 2.0)} = \$98.39 \quad (2)$$

Then the y(yield to maturity) is 6.67%. This process

shows how to get the yield to maturity, but the yield to maturity is not a complete representation of entire bond investment income. It is worth mentioning that bond investment income is different from bond interest, bond interest only refers to the product of bond coupon and bond face value, it is only a component of bond investment income. In addition to bond interest, bond investment income also includes the bond price’s difference and interest income from the reinvestment of interest, where the bond price’s difference may be negative.

2.1 Price-yield relationship

2.1.1 relationship

When it comes to the relationship between bond price and yield, using the example this paper has mentioned above,

$$PV = 3 * e^{(-y * 0.5)} + 3 * e^{(-y * 1.0)} + 3 * e^{(-y * 1.5)} + 103 * e^{(-y * 2.0)} \quad (3)$$

it is not hard to see that this formula is decreasing. Therefore, the yield and price of bonds are generally negatively correlated. That is, for the same bond, when the price goes up, the yield to maturity goes down. Because coupon rates, maturities and future cash flows are fixed, when the price paid to buy these future cash flows rises, the return on investment (yield) decreases. For example, an investor can earn 1 dollar of interest a year from now, if he invest 1 dollar of principal, the yield will be 100%. If the investor needs to invest 2 dollars now (the price rises), the yield will plummet to 50%. By the way, for current yield, it shows the same condition because current yield is equal to annual income divided by the current price. It is not difficult to see that the price rises when current yield drops.

2.1.2 duration

Duration measures a bond's or fixed income portfolio's price sensitivity to interest rate changes. Modified duration measures the price change in a bond given a 1% change in yield. For example, an investor has a bond with a current yield at around 1.32 and modified duration at about 9.305, but he wants to get return of 5. The bond price is 99.3125 dollars. What can he do to get an extra return of about 3.7 ? From the above, this paper shows that income of bonds can be obtained not only through coupon and face value, but also through price difference. Also, the current yield and price of bonds are generally negatively correlated. Therefore, he needs to reduce the yield to get a higher price, then he can earn form price difference. 9.305 of duration means that a 1% decrease in yield can improve 9.305 dollars of price. What he needs is only 3.7, so he needs 3.7 divided by 9.05 which is approximately 0.4. That means, when he drops current yield from 1.32 to 0.92, the price will

increase from 99.3125 to around 103.126. Then, he gets a return of 5. This is how modified duration works in the Bond market.

2.2 Influencing factors of yield

There are many factors that affect the fluctuation of bond, and different factors may lead to the rise or fall of bond yield. The first is the risk assessment of bonds. The lower the credit rating of bond issuers, the higher the risk, so investors require higher yield. The second is maturity. Because the volatility of bond price is related to the length of maturity, the longer the maturity, the greater the price fluctuation range when the market interest rate changes, and the greater the interest rate risk of the bond. Thirdly, inflation is the biggest enemy of bonds. Inflation erodes the purchasing power of bonds' cash flows. The future inflation expectations makes the yield curve become steeper, as investors demand higher yields to compensate for the risk of inflation. Last but not least, usually when interest rates rise above the average yield on government bonds, investors tend to dump government bonds and put them into bank deposits. When people sell government bonds, the price of government bonds will fall and the yield will increase. Conversely, when banks cut rates, investors flocked to higher-yielding bonds. That will push up prices and lower yields.

3. CHINESE VS AMERICAN BOND MARKET

For China at the present stage, the Chinese bond market is still in the development stage. There are two main kinds of treasury bonds in China, including the savings, such as certificate Treasury bonds and electronic savings Treasury bonds. Besides, the size of Chinese bond market has grown rapidly since 2015 because of a new budget law that gave local governments the permissions to issue bonds for financing. It can be seen in Peking University's bond analysis, "In the Chinese bond market in 2020, the issuance of national bonds was 7.1 trillion RMB, up 70.9%, and the issuance of local government bonds was 6.4 trillion RMB, increasing 47.771%." (2021) [5]. This demonstrates the impact of national policies on the bond market. Especially in a country like China, this impact can be infinitely magnified.

