Al-Iqtishad: Jurnal Ilmu Ekonomi Syariah (Journal of Islamic Economics)
Volume 8 (2), July 2016
P-ISSN: 2087-135X; E-ISSN: 2407-8654
Page 255 - 270

RISK AND RETURN: BONDS AND SUKUK IN INDONESIA

Ahmad Rodoni, Aris Setiawan

Abstract: Risk And Return: Bonds And Sukuk In Indonesia. *The aim of this research is to compare the degree of risk and return of bonds with sukuk, using several calculations magnitudes, which are, yield to maturity (YTM), Macaulay's duration, and Value at Risk (VaR). The results of this study show that there is no significant difference between the YTM bonds and the YTM of emitted sukuk. Using the Macaulay's duration formula to evaluate the duration of bonds and sukuk, the research found out that there is no significant difference in the duration of bonds and sukuk. However, the calculation and comparison of the VaR, showed a significant differences between bonds and sukuk , likewise either the comparison of the VaR of a sample group of bonds with a sample group of sukuk using k sample test. But by testing each group of the VaR of bonds sample group and sukuk sample group,the results show no significant differences.*

Keywords: *bonds; sukuk; risk; return.*

Abstrak: Risiko dan Tingkat Pengembalian: Obligasi dan Sukuk di Indonesia*. Tujuan dari penelitian ini ialah untuk membandingkan tingkat risiko dan tingkat pengembalian antara obligasi dengan sukuk, menggunakan beberapa ukuran yaitu: imbal hasil pada saat jatuh tempo, jangka waktu Macaulay, dan penilaian risiko (VaR). Hasil pada penelitian ini menunjukkan bahwa tidak terdapat perbedaan imbal pada saat jatuh tempo antara obligasi dengan sukuk. Menggunakan formula jangka waktu Macaulay untuk mengevaluasi durasi obligasi dan sukuk, hasil penelitian menunjukkan bahwa tidak terdapat perbedaan durasi antara obligasi dan sukuk. Namun, perhitungan penilaian risiko dan perbandingan nilai VaR menunjukkan bahwa terdapat perbedaan nilai VaR antara oblihasi dan sukuk dengan menggunakan uji sampel-k. Akan tetapi pengujian tiap kelompok pada obligasi maupun sukuk menunjukkan tidak terdapat perbedaan.*

Kata Kunci: *obligasi; sukuk; risiko; tingkat pengembalian.*

First Draft : January 22, 2016; Revison: March 30, 2016; Accepted: June 6, 2016
UIN Syarif Hidayatullah Jakarta, Jl. Ir H Juanda No 95, Ciputat, South, Tangerang, Bannten, Indonesia,
Email : ahmad.rodoni@uinjkt.ac.id, doni_ahmad@yahoo.com
DOI: 10.15408/aiq.v8i2.3159

Introduction

Sukuk is now one of the main capital market instruments in Islamic Banking and Finance Industry, it is based on Sharia principle, and it is often referred as the Islamic version of conventional finance bonds. However, in reality, sukuk is not functioning like bonds as debt securities, as the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) concluded, sukuk is defined as certificates of equal value representing undivided shares in the ownership of tangible assets, usufructs and services or (in the ownership of) the assets of particular projects or special investment activity. What has been emphasis from this definition above is that sukuk are in essence, different from bonds. One of the main requirements in the issuance of sukuk is that, the underlying asset itself should be the object of the contract. It is that concept of underlying asset that differentiate sukuk from bonds (Rodoni, 2009) and (Fathurahman and Fitriati, 2013). Unlike bonds, sukuk contracts are issued based on the principles of Sharia. The difference between sukuk and bonds highlights the fact that bonds are considered as long-term debt instruments that are issued by corporations and government (Afshar, Tahmoures, 2013) while sukuk are certificates of equal value that represent an ownership proportion of an issued asset (Mosaid and Boutti, 2014).

Several researchers had already concluded that conventional bonds and sukuk instruments are indeed different. However, there are some similarities between sukuk and bonds even though these financial instruments are mainly different. For example, like bonds, sukuk certificates have a fixed-term maturity, coupon rates or profit sharing, and sukuk certificates are also traded at a certain price (Mosaid and Boutti, 2014). In addition, sukuk certificates are also financial instruments which the rate of return can be predicted either fixed or floating, are traded in the secondary market though much smaller in amount than bonds, and have a ranking rate from the ranking agencies (Cakir and Raei, 2007). The differences between sukuk and bonds have raised many questions, among them figure the question whether or not, they are different or similar in the aspect of return and risk.

