

A Scheffe Analysis on the Sovereign Bonds and Non-Sovereign Bonds Performance in Malaysia

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ABSTRACT

This study aims to investigate the significant mean different between the sovereign bonds and non-sovereign bonds performance about the yield performance in Malaysia. Secondary data used for such government bond issuances cover the period of 2015-2019. Scheffe statistical test utilized to compare the mean different between these two groups of bond, sovereign and non-sovereign. The results is a statistically significant mean different between these two types of bonds whereby the performance of their facets could be in different patterns depending on fluctuation in price, years to maturity, amount of issues as well as other macroeconomic variables respectively.

Keywords

Scheffe Analysis, Sovereign Bonds, Non-Sovereign Bonds, Yield, Malaysia

Article Received: 10 August 2020, Revised: 25 October 2020, Accepted: 18 November 2020

Introduction

Sovereign bonds refer to any bonds such as domestic bonds, foreign bonds, and Eurobonds issued by a country's central government. Sovereign bonds are usually unsecured, different risk levels and are backed by the taxing authority of a national government. The non-sovereign bonds issued by local governments and the sources of repayment proceeds are the general taxing authority of the issuer, project cash flows and special taxes. The non-sovereign bonds accept high credit ratings due to low default rates and higher yield than the sovereign bonds.

The types of capital markets growing rapidly in Malaysia and becoming one of the largest markets in Malaysia. Government bond are marketable debt instruments issued by the government of Malaysia to raise funds from the domestic capital market to finance the government's development expenditure and working capital. The reminder of the paper organized as follows. Next section explains about past studies particularly on government bond issues and its performance that are close related to sovereign and non-sovereign bonds. Then, data and methodology used are explain in this section follows by results and discussion. Finally, this study concludes the finding.

Literature Review

The sovereign bonds will face the strategic challenge of achieving alignment with the Sustainable Development Goals in the 2020s. The sovereign bonds are one of the largest asset classes with a value of US\$66 trillion and represent macroeconomics factors, effect broader capital market pricing, system stability and core holdings for financial institutions (Pinzón, Robins, McLuckie, and Thoumi, 2020).

Bank, Kupfer, and Sendlhofer (2012) suggested Performance-sensitive government bonds (PSGB) as the main incentive for the government to build up a long-run reputation, lower average financing costs and ease budget constraints. Comer and Rodriguez (2006) verify that definite differences exist in investment styles and performances for corporate and the government of investment-grade bond

funds over the 1994-2004. The bond fund investors are acquainted with the performance difference and have directed their investment dollars by an examination of cash flows to the funds. The government bond funds returned was below than average performance evaluation for US fixed income mutual funds from 1986 until 2000. Ferson (2003, 2006). Furthermore, Fearnley (2002) explores a structural change in the prices of the market and currency risk for the US, Japanese, and European stock markets than for the bond markets.

Then, Reschreiter (2004) mentioned that the government can significantly lower their cost of long-term financing through issuing inflation index-linked debt. Lekkos and Milas (2004) showed that bondholders require high yields during recession and low yields during growth in the first half of the study period but reversed in the second half of the sample from 1977:01 to 1986:06. Next, Hedge (1987) found that the forecast performance of near-term Treasury Bond futures contract traded fails to outperform the forecasting for long term interest rates investment. Samarakoon (1998) found that rebalanced and appreciation both in account capital and bond returns for long-term interest rates portfolio investment.

Fung, Wai-Ming, and Zhu (2000) showed that the government was reliant on debt financing to solve their budget deficit and interest payment obligation. Ravindran, Shanmugam, and Mohd Hanif (2011) revealed the mix of government, Islamic, and conventional bonds in a portfolio would bring down the market risk and increase a stable income.

The hypothesis:

Ho: There is a significance means difference between sovereign bonds and non-sovereign as regards to their yield performance.

Ha: There is a significance means difference between sovereign bonds and non-sovereign as regards to their yield performance.

