Journal of Quality Measurement and Analysis *JQMA* 12 (1-2) 2016, 27-36
Jurnal Pengukuran Kualiti dan Analisis

PREDICTING THE INFLATION RATE IN MALAYSIA USING *SUKUK* TERM STRUCTURE

(Peramalan Kadar Inflasi di Malaysia Menggunakan Struktur Tempoh Sukuk)

HUMAIDA BANU SAMSUDIN, NUR ATIKAH MOHAMED ROZALI &
DINI NAZIHA BINTI MOHAMAD

ABSTRACT

The ability to forecast inflation rate accurately is vital since inflation has a big impact on both society and the country in general. One of the methods used to predict inflation rate is by observing the term structure. There have been many studies done on term structure of conventional bonds but hardly any on *sukuk*. Therefore, this study aims to test the viability of the term structure of *sukuk* on predicting the inflation rate in Malaysia, with and without taking into factor term premiums, and compare the predictions with those of the conventional bonds. The results are also compared to a benchmark autoregressive (AR) model of the inflation rate. The monthly interest rate data starting from October 2006 to March 2014 for Malaysian Government Securities (MGS), which is a conventional bond and Government Investment Issues (GII), which is an Islamic bond, were used in this study. Consumer Price Index data from the year 2005 until 2014 were also collected to calculate inflation rates. The one-month interest rate was used to observe the existence of term premium. An autoregressive distributed lag (ARDL) model was chosen to forecast six-month-ahead inflation rates using MGS and GII data with and without accounting for term premiums. The first part of the analysis revealed that term premiums are nonzero and not constant. Furthermore, forecasting results showed that without considering term premiums, neither MGS nor GII term structure was able to accurately predict the six-month-ahead inflation rate. However, incorporating term premiums into the term structure would result in a better forecast of the inflation rate compared to the benchmark AR model. As such, it is hoped that this will spur more interest in the development of *sukuk* and Islamic economics in terms of research.

Keywords: inflation rate; conventional bonds; *sukuk*

ABSTRAK

Keupayaan untuk meramal kadar inflasi secara tepat adalah penting kerana inflasi mempunyai impak yang besar kepada masyarakat dan negara secara amnya. Satu daripada kaedah yang digunakan untuk meramal kadar inflasi ialah dengan memerhatikan struktur tempoh. Terdapat banyak kajian yang dilakukan ke atas struktur tempoh bon konvensional tetapi hampir tiada kajian pada sukuk. Oleh itu, kajian ini bertujuan untuk menguji keupayaan struktur tempoh sukuk untuk meramal kadar inflasi di Malaysia, dengan dan tanpa mengambil kira faktor premium tempoh, dan membandingkan ramalan dengan yang digunakan oleh bon konvensional. Keputusan juga dibandingkan dengan penanda aras model autoregresif (AR) bagi kadar inflasi. Data kadar faedah bulanan yang digunakan dalam kajian ini bermula daripada Oktober 2006 hingga Mac 2014 bagi Sekuriti Kerajaan Malaysia (MGS), yang merupakan bon konvensional dan Terbitan Pelaburan Kerajaan (GII), yang merupakan bon Islam. Data Indeks Harga Pengguna daripada tahun 2005 hingga 2014 juga dikumpul untuk mengira kadar inflasi. Kadar faedah satu bulan telah digunakan untuk melihat kewujudan premium tempoh. Satu model lag autoregresif (ARDL) telah dipilih untuk meramal kadar inflasi enam bulan akan datang dengan menggunakan data MGS dan GII, dengan dan tanpa mengambil kira premium tempoh. Bahagian awal analisis menunjukkan bahawa premium tempoh adalah bukan sifar dan nilainya tidak tetap. Tambahan pula, keputusan ramalan menunjukkan bahawa tanpa mengambil kira premium tempoh, struktur tempoh MGS dan GII tidak dapat meramalkan kadar inflasi enam bulan akan datang dengan tepat. Walau bagaimanapun, dengan menggabungkan premium tempoh ke dalam struktur tempoh, ramalan yang lebih baik bagi kadar inflasi berbanding dengan penanda aras model AR dapat diperoleh. Oleh itu, adalah diharapkan ini akan menarik minat yang lebih dalam pembangunan ekonomi dan sukuk Islam dari segi penyelidikan.