One method used to measure return is to evaluate the yield to maturity (YTM). The comparison of the yield to maturity of different bonds is used by investors to decide which bonds to buy or which bond to sell (Sharpe, 2005). Regarding risk evaluation, several methods are used by corporation and institutions to evaluate it; one of them is the Duration Model method, used in risk management calculate the duration and net income by using all the cash inflows based on YTM. Duration is a time value and maturity of cash flows and represents the average time required for an initial investment return. Another method used is the Value at Risk (VaR), this method is relatively new; the VaR indicates a company's losses by using

http://journal.uinjkt.ac.id/index.php/iqtishad
DOI: 10.15408/aiq.v8i2.3159

probability and timing of an asset ownership (Khan and Ahmed, 2001). Up held research made by Ariffin, et. al (2008) in Nanaeva (2010) indicates that there are several methods used in risk analysis by Islamic banking industry where 82% of Islamic Institutions use the Maturity Matching method, 68% use a Gap Analysis method, 43% the Duration Analysis method, 29% use the VaR method and 14% use the Risk Adjusted Return on Capital (RAROC) method. Driven by the crucial importance of information about one financial instrument`s risk and returns in making investment decisions. This study aim to analyze the differences in risk and return between bonds and sukuk in Indonesia using the YTM rate, the duration and Value at Risk (VaR) methods.

Literature Review

The research conducted by Cakir and Raei (2007) entitled *Sukuk vs. Eurobond: Is There a Difference in Value at Risk?*, compared the performance of sukuk and bonds using daily data of four countries namely Malaysia, Pakistan, Bahrain and Qatar. They calculated the costs and risks using Value at Risk (VaR) portfolio with the Monte Carlo simulation method. Their research proves that sukuk is different from conventional bonds, as evidenced by its costs. They put sukuk certificates inside portfolio and proved that doing so can significantly reduce the VaR of the portfolio. The difference between their research and the one conducted by Cakir and Raei (2007) is in the object of the research and the method of evaluation, they used not only the evaluation of the VaR, but the evaluation of the YTM and the duration as well.

Khuluq (2007) investigated the Comparative Risk Measurement of sukuk Ijarah (Islamic banking product), model duration and Value at Risk (VaR). His research was conducted by measuring the risk of sukuk Ijarah using a model to evaluate the duration and Value at Risk (VaR), and by measuring the risk using the Variance Covariance model (VAR). Comparing these two methods of risk measurement, he found out that the level of risk obtained by using the VAR calculation is lower when compared to the one using via the duration method. The specificity of this study lies in the samples, as only sukuk Ijarah was the object of the research, and the evaluation models used.

Ijtihadi (2010) made a research about the Analysis of sukuk and bonds portfolio Value at Risk (VaR). He uses VaR level measurement method, the duration and convexity of each sample. The VaR of sukuk to its market rate has a lower value than the VaR of bonds. Regarding portfolio, the presence of sukuk in a portfolio may not necessarily cause a low portfolio VaR. The Back testing results shows that the VaR model made in this research is valid. The research conducted by Nanaeva (2010)

entitled *How Risky Sukuk are: Comparative Analysis of Risks Associated with Sukuk and Conventional Bonds*. The method used in this study is evaluating the average Value at Risk value of a single asset of conventional bonds and sukuk. The results show that the VaR of sukuk and conventional bonds are difference as the VaR of sukuk is 10 times higher than the VaR of conventional bonds. The main conclusion from this study is that sukuk are more risky when compared with conventional bonds.

Ramasamy (2011) research entitled *Relative Risk of Islamic Sukuk over Government and Conventional Bonds* uses the evaluation of the YTM, the duration and the convexity using MATLAB and SPSS software to assess how risky sukuk are compared with government and conventional bonds. The conclusion that had been derived from this research is that sukuk is riskier than government bonds, but sukuk risk is lower if compared with conventional bonds. In addition, risk and return are positively correlated. Ariff and Safari (2012) in their research entitled *Are Sukuk Securities Same as Conventional Bonds?* Analyzed sukuk and bonds by using the Yield to Maturity (YTM) evaluation, and compared the average with a *paired sample t test* between sukuk and bonds. They then performed a Granger Causality test to see whether there is a correlation between yields (returns) of both sukuk and bonds. The comparison results show that there is no significant difference between the average return even though the Granger Causality results showed no significant correlation between sukuk and bonds, which means that when there are changes in some bonds yields, it will affect other bonds, but will not affect sukuk.

