Determinants of the Thai Corporate Bond Liquidity

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Abstract

The Thai bond market has developed rapidly, but it is unbalanced between the Government bonds and corporate bond markets. The corporate bond market is still undeveloped. This study aims to study the determinants which influence the corporate bond market liquidity. The period of this study is from January 2005 to October 2012. Based on the results of multiple regression, this study finds that the spread between yield to maturity and market rate and exchange rate influence the corporate entities in issuing bonds. This study also investigates the relationship between the spread between yield to maturity and market rate and issued amount of corporate bonds. The result shows that there is a relationship between the spread between yield to maturity and market rate and issued amount of corporate bonds. We can conclude that the corporate entities depend on the spread between yield to maturity and market rate in order to raise funds from the market. This study suggests that less fluctuation of spread between yield to maturity and market rate and exchange rate can encourage the corporate entities to mobilize funds from the market. The concerned organizations in the Thai bond market should carefully control the factors that obstruct the market participants to participate in the market. Finally, the authorities of the Thai bond market should encourage the market participants to participate in the Thai corporate bond market.

Keywords: **corporate bond market, liquidity, Thai bond market**

JEL Classification: G10, G12, G24

Following the Asian Financial Crisis in 1997, both the government and corporate entities in Thailand have been issued bonds to mobilize funds for supporting their desired level of industrial and financial growth. However, the most active issuer in the market is the Government, who generally issued approximately 81.64% of the total bonds as on October 31, 2012 (ThaiBMA, BoT). This reflects that the corporate bond market is illiquid. Moreover, both the government and corporate entities generally issue straight fixed rate bonds and floating-rate notes. This indicates that the corporate bond market is unattractive to the issuers to raise funds from the market. Finally, most of debt instruments are traded through the OTC market between dealers to dealers. This means the individual investors are not willing to participate in the corporate bond market.

The liquid bond market is attractive to the market participants to be involved in the market. Gravelle (1999) and Committee on the Global Financial System (1999) defined the liquid market as a market where issuers can easily issue a large amount of debt instruments at a relatively low cost since investors feel more confident about their ability to purchase debt instruments in the secondary market. On the other hand, the market liquidity, as defined by Chakravarty and Sarkar (1998), is an amount of debt instruments that can be easily brought and sold without removing the price. Endo (2008) broadly classified the types of liquid markets into trading liquidity and funding liquidity. The former is known as 'trading liquidity' as the traders can easily offset or eliminate a position without significant market price, while the latter -'funding liquidity' - means that the issuers/traders can easily raise funds. Kyle (1985) grouped the measure of the market liquidity into the direct measure method and indirect measure method respectively. The bid-ask spread is commonly known as a direct measure method, while the trading value is known as the indirect measure method. The compensations of market liquidity help circumvent the development of the Thai corporate bond market. Moreover, understanding the factors that affect the issued amount of corporate bonds can help issuers to easily raise funds. Finally, the relationship between the spread between yield to maturity and market rate and issued amount of corporate bonds can enhance the confidence of the market participants to participate in the market.

Understanding liquidity in the bond market can help to improve the bond market. Most of the previous studies were conducted in the developed bond market like the U.S., UK, and the bond markets of the Euro region. The present study focuses on the Thai corporate bond market, which is a developing bond market. The aims of this study are to study the determinants which influence the corporate bond market liquidity and also examine the relationship between the

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spread between yield to maturity and market rate and the issued amount of corporate bonds. This study differs from the previous studies by Chabchitrchaidol and Panyanukul (2005), who examined the bid–ask spread on the government bond market ; Batten, Fetherston, and Hoontrakul (2006), who investigated the yield spread between the sovereign issued in the international market by Chinese, Korean, Malaysian, Philippines, and Thai issuers and matched with near benchmark U.S. Treasury bonds; and Paisarn (2012), who examined the impact of change in macroeconomics of yield spreads. Moreover, the present study differs from the previous studies, because the present study focuses on the time before and after the global financial crisis of 2007. This can help to understand the factors that impact the liquidity of the Thai bond market more accurately.

Objectives of the Study

The aim of this study is to study the Thai corporate bond market liquidity by analyzing the factors that impacted the issued amount of corporate bonds during the period from January 2005 to October 2012. This study also examines the relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds.

Review of Literature

The effect of bond market liquidity has been frequently studied in the recent financial literature. Moreover, the concept of market liquidity has also been studied in order to understand the extent to which a bond market is liquid or illiquid.