Kata kunci: kadar inflasi; bon konvensional; sukuk

1. Introduction

Inflation has a great impact on a society and on a country in general. For ordinary people, a high inflation rate means a higher cost of living and greater real wage growth. This is also important for investors because the rates of return on stocks and bonds depend on the rate of inflation. For businesses, knowledge about inflation is necessary in deciding the prices of goods and production planning. Homeowners also have to observe the rate of inflation for a mortgage refinance. Inflation rate forecast is important because it can affect economic decisions. One way to predict inflation rates is by observing the yield curve and the term structure. The yield curve reflects expectations of interest rates, where these interest rates would affect the inflation rates.

According to Bursa Malaysia, bonds are fixed income securities or debt securities issued by a government or a company to meet its financing needs. *Sukuk* is the bond that complies with Islamic principles. ‘Sakk’ (plural *sukuk*) is an Arabic term derived from the idea of entering into an agreement embodying the rights and obligations of a person. Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI) issued a document that describes the standards for *sukuk* in November 2002. The document states that an investment *sukuk* certificate shows the receipt for the value and can be used in a way to give shares or rights to a real property, a service or equity in the project.

The Malaysian government has approved the Government Investment Act 1983 (now known as the Government Funding Act, 1983) that allows the government to issue certificates without interest rate, known as Government Investment Certificate (GIC) that uses the concept *qarḍ-hassan* (MIDF, 2014). This concept, however, does not entitle GIC certificates to be traded in the secondary market. The Malaysian government has issued 3-year Government Investment Issues (GII) amounting to RM2 billion under the principle of *Bai-al-inah* on June 15, 2001, which entitles it to be traded in a secondary market using the concept of *Bai-al-dayn* (MIDF, 2014). On March 16, 2005, the Malaysian government has issued a profit-based 5-year GII at par value using the *Bai-bi-thaman ajil* (deferred payment at a higher price) (MIDF, 2014). In 2013, Malaysia is the largest *sukuk* issuer in the world with approximately 69% of the total world issuance or RM271 billion, and still remain the largest and most liquid market in 2015 (MIFC, 2014; Moody’s, 2015).

2. Comparison Between Conventional Bonds and *Sukuk*

At present, *sukuk* is referred to the certificates or financial securities that represent an interest in an asset, and it is not just a claim on the cash flows, but also a claim of ownership (Kamali, 2007). These claims set forth in *sukuk* are what differentiate it from conventional bonds. While conventional bonds benefit from interest bearing securities, *sukuk* are investment certificates including claims of ownership of a pool of assets. According to Islamic law, a pool of assets of an institution must not only consist of debt of Islamic financial contracts but also a dominantly asset based component. The existence of assets on the balance sheet of the institution is the main requirement of *sukuk*. Moreover, interest is prohibited in order to avoid *riba'*, similar in other Islamic financial system.

Alam *et al.* (2013) concluded that the difference in market reactions on the issuance of *sukuk* and conventional bonds shows that stock market participants recognize the differences in the characteristics of the two types of bonds. However, Miller *et al.* (2007) believe that the yields of *sukuk* resemble the yields of conventional bond. Besides that, *sukuk* does not have an established infrastructure and distinctive yield curve to predict changes in the expected return as a conventional bond and had to rely on conventional yield curve to assess the price (Adesina-Uthman, 2011). The study by Khan (2010) also shows that the function of Islamic Banking and Finance (IBF) is not much different from conventional banking, although it has managed to strengthen the Islamic identity by creating an Islamic term that replaces the conventional term financial instruments.