Fathurahman and Fitriati (2013) conducted a research about the yields (returns) comparison between sukuk and conventional bonds. Evaluating the return using the Yield to Maturity (YTM) method to test the hypothesis, and conduct the comparison using independent sample t test. This study classifies sukuk into one group and conventional bonds into 10 groups, with the aim of balancing the number of sukuk. The results showed that the average value of sukuk YTM is larger than the average value of conventional bonds; in addition ,sukuk risk is higher than the risk of the group of 10 conventional bonds. The research of Mosaid and Boutti (2014) entitled *Sukuk and Bonds Performance in Malaysia* ,compare portfolios *return* by using *t test for paired samples*, then tested the correlation of those returns. The results of the t test for paired samples of sukuk portfolios return show that only one of the 10 portfolios is significant, regarding bonds portfolio, none was significant. The portfolios return correlation result show a positive correlation between the return of sukuk and bonds.

Methods

Scope of the Study and Sampling Techniques**.** The research is made on bonds and companies sukuk issued from 2009 to 2013. The sampling technique used

DOI: 10.15408/aiq.v8i2.3159

in this study is a *nonprobability sampling* technique which is *purposive sampling*. Hypothesis Testing and Statistics. Comparison of the results of the YTM evaluation, the calculation of the duration and the VaR, each will be tested through hypothesis, based on the sample, using the following steps: First, Hypothesis test of two samples that are the entire sample of 288 bonds and the sample of the total 18 sukuk, using the *independent sample t test* (parametric) or the *Mann Whitney test* (nonparametric). Second, hypothesis test of comparison of two sample groups, respectively between 16 groups of bonds with a sample group of sukuk using the *independent sample t test* (parametric) or *Mann Whitney test* (nonparametric). Third, the hypothesis test of more two samples, specifically a sample of 16 bonds groups, as a whole, with a sample group of sukuk, using ANOVA test (parametric) or *Kruskal Wallis test* (nonparametric).

Result and Discussion

Table 1 shown the overall picture of the YTM of bonds and sukuk can be seen, the calculations had been made based on the market price at the date of February 12, 2014, it can be seen from the table that the highest level of YTM of bonds reached 15.53% while for sukuk the highest point is 11.93%. However, the lowest value of both bonds and sukuk differ for a magnitude of 0.0065, as the lowest YTM of bonds is 0.0585 and 0.0650 for sukuk. And when viewed from the average point, bonds and sukuk are not far adrift, respectively in the range of 9% and 8%. The standard deviation of the YTM of sukuk higher than the one of bonds, which shows that the YTM between sukuk has a value that is more disperse than the YTM of bonds, although the standard deviation of both YTM sukuk and bonds are differentfor a value of 0,004. To summarize this point, we may say that the main information driven from the descriptive statistics of the YTM of bonds and sukuk is that, the differences between these two financial products reside on their high nominal values *(face / par value)*.

Table 1. .YTM of Bonds and Sukuk Descriptive Statistics

Characteristic	Bonds	Sukuk
N	288	18
Minimum	.0585	.0650
Maximum	.1453	.1193
Range	.0868	.0543
Mean	.096319	.088472
Std. Deviation	.0125568	.0166167

Source: data processed with SPSS 22.

DOI: 10.15408/aiq.v8i2.3159

From the normality test results, can be concluded that the data are not normally distributed, therefore, the Mann Whitney non-parametric test was used for the hypothesis testing. The results of the Mann Whitney testare shown in the Table 2.

Table 2. Mann Whitney test results of the YTM of Bonds and Sukuk

Test Statistics	
	YTM
Mann-Whitney U	1920.000
Wilcoxon W	2091.000
Z	-1.845
Asymp. Sig. (2-tailed)	.065
a. Grouping Variable: Instrument	

Source: Statistical data output, processed with SPSS version 22

It can be seen from the statistical output that the Mann Whitney test has a significant value as 0.065> 0.05, which means that the H_0 hypothesis is accepted, there is no significant difference between the YTM of sukuk and bonds.

Comparison between the YTM of Bonds sample groups and Sukuk sample groups

The comparisons of the YTM each sample groups of bonds with the YTM sample group of sukuk were performed using the normality and homogeneity test; therefore to test the hypothesis of comparison of each YTM group of bonds and sukuk, we used the independent sample t test and the Mann Whitney test. The test results are recapitulated in the Table 3.