Bond market liquidity makes the bond market more attractive to the market participants to participate in the market. Chabchitrchaidol and Panyanukul (2005) concluded that the authorities should clearly announce plans regarding auctions and new issuances, and strictly commit to these plans, if possible, in order to ensure smooth market movements and to avoid market confusion. Batten, Fetherston, and Hoontrakul (2006) found that the credit spreads of these sovereign bonds tend to be negatively related to changes in interest rates on U.S. benchmark bonds and positively related to changes in the slope of the yield curve. Paisarn (2011) concluded that bond trading, time to maturity, and coupon rate are significant determinants of yield spreads. The issuer performance and time to maturity influence the yield spreads. Chen, Lesmond, and Wei (2007) and Bao, Pan, and Wang (2008) concluded that the illiquidity in corporate bonds significantly affects the yield spreads. Jong and Driessen (2005) who studied the corporate bond market liquidity concluded that liquidity has an impact on the yield spreads. Sun (2007) compared the different liquidity measure bid-ask spread return percentages. He concluded that the zero-return percentage is a better predictor of yield spreads than other liquidity measure bid-ask spreads and Amihud illiquidity factors. Nicolo and Ivaschenko (2009) concluded that liquidity indicators appear to be important determinants of bond spreads in advanced economies and emerging market bond index spread in emerging markets.

Understanding the factors that impact the bond market liquidity can help to improve the bond market. Chakravarty and Sarkar (1998) examined the determinants of the realize bid-ask spread in the U.S. corporate, municipal, and government bond markets. They concluded that liquidity is an important determinant of the realized bid-ask spread of all the three markets. Klepsch and Wollmershäuser (2011) analyzed the determinants of EMU government yield spreads from 2002 until September 2010. They found that before the global financial crisis in 2007, investors generally ignored fundamental sovereign bond risk factors, but after the EMU crisis, most of the investors were concerned about the risk factors. Kapingura and Ikhide (2010) analyzed the determinants of liquidity of the South African bond market. They found that innovation in the repo market, stock index, volume of trading, foreign investor participation, and volatility impacted the bond market liquidity. Bongaerts, De Jong, and Driessen (2011) compared the effects of expected liquidity and liquidity risk on expected U.S. corporate bond returns. They concluded that expected bond liquidity and exposure to equity market liquidity risk has an affect on the expected bond returns. They also found robust evidence that exposure to corporate bond liquidity shock carries an economically negligible risk premium.

Barrios, Iversen, Lewandowska, and Setzer (2009) analyzed the determinants of government bond yield spreads in the Euro area with a focus on development during the global financial crisis in 2007. They concluded that generally, risk perceptions play a significant role in explaining government yield spreads. The issuers who are known as borrowers play a key role in the primary bond market in order to develop the primary market. Endo (2008) was of the view that broadening the offering methods of corporate bonds would help to develop the market. He found that primary market efficiency is significant to determine the activity level of the corporate bond market. Market transparency, as defined by Bessembinder and Maxwell (2008), means a securities market that refers to the amount

and timeliness of the information provided to the investing public regarding market conditions. Moreover, Edwards, Harris, and Piwowar (2004) explained the transparency market where transaction costs were low. Chan, Chui, Packer, and Remolon (2011) stated that the market transparency can lead to significant improvement in market liquidity.

Research Methodology

This study is investigative in nature. This study can help to determine the bond market liquidity. Direct liquidity measures, effective bid-ask spread quote, trade size quote, trade frequency, and trading volume of corporate bonds, where most bonds are traded through the OTC market are quoted. These direct measures are often not realizable and are difficult to obtain. Hence, this study attempted to examine corporate liquidity by using the spread between yield to maturity, market rate, and exchange rate. This study uses the stepwise regression analysis to test the hypotheses. The stepwise regression model is explained below :

$$\text{Issued Amount} = b_1 + b_2 \text{Spread} + b_3 \text{ Exchange}$$

Where,

Issued Amount = The issued amount of corporate bonds in the Thai corporate bond market,

Spread = The spread between yield to maturity and market interest rate,

Exchange = Average of monthly exchange rate of U.S. Dollar in terms of Thai Baht.

Peason's Correlation analysis was used to test the relationship between spread between yield to maturity, market rate, and issued amount of corporate bonds.

❖ **Data Sources :** The data was collected from the following sources : The issued amount, exchange rate, and market rate are the monthly data which were collected from the Bank of Thailand. The yield to maturity is the monthly data, which were collected from the Thai Bond Market Association (ThaiBMA) (the Thai Bond Information Centre). This data is in real time since the ThaiBMA requires its members to report trading transactions within 30 minutes. They disseminate data to the public in real time.

The issued amount means the amount of corporate bonds issued by corporate entities in Thailand and sold in the primary market. The spread between yield to maturity and market rate is calculated from the yield to maturity of debt instruments with maturity of 1 year subtracted by the market rate of term deposits with maturity of 1 year. The market rate is the average interest rate which is computed from the term deposits, with a maturity of 1 year of five commercial banks in Thailand, including Bangkok Bank, Krung Thai Bank, Siam Commercial Bank, Kasikorn Bank, and Bank of Ayudhya. The exchange rate is an average of monthly exchange of U.S. dollars in term of the Thai Baht.