This study assesses the relationship between differences in *sukuk* returns yields and the inflation rate in Malaysia. The study continues to analyse the ability of the term structure of *sukuk* to predict inflation rates as in the case of conventional bonds.

3. Data

Monthly data for the yields of 3-year and 5-year Government Investment Issues (GII) and Malaysian Government Securities (MGS) from October 2006 until March 2014 were obtained from the Bank Negara Malaysia (BNM) website. One-month interest rates that were used to observe the existence of term premium and the Consumer Price Index (CPI) data that were used to calculate the inflation rate were also obtained from BNM's website. Table 1 summarised the descriptive statistics of the data. Bodie et al (2011) defines inflation as the extent to which the price level of goods and services increased. The inflation rate for year *t* is given by $\frac{CPI_t - CPI_{t-1}}{CPI_{t-1}}$.

Table 1 Statistical description

	Mean (%)	Median (%)	Minimum (%)	Maximum (%)	Standard deviation	Skewness	Curtosis
Inflation rate	0.0245	0.0218	-0.0244	0.0851	0.0193	0.7969	3.4516
Interest rates (1 month)	2.7879	2.9200	2.0000	3.1300	0.3641	-1.3504	0.4220
GII yield (3 years)	3.3289	3.3101	2.6471	4.0496	0.2591	0.0654	1.0429
GII yield (5 years)	3.5833	3.5817	2.9584	4.2600	0.2438	0.4057	0.4372
MGS yield (3 years)	3.2583	3.2220	2.5200	4.1170	0.2914	0.3751	0.5017
MGS yield (5 years)	3.5190	3.5125	2.7850	4.2730	0.2536	0.2152	0.4633

The mean of yields for a 3-year and a 5-year GII are 3.3289% and 3.5833% (refer Table 1) respectively. The mean of yields for a 3-year MGS is 3.2583% and 3.5190% for a 5-year MGS. Yields will increase as maturities increase and hence, it can be concluded that a yield curve generally slopes upward. In addition, the yields of GII has a higher mean as compared to the yields of MGS, contrary to the conclusion made by Alam *et al.* (2013) that bond issuers use *sukuk* to finance their projects because they want to reduce the risk while expecting a lower profitability when compared with conventional bond issuers

For both MGS and GII, the minimum and the maximum value of the yields for the 5-year bond are higher than the 3-year bond. This is normal because yields for a bond whose aim is to gain a large profit. The same conclusion can be made when comparing the median of these two bonds. Some *sukuk* models require backup assets and this can reduce the risk.with a longer maturity would be higher. Standard deviation of the MGS's yields is higher than the GII's. MGS's yields are more volatile and prone to higher risk. For skewness, the yields for the 3-year GII have a small positive skewness of 0.0654. For the 5-year GII, the yields have a relatively large skewness that is 0.4057. This may be due to some of the large value in the huge data set. In contrast to the GII, the skewness of the yields of the 3-year MGS is greater than the 5-year MGS bond. For kurtosis, the 3-year GII yields have the highest relative kurtosis that is 1.0429. This may be due to some extreme value (on both sides of the distribution as the skewness is almost zero) and not because of many of the yields differ from the mean. Kurtosis value for the 5-year bond yield was smaller than the 3-year bond yield. All yields are leptokurtic.

4. Term Premium

Theory of Rational Expectations Hypothesis Structure Period (REHTS) states that the period to maturity of a bond with a term to maturity *n* can be divided into two components, which are the risk premium and the expected results of the period, that is,

$$\Phi(n,t) = R(n,t) - \frac{1}{n}\sum_{i=0}^{n-1} E_t R(1,t+i) \tag{1}$$

where $\Phi(n, t)$ is the average risk premium on a bond with a term to maturity n, $R(n, t)$ is the yield to maturity of a bond with a term to maturity n and $E_t(\cdot)$ the expectation operator is conditional on information available until period t. The one-month interest rates were used as the short term rate for the expectations of $E_t(\cdot)$. $R(n, t)$ is the 3-year and 5-year GII and MGS yields. Under the assumption of perfect foresight, the expectation given in Equation 1 only consists of the term premium and excludes any forecast errors committed by the investors while making expectations (Cuaresma *et al*. 2005).