From the Table 3, we can see that only the YTM bonds group 1, 13 and 14 have a significant difference with the YTM of sukuk group, their values are significant as respectively 0,031; 0.027 and 0.033 are <0.05, with these 3 groups of sample the H_0 hypothesis is accept, there is no significant difference between the YTM of bonds sample group and sukuk sample group. The comparisons of the YTM each sample groups of bonds with the YTM sample group of sukuk as a whole were performed using the normality and homogeneity test; therefore to test the hypothesis of comparison we used the Kruskal Wallis test, because despite having the same variance, all the data are not normally distributed. The results of the statistical output are shown in the Table 4.

http://journal.uinjkt.ac.id/index.php/iqtishad
DOI: 10.15408/aiq.v8i2.3159

Table 3. Summary of Results of Independent Sample t test and Mann Whitney Test of YTM of Bonds and Sukuk samples

Comparison between	t test	Mann-Whitney U	Sig.
YTM_Sukuk and YTM_Bonds1	2.276	-	.031
YTM_Sukuk and YTM_Bonds2	-	106.000	.076
YTM_Sukukand YTM_Bonds3	1.586	-	.122
YTM_Sukukand YTM_Bonds4	1.904	-	.065
YTM_Sukukand YTM_Bonds5	2.042	-	.052
YTM_Sukukand YTM_Bonds6	1.320	-	.196
YTM_Sukukand YTM_Bonds7	-	122.500	.211
YTM_Sukukand YTM_Bonds8	.003	-	.998
YTM_Sukukand YTM_Bonds9	-	138.000	.448
YTM_Sukukand YTM_Bonds10	1.597	-	.123
YTM_Sukukand YTM_Bonds11	-	120.000	.184
YTM_Sukukand YTM_Bonds12	-	137.500	.438
YTM_Sukukand YTM_Bonds13	2.329	-	.027
YTM_Sukukand YTM_Bonds14	-	94.500	.033
YTM_Sukukand YTM_Bonds15	.953	-	.347
YTM_Sukukand YTM_Bonds16	1.728	-	.093

Source: data processed with SPSS 22, converted into Ms. Word

We can see from Table 4, that the Kruskal Wallis test is significant as 0.466 > 0.05 answering the third hypothesis,we then accept the H_0 hypothesis, there is no significant difference between all groups of YTM bonds sample and the YTM group of sukuk sample as a whole. The results of this present research on the comparison of bonds and sukuk return (YTM) are in line with the results of the one conducted by Wahdy (2011) and Wahyuni (2011) which stated that there is no significant difference between bonds and sukuk returns. Our results also go in line with the research of Fathurahman and Fitriati (2013), with the statistical results of *the independent sample t test* comparing the YTM of a sample of 10 groups of bonds compared to a sample group of sukuk, where we found out that not all tests was significantly different, we found out that only the YTM of the sample group bonds 3, 6 and 10 as well as seven other groups did not different significantly.

DOI: 10.15408/aiq.v8i2.3159

The arguments that support the result of this study, namely there is no significant differences between the YTM of sukuk and bonds, lies on the similar characteristics located on both financial instruments. In evaluating the YTM of bonds and sukuk, there are some data that are needed, namely the market price of the instrument, his time to maturity, coupon rate, and so on. Such data has the same characteristics in the secondary market. As noted by Mosaid and Boutti (2014), like bonds, sukuk also has a *fixed-term maturity*, a coupon rate or profit sharing, and sukuk are also traded at a certain price. Additionally, Cakir and Raei (2007) also stated that sukuk certificates are also financial instruments that which the level of yield (return) can be predicted whether it is fixed or floating, and sukuk are also traded on the secondary market, and are rated by rating agencies, because of all these similarities, the test results do not have significant differences.

Table 4. Kruskal Wallis YTM Bonds and Sukuk Sample Group

Test Statistics[a,b]	
	YTM
Chi-Square	15.818
Df	16
Asymp. Sig.	.466
a. Kruskal Wallis Test	
b. Grouping Variable: Instrument	

Source: Statistical data output processedwith SPSS version 22

Comparison of the *Macaulay's Duration* rate of Bonds and Sukuk

Comparison of Bonds and Sukuk duration

In Table 5, is presented the results of descriptive statistics of the duration value of bonds and sukuk that will be compared.