However, while the bond market transaction increases, the Chinese bond market also faces insufficient liquidity. Firstly, most investors or banks choose to hold bonds to maturity, which undoubtedly reduces the liquidity of bonds. Secondly, the types of Chinese investors are too single, which leads to the motivation of buying and selling bonds tends to be consistent. Generally speaking, as a risk-free bond, national bonds plays an important role in the bond

market. For example, the yield of US Treasury bonds is the benchmark of its financial market, which is a very important index of financial market pricing and plays an important role in the global financial market. However, the yield of Chinese national bonds do not seem to play the same role as the US bond yield to the US financial market.

Both China and the U.S have some of the worlds' largest bond markets. According to the International Capital Market Association (2021), "the U.S and China make up 45 per cent of the world's total bond market. The U.S bond market is currently estimated at \$10.9 trillion; China comes second with its bond market estimated at \$7.4 trillion." [6] This makes both countries influential players in the global bond market and economy in general. China is among the countries that hold the largest portions of U.S treasury securities. According to the Federal Reserve, "China currently holds 1.1 trillion U.S dollars in U.S Treasury, with Japan and other oil-exporting countries being the other owners of U.S debt." (Statistica, 2021) [7]

The U.S and China bond markets are regulated differently. According to the International Monetary Fund, the integration of the Chinese bond market and financial sector with the global financial economy is limited compared to the U.S. The Chinese bond market has been highly regulated with strict controls on the flow of money in and out of the market.

However, the Chinese bond markets have undergone several reforms in recent years. For instance, the inclusion of Chinese bonds in global indices such as Bloomberg Barclays Global Aggregate Bond Index, the emerging markets bond index (EMBI) and The Financial Times Stock Exchange 100 Index (FTSE) is one of the major milestones that presents valuable growth opportunities for the Chinese bond market. As revealed by China International Import Expo (CIIE) (2021), "this inclusion in the top global indices will benefit China's domestic economy while fostering global asset diversification." [8] The CIIE (2021) also projects that "the latest inclusion will, on average, spur net monthly foreign inflows ranging from \$3.6 billion to \$4.2 billion into China's government bond market, according to analysts." [8] The excessive administrative control of the Chinese bond market is a major weakness that puts it at a competitive disadvantage. Modern bond markets require some level of administrative intervention, however, overregulation and government intervention can undermine the market's potential.

On the other hand, the U.S bond market is less regulated, with less stringent controls compared to China. Unlike China, the U.S bond market has always been included in the top in global indices. This inclusion has been pivotal to the growth of the U.S bond market. The U.S employs more neoliberal economic policies in the management and regulation of its bond markets.

There are relatively minimal interventionist Keynesian economic policies in the economy, which leaves the bond market regulation to demand and supply market forces. The U.S bond market is thus more predictable and less volatile compared to its Chinese counterpart. This means that investors in the Chinese bond market suffer higher risks due to the higher volatility. China's state policy on interest rate cuts is one of the factors behind bond market volatility. Additionally, the performance of the Chinese and U.S bond markets is influenced by a wide range of risks. Some of the common forms of risks that influence both markets include interest rates risks, credit risks, inflation risks, and reinvestment risks. However, there are other unique forms of risks that influence each of the bond markets. The U.S-China trade war and the Covid-19 lockdowns have increased bond defaults.

In a nutshell, both China and the U.S are influential players in the global bond market, and this is largely due to their huge economies. While their bond markets share several similarities, they differ in a number of aspects, such as regulation and volatility. The various rearmings being undertaken by both China and U.S will have far-reaching impacts not only in their respective markets but also on the global bond markets.

4. CONCLUSION

In conclusion, although the Chinese bond market is in a stage of rapid development, its national conditions will also limit the development of bond market. The government's intervention in the bond market and the strong influence of national policies will bring about market volatility and increase of risks. This also limits the integration of China's bond market with the global financial economy. However, this can be recognized as unique operation mode of China's bond market. The Chinese government's supervision and intervention has also brought about the sustained and stable growth of the national economy. Although there are still deficiencies in some areas, the economic growth and benefits brought by this unique operation mode are far greater than the impact. Compared with China, America's bond market is more free and mature. The United States has the world's largest bond market and serves as a benchmark for other bond markets around the world. There are few interventionist economic policies in the US bond market, which brings stability and low risk to the US bond market. Overall, both China and the United States are powerful players in the global bond market, and their every move will have an impact on the global bond market. The two countries' different operation of the bond market is for the stable and sustainable economic development.

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