The data for a perfect foresight was only available until March 2011 for the 3-year bond and until March 2009 for the 5-year bond. Therefore, in order to obtain the term premiums until the year 2014, $\hat{R}(1,t+i)$, the short-term yields predicted by an ARIMA model were used. Result shows that the term premiums for both GII and MGS are non-zero and not constant (Figure 1(a) and 1(b)).

Since the term premiums are non-zero, the ability of the term premium to predict inflation rates can be improved by including the term structure (Cuaresma *et al*. 2005). The term structure is given by:

$$\hat{R}(n,t) - \hat{R}(m,t) = \frac{1}{n}\sum_{i=0}^{n-1}\hat{R}(1,t+i) - \frac{1}{m}\sum_{i=0}^{m-1}\hat{R}(1,t+i), \tag{2}$$

where $R(n, t)$ is the long-term yield which is the yield for the 3-year and 5-year bonds, and $R(m, t)$ is the short-term yield which is the one-month interest rate.

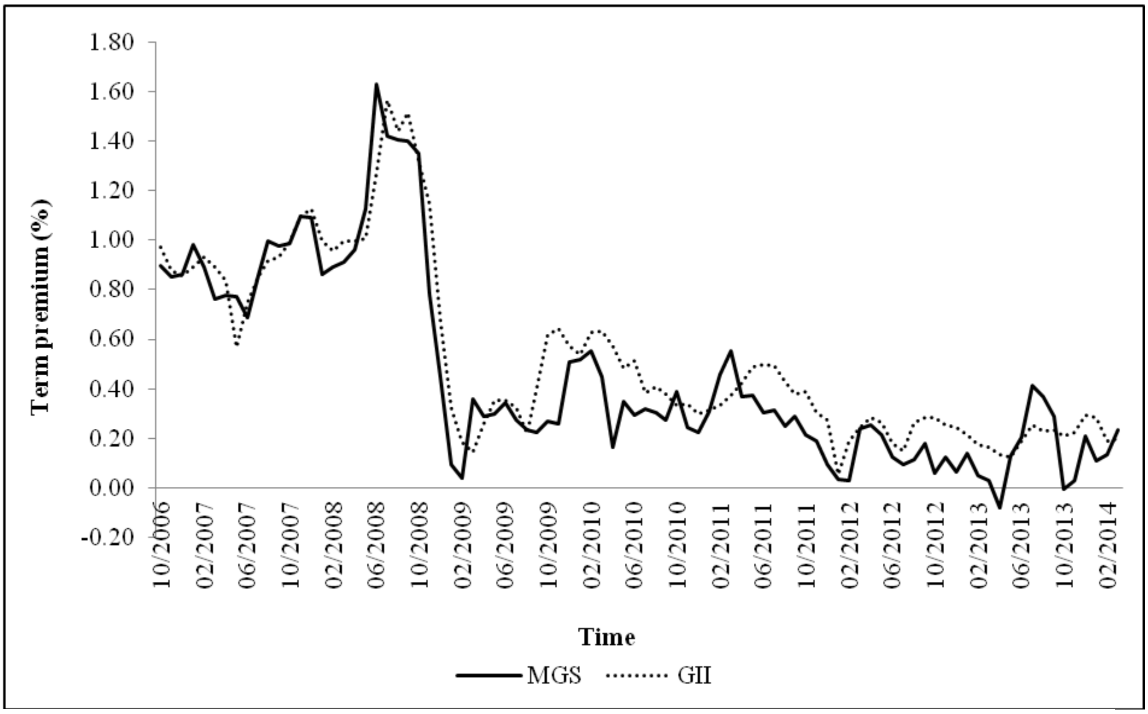