Data and Methodology

This study will be obtaining data from the Ratings Agency Malaysia (RAM) and Malaysian central bank, Bank Negara Malaysia (BNM) Bond Info Hub where there are sufficient for gathering data on yield, coupon rates, types of instrument, size of issuance and price. In this study, the maturity date that is consider a long-term government bond yield expressed as an annual rate. Therefore, the sample period of study is planning to be collected in year 2015 until 2019 cover for 69 and 2121 observations for sovereign and non-sovereign bonds respectively.

Next, Scheffé's method or approach applies to the set of estimates of all possible contrasts among the factor level means, not just the pairwise differences considered by Tukey's method. Technically there are an infinite number of contrasts. The simultaneous confidence coefficient is exactly $1-\alpha$, whether the factor level sample sizes are equal or unequal. The Scheffé confidence interval procedure that generates simultaneous intervals for all contrasts is considerably wider. In the general case when many or all contrasts might be of interest, the Scheffé method tends to give narrower confidence limits and is therefore the preferred method. Therefore, Scheffe's test is one of the most stringent adjustments that can used to decrease

experiment wise error rates when testing multiple comparisons. This means that each pairwise comparison has to have the same significance as the variance for all comparisons when using Scheffe's test. An arbitrary contrast is defined by this study for such evaluation analysis is a below:

$$\text{Scheffé: } 0.95 < \mu_2 - \mu_1 < 5.49$$

Where; $\mu=$ refers to the set of estimates of all possible contrasts among the factor level means.

Results and Analysis

From the Table 1, we can see that most of the issuances are from non-sovereign bonds for 2121 compare to only 69 issuances by sovereign bond issuer in Malaysia as represented by frequency statistic generated by Scheffe tabulate. With respect to the mean value, there are quite huge different between these bonds, sovereign and non-sovereign at 2.55 and 3.80 value respectively. This implies that the yield shows non-sovereign bond is perform better. Supported by the result present in table 2 where these two bonds are statistically significant different at 99 percent confidence level with p value of 1.25. Whereas the risk level represented by standard deviation shows an adverse risk profile whereby sovereign bonds indicate less risk in coupon payment compare to non-sovereign bonds is at 2.16 and 2.22 respectively.

Table 1 Summary of Yield Based on Scheffe Tabulate

Type	Mean	Std. Dev.	Frequency
Sovereign Bond	2.5505797	2.1590827	69
Non Sovereign Bond	3.8045084	2.2242257	2121

Table 2 Comparison of Yield Mean by Type

	Sovereign Bond	Sig.
Non Sovereign Bond	1.25393	0.000

Table 3 Intraclass Correlation and Reliability Results

	Value	Asy. SE	95% Conf. Interval
Intraclass Correl	0.13173	0.16977	0.00000 0.46447
Estimated SD of type effect	0.8655747		
Estimated SD within type	2.22223		
Est. reliability of a type mean	0.953		

In Table 3, the result reported for intraclass correlation between sovereign and non-sovereign bonds as well as the reliability test. The correlation between these groups shows a significant at 95 percent confidence level of interval with 0.46. Concerning the estimated reliability of a mean test, the score is high at the value of 0.953 that satisfy the statistical results. Therefore, the scheffe analysis confirm that there is a statistical significant mean different of yield between sovereign and non-sovereign bonds even though both was issued by government or other quasi government in Malaysia. Thus, this study accept the Ha.

Conclusion

In overall, the study confirms that the alternative hypothesis, Ha accepted where there is a significant mean different between the yield performance for issuances of sovereign and non- sovereign bonds in Malaysia. Some of the investor predicted that their yield performance is similar except the risk level are different in terms of coupon payment. However, this study prove that the risk level react

differently. Thus, this study can provide a signal to the issuer as well as investor when they have a planning to invest long-term investment about bond in their capital structure.

Acknowledgement

We thank you to Universiti Tenaga Nasional for BOLD Grant awarded under this study.

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