Table 5. Descriptive Statistic Test Results of Bonds and Sukuk Duration

	N	Min	Max	Range	Mean	Std. Deviation
	Stat	Stat	Stat	Stat	Statistic	Statistic
Bonds_ Duration	288	.2500	6.4011	6.1511	2.259662	1.4310504
Sukuk_ Duration	18	.7272	6.2400	5.5128	2.805697	1.7425498
Valid N (listwise)	18					

Source: Statistical data output processedwith SPSS version 22

DOI: 10.15408/aiq.v8i2.3159

From the descriptive statistics showed in table 6, we can see that the highest duration value of both sukuk and bonds are almost at the same level, at around 6 in terms of years. The lowest value for the bonds duration is 0.25 while for sukuk it is 0.73 years which is much higher than the lowest value of the bonds, which is due to the fact that many sukuk have a long period of maturity. When we looked at the average value of duration, we can see that it is not so different; the duration value of sukuk is slightly longer 2.81 years, than the duration value of bonds 2.26. Furthermore, we performed the third hypothesis testing with non-parametric statistics using the Mann Whitney test, the statistical output in Table 6. From the Mann Whitney test showed in table 7, the fourth hypothesis can be answered by looking at the significant value of 0.238 > 0.05, which means that the H_0 is accepted, there is no significant difference between the duration of bonds and sukuk.

Table 6. Mann Whitney Bonds and Sukuk Duration

Test Statistics[a]	
	Duration
Mann-Whitney U	2162.500
Wilcoxon W	43778.500
Z	-1.180
Asymp. Sig. (2-tailed)	.238
a. Grouping Variable: Instrument	

Source: Statistical data output processedwith SPSS version 22

Bonds and Sukuk sample group duration comparison

The comparison of each bonds duration of sample group with the sukuk duration sample group were performed using the *independent sample t test* and the *Mann Whitney test* referring to the test results of normality and homogeneity. The output of these test are shown in Table 7.

From the *independent sample t test* and the *Mann Whitney* which the results shown in Table 7, it can be concluded that there is only two sample groups duration of bonds that have significant differences with the duration of a sample group of sukuk, which is the duration of the bonds sample groups 4 and 9 with a significance level of 0.028 and 0.044 > 0.05, we then accepted the fifth null hypothesis H_0 there is no significant difference between the duration of the sample group of sukuk and sample group of bonds. The comparison of samples group of bonds duration with samples group of sukuk as a whole were performed using the normality and homogeneity test, although the homogeneity of the data have the same variance, but

DOI: 10.15408/aiq.v8i2.3159

regarding the normality test, there is only one group that is normally distributed. Therefore, the fourth hypothesis was tested using the Kruskal Wallis non-parametric statistical test, the output of the test is shown in the Table 8.

Table 7. Mann Whitney and *Independent Sample t Test,* Bonds and Sukuk Sample group Duration Output Summary

Comparison	t test	Mann-Whitney U	Sig.
SukukwithBonds_Duration1	-.933	-	.358
SukukwithBonds _Duration2	-1.512	-	.140
SukukwithBonds _Duration3	-1.444	-	.158
SukukwithBonds _Duration4	-2.316	-	.028
SukukwithBonds _Duration5	-.160	-	.873
SukukwithBonds _Duration6	-.972	-	.338
SukukwithBonds _Duration7	-.753	-	.456
SukukwithBonds _Duration8	-1.710	-	.096
SukukwithBonds _Duration9	-2.096	-	.044
SukukwithBonds _Duration10	-1.301	-	.202
SukukwithBonds _Duration11	.110	-	.913
SukukwithBonds _Duration12	-.728	-	.471
SukukwithBonds _Duration13	-1.139	-	.263
SukukwithBonds _Duration14	.336	-	.739
SukukwithBonds _Duration15	-	121.000	.195
SukukwithBonds _Duration16	-.255	-	.800

Source: Statistical data output processed with SPSS version 22.

From the output of the Kruskal Wallis test shown in Table 8, we can answer the sixth hypothesis by looking at the significant value of 0.146 > 0.05, which means that the null hypothesis is accepted, there is no significant difference between the duration of the group of bonds and the groups of sukuk as a whole.

Testing the difference sukuk and bonds duration, none of hypothesis 4, 5 and 6 was statistically significant. Even in the comparison between the duration of the sample group of bonds and sukuk, only two groups of duration of sample were significantly different. This is because of the average duration of bonds and sukuk are approximately close, and the fact that the duration between groups is almost of an equal value, so there is no significant difference. In addition, one of the reasons is that their market price offered in the secondary market has almost the same value. The comparison of each duration bonds sample group indicated by the average

value only with close intervals. Reinforced by the results of hypothesis 1, 2 and 3 of the YTM that statistically there is no difference, therefore there is no significant difference regarding the duration. This is because the period of evaluation of the duration is same with the period of evaluation of YTM, where the duration requires YTM data to look for cash flow that will be included into the calculation process of the duration. If there is no significant difference of the YTM, then this will strengthen the hypothesis 3, 4, and 6, there will be no significant difference either.