Figure 1(a): Term premium (predicted) for 3-year bond

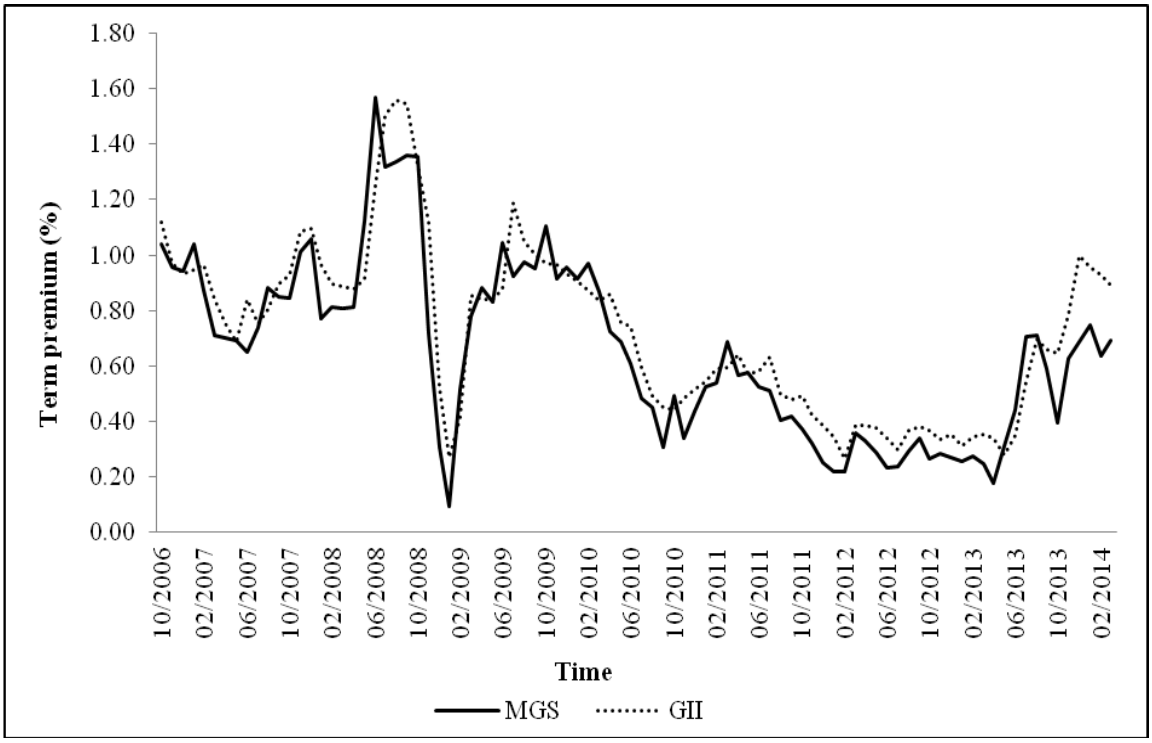

Figure 1(b): Term premium (predicted) for 5-year bond

5. Predicting Inflation Rate Using Term Structure

In this study, the model autoregressive distributed lag (ARDL (*p*, *q*)) was used to predict the inflation rates. The data used are the yield rates of 3-year and 5-year MGS and GII bonds as the long term rates, and the one-month interest rate of one month as the short term rates. For the forecast period, *h*, the estimated model is:

$$y_{t+h} = \delta + \sum_{i=0}^{p} \alpha_i y_{t-i} + \sum_{j=0}^{q} \beta_j x_{t-j} + \varepsilon_t \tag{3}$$

where y_t is the inflation rate at time *t*. Since this study focuses on forecasting the inflation rates six months ahead into the future, the value of *h* is set as six. x_t is the structure of the observed period last adjusted. ε_t is a random error with zero mean and constant variance.