Hypotheses

The hypotheses of this study are as follows :

❖ **H1: The spread between yield to maturity and market rate and exchange rate influences the corporate entities to raise funds from the market.**

❖ **H2: There is a relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds.**

Table 1: Summary Statistics of Issued Amount of Corporate Bonds, Spread between Yield to Maturity and Market Interest Rate and Exchange Rate

	Mean	Median	Minimum	Maximum	Std. Dev.	N
Ln (Issued Amount)	11.0663	11.3609	2.9689	12.0476	1.1395	94
Spread	0.7565	0.7750	0.0250	1.7350	0.4086	94
Exchange Rate	34.3019	33.8420	29.8835	41.7628	3.3301	94

Sources: BoT and ThaiBMA

Analysis and Findings

The Table 1 shows the summary of all the variables used for this study. The average of the issued amount is 11.0663. This means that the corporate entities raised funds approximated at 47.3268 million Baht per month. The average of the spread between yield to maturity and market rate is 0.7565. It can be seen that the average yield to maturity was 2.3126% higher than the market rate of term deposit with a maturity of 1 year.

The Table 2 shows the spread between yield to maturity and the market rate, and the issued amount of corporate bonds in Thailand during the period from January 2005 to October 2012. The spread between yield to maturity and the market rate was computed from yield to maturity of government bonds with a maturity of 1 year subtracted from the market rate. The yield to maturity data was collected from the ThaiBMA. The market rate is an average interest rate which was computed from the term deposit with a maturity of 1 year of five commercial banks in Thailand including Bangkok Bank, Krung Thai Bank, Siam Commercial Bank, Kasikorn Bank, and Bank of Ayudhya. The spread between yield to maturity and market interest was the widest in 2005. It was narrow spread in 2012. Hence, it can be said that the corporate entities in Thailand were confident of the Thai bond market, which increases the issued amount of corporate bonds every year.

Testing Hypothesis No. 1: The spread between yield to maturity and market rate and exchange rate influence the corporate entities to raise funds from the market.

- **Ho1: The spread between yield to maturity and market rate and exchange rate do not influence the corporate entities to raise funds from the market.**
- **Ha1: The spread between yield to maturity and market rate and exchange rate influence the corporate entities to raise funds from the market.**

$R = 0.608; R^2 = 0.369;$ Adjust R Square $= 0.356; F = 26.651;$ Sig.$= 0.000$

The computed regression line has the equation :

Issued Amount $= 16.507 - 0.796$ Spread $+ 0.141$ Exchange (refer to Table 3)

Table 2: Summary Statistics of the Spread between Yield to Maturity and Issued Amount of Corporate Bonds in the Primary Bond Market

Year	Yield To Maturity	Market Rate*	Spread Between Yield to Maturity and Market Rate	Issued Amount of Corporate Bonds Unit: THB Million	Ln (Issued Amount of Corporate Bonds)
2005	3.2150	1.7188	1.4963	16,050.7800	9.6835
2006	4.9017	4.2604	0.6413	73,665.6833	11.2073
2007	3.6592	2.7979	0.8613	97,248.9942	11.4850
2008	3.3433	2.5633	0.7800	105,602.4267	11.5674
2009	1.4283	0.9313	0.4971	82,161.9125	11.3164
2010	1.7967	1.0021	0.7946	80,817.7108	11.3000
2011	3.1333	2.3958	0.7375	99,680.1433	11.5097
2012**	3.0770	2.9350	0.1420	111,216.2660	11.6192

Source: BoT and ThaiBMA

Remark: * Market interest refers to term deposit rates with maturity of 1 year

** This data is from January to October 2012

Table 3: Multiple Regression Results on Spread between Yield to Maturity and Market Rate, Exchange Rate, and Issued Amount of Corporate Bonds

Variables	b	Std. Error	Beta	t-statistics	Sig.
Constant	16.507	1.047		15.190	0.000
Spread between Yield to Maturity and Market Rate	-0.796	0.268	-0.285	-3.030	0.004
Exchange Rate	0.141	0.033	-0.412	-4.025	0.000

Source: Data Analysis

Table 4: Results of the Pearson's Correlation between the Spread between Yield to Maturity and Market Rate and Issued Amount of Corporate Bonds			
		Spread between Yield to Maturity and Market Rate	Issued Amount of Corporate Bonds
Spread between Yield to Maturity and Market Rate	Pearson Correlation	1	-.492**
	Sig. (2-tailed)		.000
	N	94	94
Issued Amount of Corporate Bonds	Pearson Correlation	-.492**	1
	Sig. (2-tailed)	.000	
	N	94	94
**. Correlation is significant at the 0.01 level (2-tailed).			
Source: Data Analysis			