Table 8. Kruskal Wallis Test of Bonds and Sukuk sample results

Test Statistics[a,b]	
	Duration
Chi-Square	21.925
Df	16
Asymp. Sig.	.146
a. Kruskal Wallis Test	
b. Grouping Variable: Instrument	

Source: Statistical data output processedwith SPSS version 22

Comparison between *Value at Risk* (VaR) of Bonds ands ukuk

Comparison between VaR of Bonds and Sukuk

Table 9 presented the descriptive statistics regarding VaR in Indonesian Rupiah of sukuk and bonds, under the assumption that investment holding period is 5 days.

Table 9. VaR of Bonds and Sukuk Descriptive Statistic

	N Stat	Minimum Statistic	Maximum Statistic	Mean Statistic	Mean Statistic	Std. Deviation Statistic
VaR_Bonds_t5	288	3824125	49575867020	7188051203	49572042895	9412994466
VaR_Sukuk_ t5	18	140747516	8529687745	2020748491	8388940229	1961100803
Valid N (listwise)	18					

Source: Statistical data output processedwith SPSS version 22

From the table 10, we can see that the maximum loss from bonds is amounted to Rp 49,575,867,020, while the maximum loss from sukuk is Rp 8,529,687,745. Looking from the average VaR of losses for a single bonds asset is Rp 7,188,051,203,- while it is Rp 2,020,748,491 for one sukuk asset. This high VaR indicates that there is

a bond that has a very high potential of loss that exceeded the maximum loss potential of sukuk. However, from the descriptive statistic, we can also see that there is a bond that has a very low VaR which mean, that the maximum loss from that bond is less than the lowest loss in sukuk. The two tests of normality, had led us to concluded that for the seventh hypothesis testing, we had to use a non-parametric statistics, the Mann Whitney test had been used, the output of the test are shown on Table 10.

Table 10.VaR Bonds and Sukuk Mann Whitney Test

Test Statistics[a]	
	VaR_t5
Mann-Whitney U	1429.000
Wilcoxon W	1600.000
Z	-3.194
Asymp. Sig. (2-tailed)	.001
a. Grouping Variable: Instrument	

Source: Statistical data output processedwith SPSS version 22

The difference is testing using Mann Whitney test shown in table 11, the results show a significant value 0.001 < 0.05, which means that the H_0 of the seventh hypothesis is accepted, there is a significant differences between the VaR of bonds and sukuk.

Comparison of the VaR of Bonds Group Sample with Sukuk Sample Group

The comparisons of the VaR of each sample group of bonds with the VaR of sample group of sukuk were performed using the independent sample t test and Mann Whitney test. The output is shown in the Table 11.

From the t test and the Mann Whitney test as shown in table 12, there are plenty of VaR sample group bonds that have significant value < 0.05, which means there are significant VaR differences between bonds sample group and sukuk sample group, namely group 1 , 5, 6, 7, 10, 11, 13, 14, and 16, but because not all groups were significant, only 9 sample groups of bonds, we therefore accepted the H_0 of the eighth hypothesis, there is no significant difference of the VaR of bonds and sukuk sample.

The comparison of the VaR of bonds group samples with sukuk group sample as a whole was performed using the normality and homogeneity test. From the normality test, we found out that not all the data showed a normal distribution, and from the homogeneity test, we found out that the data does not have the same

variance, therefore to test the ninth hypothesis we used the Kruskal Wallis test which the results are shown in Table 12:

Table 11. Mann Whitney and *Independent Sample t Test, VaR of* Bonds and Sukuk Sample group, Output Summary

Comparisons	t test	Mann-Whitney U	Sig.
VaR _Sukuk dg VaR_Obligasi1	-	93.000	.029
VaR _Sukuk dg VaR_Obligasi2	-	111.000	.107
VaR _Sukuk dg VaR_Obligasi3	-	104.000	.066
VaR _Sukuk dg VaR_Obligasi4	-	109.000	.094
VaR _Sukuk dg VaR_Obligasi5	3.111	-	.006
VaR _Sukuk dg VaR_Obligasi6	-	98.000	.043
VaR _Sukuk dg VaR_Obligasi7	-	100.000	.050
VaR _Sukuk dg VaR_Obligasi8	-	132.000	.343
VaR _Sukuk dg VaR_Obligasi9	1.606	-	.117
VaR _Sukuk dg VaR_Obligasi10	-	72.000	.004
VaR _Sukuk dg VaR_Obligasi11	-	77.000	.007
VaR _Sukuk dg VaR_Obligasi12	-	103.000	.062
VaR _Sukuk dg VaR_Obligasi13	-	40.000	.000
VaR _Sukuk dg VaR_Obligasi14	-	64.000	.002
VaR _Sukuk dg VaR_Obligasi15	-	110.000	.100
VaR _Sukuk dg VaR_Obligasi16	-	39.000	.000