Parameters were estimated using the method of least squares (OLS). Lag number (*p, q*) is selected based on multiple criteria optimal information provided in the software EVIEWS. Model ARDL was also tested for serial correlation, stability and relationship between the predictive variables with inflation. Breusch-Godfrey serial correlation test was used to test the existence of serial correlation. The p-value of the F-statistic is more than 5% implies that the null hypothesis saying that there is no serial correlation cannot be rejected (see Appendix A). The short-term and long term relationships between the variables and the inflation rate were tested using Wald tests and test limits by Pesaran *et al.* (2001) (see Appendix B). If the p-value of the F-statistic for the null hypothesis that states the coefficients of the variables equal to zero is larger than the upper limit, then there is a short-term or long-term relationship between the variables and the inflation rates.

In addition to the forecasts, the simple autoregressive (AR) model that was used to predict the rate of inflation, y_t is given as follow:

$$y_{t+h} = \delta + \sum_{i=0}^{p} \alpha_i y_{t-i} + \varepsilon_t \tag{4}$$

The value of the AR serves as a benchmark to see if the term structure can improve the forecasted inflation rate. The ability of the model to predict the rate of inflation was determined based on the root mean square error (RMSE). The equation of the RMSE model for six months forward is as follow:

$$RMSE(x,6) = \sqrt{\frac{1}{N} \sum_{n=T+6}^{T+5+N} \left(y_n^{x,6} - y_n \right)^2} \tag{5}$$

where $y_n^{x,6}$ is prediction value of y_n. The forecasted values for six months ahead were obtained from the model with the variable *x*. *N* is the number of predictions made.

6. Conclusion

The analysis shows that a non-constant term premium exists and it is an important factor in improving the forecast of the inflation rates for six months ahead. If the term premium is not taken into consideration when forecasting the inflation rates, the *sukuk*-yield differential (GII) will not be able to improve the inflation rate forecasting as compared to the conventional bond-yield differential (MGS) or the AR model for the inflation rates, which was used as a benchmark (Figure 2). The MGS yields also do not produce a very accurate forecast and AR model is more suitable to be used in this case for having the lowest RMSE (Table 2). However, bond-yields differentials that consider the term premium would give better predictions as compared to the benchmark model. This shows that the term structure can be used to predict the rate of inflation if it premium includes the period. Moreover, it can be observed that interest rate is an important factor in predicting inflation.