The spread between yield to maturity and market rate is negatively correlated with the issued amount of corporate bonds, indicating that the corporate entities do not much depend upon the spread between yield to maturity and market rate to raise funds from the market. The exchange rate is positively and significantly correlated with the issued amount of corporate bonds, indicating that corporate entities depend upon the volatility of the exchange rate to mobilize funds from the market. Moreover, the results of this study indicate that the relationship between the spread between yield to maturity and market rate, exchange rate, and the issued amount of corporate bonds are 36.9 percent. This means that the variation in the spread between yield to maturity and market rate and exchange rate explains 36.9 percent of the variation in an issued amount of corporate bonds. The multiple correlation error is 0.608 and the standard error is ± 1.047.

The spread between yield to maturity and market rate and exchange rate are significant at the 5 percent level ($F_{critical}$ = 6.915), allowing this study to reject the null (H01) hypothesis. Hence, the alternate hypothesis (Ha1) is Accepted. Chabchitrchaidol and Panyanukul (2005), who similarly studied bid–ask spread on the government bond market, and Paisarn (2011) who studied the impact of change in macroeconomics of yield spreads obtained similar results. Thus, it is concluded that the spread between yield to maturity and market rate and exchange rate influences the issued amount of corporate bonds.

Testing Hypothesis No. 2: There is a relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds.

- **Ho2: There is no relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds.**
- **Ha2: There is a relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds.**

This results indicate (refer to Table 4) that there is a moderate relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds. In other words, this means that changes in the spread between yield to maturity and market rate are moderately correlated with changes in the issued amount of corporate bonds. This is a negative correlation. We can conclude that when the spread between yield to maturity and market rate increases, the issued amount of corporate bonds decreases.

The significant value is at 0.00 that is less than 0.01, allowing this study to reject the null hypothesis (H02) . Hence, the alternate hypothesis (Ha2) is accepted. This means that there is a relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds. Finally, we can conclude that there is a statistically significant correlation in the relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds.

Recommendations

This study suggests that less fluctuation of spread between yield to maturity and market rate and exchange rate can

encourage the corporate entities to mobilize funds from the market. Moreover, the Government should control their monetary policies so as to make them more stable. This will encourage the corporate entities to mobilize funds from the bond market. They should bring in reforms and regulations or should regulate the policies that can encourage the market participants to be involved in the market. Moreover, they should educate the market participants about the benefits of raising funds from the market.

Conclusion

Following the Thai/Asian Financial Crisis of 1997, the Thai bond market has grown rapidly due to public sector initiatives to balance the financial system. However, the Thai bond market is unbalanced between the Government bonds and corporate bond markets. The most active issuer in the market is the Government, while a few corporate entities mobilize funds from the market.

Based on the multiple regression results, this study found that the spread between yield to maturity and market rate and exchange rate influenced the issued amount of corporate bonds. This indicates that the corporate entities in Thailand make the decision to mobilize funds from the bond market depending upon the volatility of the yield to maturity, market rate, and exchange rate. In addition, based on Pearson's correlation results, this study finds that there is a relationship between the spread between yield to maturity and market rate and the issued amount of corporate bonds. This illustrates that the amount of bonds which are traded in the primary market are correlated between the yield to maturity and the market. In case the market rate and yield to maturity are very high rates, the corporate entities would not want to mobilize funds from the market. This study suggests that the concerned organization in the Thai bond market should carefully control the factors such as the market rate and yield to maturity that obstruct the market participants to participate in the market. Finally, the regulators should reform the existing regulations and policies, and bring in new regulations and policies which can encourage the market participants to participate in the market.

Research Implications

Generally, the determinants of the Thai corporate bond liquidity perceptions can help the authorities of the Thai bond market to improve the bond liquidity. This also can encourage the market participants to participate in the market. The corporate entities in Thailand make decisions to mobilize funds from the bond market depending upon the volatility of the yield to maturity, market rate, and exchange rate. In addition, the amount of bonds which are traded in the primary market are correlated with the yield to maturity and the market. The results of this study can help the authorities in the Thai bond market and the market participants to determine the factors that influence the liquidity of the Thai corporate bond market. Finally, the present study can be used by the concerned organizations of the Thai corporate bond market to reform the existing regulations and policies, and introduce new ones.

Limitations of the Study and Scope for Future Research

The biggest limitation of this study is that it is based on the data published by the Thai Bond Market Association, the Bank of Thailand, and related organizations. Moreover, other factors such corporate bond credit rating and inflation rate are not covered in this study, since the data for the same was not available.

In order to increase the issuers in the Thai corporate bond market, the study of the behavior of issuers in the bond market may be taken up. Moreover, they should study the other factors like inflation rate and credit rating that have an influence on Thai corporate bond liquidity.

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