Source: Statistical data output processedwith SPSS version 22 and converted into Microsoft word document.

From the Table 12, the ninth hypothesis can be answered; with a significant value of 0.003 < 0.05, H_0 is rejected, there is no significant differences of VaR for bonds group and sukuk group tested as a whole.

These findings go in line with the findings of the research of Nanaeva (2010) explaining that there is a difference between the VaR for bonds and sukuk. Nanaeva (2010) explained that the VaR rate for bonds is 10 times more higher compared with sukuk. In this study, the differences of VaR can only be seen from the descriptive statistics with on average VaR for bonds is about 3.6 times higher than the VaR for sukuk, 7,188,051,203 as VaR for bonds and 2,020,748,491 as VaR for sukuk. Though the value of sukuk is lower, the VaR for sukuk is higher than VaR for bonds, respectively 3,824,125 and 140 747 516, but when viewed from

the top rate, VaR for bonds is much higher with a value of 49,575,867,020, than the VaR of sukuk with a value of 8,529,687,745. Thus, though there is a slightly different finding in this study when compared with the study of Nanaeva (2010), who inversely conclude that the VaR for bonds is higher than the VaR for sukuk, on the other hand, the research conducted by ijtihadi (2010) and Ramasamy et al (2011), showed similar results with our study where bonds has a higher risk than sukuk. In addition, the research conducted by Cakir and Raei (2007) also showed that the VaR for bonds differ significantly from the VaR for sukuk. Although the method used to evaluate the VaR are different, and in that research were included some portfolio, but in conclusion, both of the VaR have different characteristics.

Table 12.Kruskal Wallis Test Output of the VaR of Bonds Group and Sukuk Group

Test Statistics[a,b]	
	VaR_t5
Chi-Square	35.921
Df	16
Asymp. Sig.	.003
a. Kruskal Wallis Test	
b. Grouping Variable: Instrument	

Source: Statistical data output processedwith SPSS version 22

The difference is generally seen is the studied sample, where the sample of bonds in this study is not in the same amount with the sample of sukuk, due to fact that the number of sukuk issued is less when compared to bonds, especially in Indonesia where sukuk is still relatively new. So because of the number of samples of bonds is more numerous and diverse, it include a higher risk when compared to sukuk. The research of Nanaeva (2010) was conducted with an equal sample sukuk and bonds, so the VaR differenceis almost the same.

Some companies that issued sukuk also bonds, but companies that issued bonds on average does not necessarily issue sukuk. It can be concluded from that fact, that the issuance of sukuk in Indonesia is still very low when viewed from the amount of issuers. Sukuk are still issued only as a complement to the issuance of bonds by companies, nevertheless the reasons that motives companies to issue sukuk, can be seen more as a strategy to diversify their financial instruments in order to minimize the risk.

Conclusion

http://journal.uinjkt.ac.id/index.php/iqtishad
DOI: 10.15408/aiq.v8i2.3159

The comparison of the YTM of bonds and sukuk showed no significant difference whether the comparison had been made as a whole using the Mann Whitney test, or the entire sample group of bonds and sample groups of sukuk using Kruskal Wallis test. However, if the YTM of each sample group of bonds is compare with the YTM of each sample group of sukuk using independent sample t test and Mann Whitney test, there are 3 groups namely sample bounds group 1, 13 and 14 that have significant differences with the sample group of sukuk. Because of the similar characteristics of these two instruments, there is no difference between the YTM of bonds and sukuk.

The comparison of the duration of bonds and sukuk showed no significant difference either. Of the three hypotheses test regarding the duration of the bonds and sukuk, namely the comparison of the duration of sukuk and bonds using Mann and Whitney test and the comparison of all the sample group of bonds with the sample groups of sukuk using the Kruskal Wallis test, no differences were statistically significant. While the comparison of the duration of each sample group of sukuk and bonds using independent sample t test and Mann Whitney test showed that there are only two groups: the duration of the bonds sample groups 4 and 9 were significant. The absence of differences in the duration of one of them caused no difference in YTM of bonds and sukuk, because the calculation of the duration involved the YTM.

The comparison of the VaR of bonds and the VaR of sukuk shows that there are significant differences. The VaR of the sample group of bonds the sample group of sukuk using the Mann Whitney test showed that there is a significant difference, as well as the test of all sample groups of bonds and sukukas a whole using Kruskal Wallis test. While the comparison of VaR of each sample group of bonds with a sample group of sukuk using independent sample t test and Mann Whitney test, showed that 9 sample group of bonds had a significant difference, namely the sample group of bonds 1, 5, 6, 7, 10, 11 , 13, 14 and 16.

References

Afshar, T.A. (2013). Compare and Contrast Sukuk (Islamic Bonds) with Conventional Bonds, are They Compatible? *The Journal of Global Business Management.* Vol. 9 (1): 71-80.

Al Arif, M.N.R. (2012). *Lembaga Keuangan Syariah: Kajian Teoritis Praktis.* Bandung: Pustaka Setia.

Ariff, M. & M. Safari. (2012). Are Sukuk Securities the Same as Conventional Bonds? *Afro Eurasian Studies*. Vol. 1 (1): 101-125.

Ayub, M. (2007). *Understanding Islamic Finance.*England: John Wiley and Sons Ltd.

Buchdadi, A.D. (2008). Penghitungan VaR Portofolio Optimum Saham Perusahaan Berbasis Syariah dengan Pendekatan EWMA. *Jurnal Akuntansi dan Keuangan Indonesia*. Vol 5 (2): 182-201.

Cakir, S. & F. Raei. (2007). Sukuk vs Eurobonds: Is There a Difference in Value at Risk. *International Monetary Fund Working Paper* WP/07/237. Middle East and Central Asia Departement. 2007.

Fathurahman, H. & R. Fitriati. (2013). Comparative Analysis of Return on Sukuk and Conventional Bonds. *American Journal of Economics*. Vol. 3 (3): 159-163.

Ijtihadi, A.F. (2010). *Analisis Pengukuran Value at Risk pada Portofolio Sukuk dan Obligasi.* (Unpublished Thesis). Depok: Universitas Indonesia.

Jones, C.P. (2007). *Investments: Analysis and Management.* USA: John Wiley and Sons, Inc.

Khuluq, H. (2007). *Perbandingan Pengukuran Risiko Obligasi Syariah Ijarah Model Durasi dan Value at Risk.* (Unpublished Thesis). Depok: Universitas Indonesia.

Mosaid, F.E. & R. Boutti. (2014). Sukuk and Bond Performance in Malaysia. International *Journal of Economics and Finance*. Vol. 6 (2): 121-130.

Nanaeva, Z.K. (2010). *How Risky Sukuk are: Comparative Analysis of Risks Associated with Sukuk and Conventional Bonds.* Dubai: The British University in Dubai.

Penza, P. & V.K. Bansal. (2001). *Measuring Market Risk with Value at Risk.* USA: John Wiley and Sons Inc.

Ramasamy, R. (2011). Relative Risk of Islamic Sukuk Over Government and Conventional Bonds. *Global Journal of Management and Business Research*. Vol. 11 (6): 511-520.

Rodoni, A. (2009). *Investasi Syariah*. Jakarta: Lembaga Penelitian UIN Jakarta.

Sartono, R.A. & A.A. Setiawan. (2006) VaR Portofolio Optimal: Perbandingan antaraMetode Markowitz dan Mean Absolute Deviation. *Jurnal Siasat Bisnis*. Vol. 11 (1): 37-50.

Sharpe, W.F. et.al. (2005). *Investasi.* Jakarta: PT Indeks Kelompok Gramedia.

Wahdy, A. (2007) *Perbandingan Risiko dan Imbal Hasil Sukuk dan Obligasi Konvensional di Pasar Sekunder (Studi Kasus di Bursa Efek Surabaya 2004 – 2006).* (Unpublished Thesis). Depok: Universitas Indonesia.

Wahyuni, Y.S. (2014). *Analisis Komparasi Imbal Hasil dan Risiko Sukuk dengan Menggunakan Harga Pasar dan Harga Wajar (Studi Kasus pada Sukuk yang diterbitkan di Indonesia Periode 2009 – 2011).* (Unpublished Thesis) Depok: Universitas Indonesia.

DOI: 10.15408/aiq.v8i2.3159