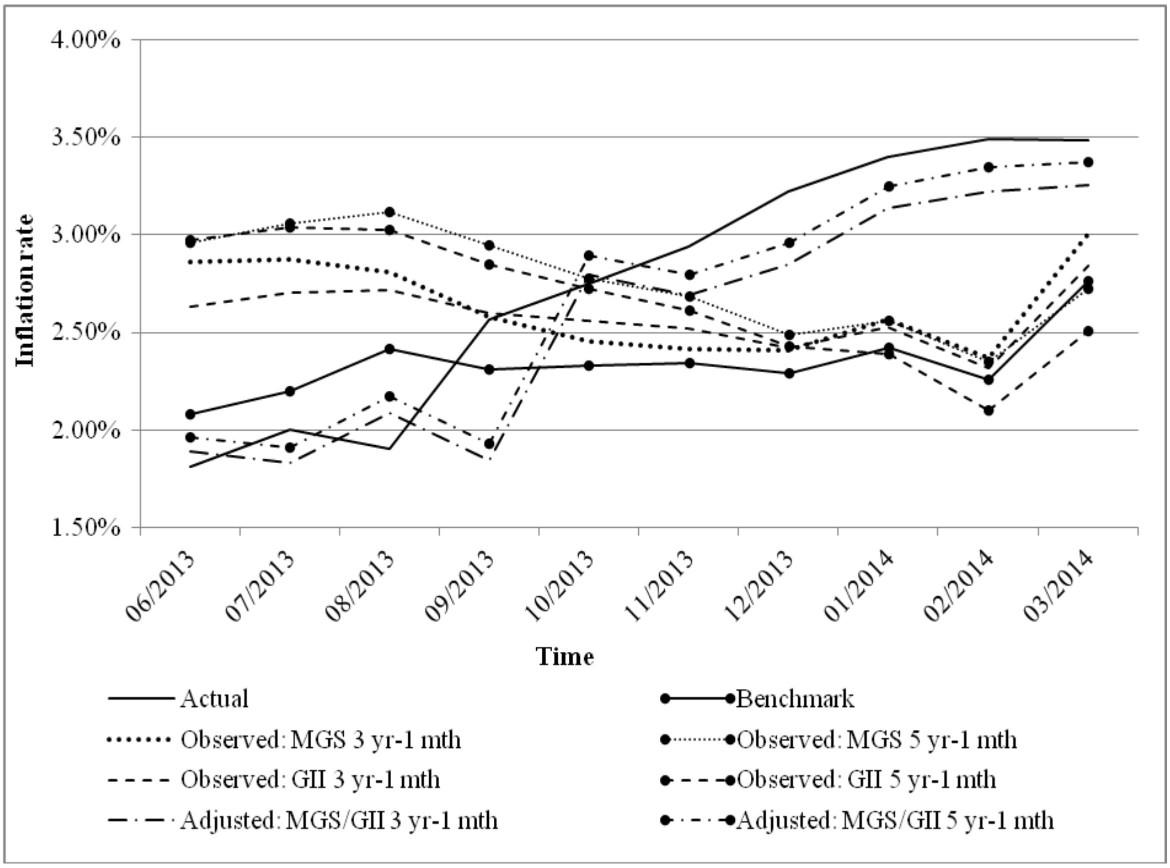

Figure 2: Inflation rate prediction

Table 2: RMSE for predicted AR and ARDL models

		RMSE
Benchmark AR model		0.6956
Observed term structure		
GII	3 year - 1 month	0.7216
	5 year - 1 month	0.9419
MGS	3 year - 1 month	0.7663
	5 year - 1 month	0.8510
Adjusted term structure		
GII/ MGS	3 year - 1 month	0.3152
	5 year - 1 month	0.2595

From this study, it can be seen that the term premium is an important factor in predicting the future inflation rates and should not be ignored. The term structures of MGS and GII are also suitable in forecasting inflation rates after including the term premium. With that, a more accurate inflation rate forecasting can be produced and hence assist various institutions in decision making processes. A more accurate prediction indicates that the actual inflation rate is not significantly different from the forecasted rate, which not only helps a bank or an insurance company to plan for a more appropriate investment strategies, but also to minimize losses. Moreover, in terms of economic scientific research, this study can attract scholars to study on the Islamic economic sector in more detail. There are many other aspects of *sukuk* that can be investigated in order to improve the system, as well as to further encourage investments in *sukuk*.

References

Adesina-Uthman G.A. 2011. Performance and term structure of profit rate of sukuk bonds in Malaysia. Tesis Ph.D. University Putra Malaysia.

Alam N., Hassan M.K. & Haque M.A. 2013. Are Islamic bonds different from conventional bonds? International evidence from capital market tests. *Borsa Istanbul Review* **13**(3): 22-29.

Bodie Z., Kane A. & Marcus A.J. 2011. *Investments and Portfolio Management.* 9th Ed. Singapore: McGraw Hill.

Cuaresma J.C., Gnan E. & Ritzberger-Grünwald D. 2005. The term structure as a predictor of real activity and inflation in the euro area: a reassessment. *Review of World Economics* **141**(2): 318-342.

Kamali M.H. 2007. A Shari’ah analysis of issues in Islamic leasing. *Islamic Economics* **20**(2): 3 – 21.

Khan F. 2010. How ‘Islamic’ is Islamic Banking? *Journal of Economic Behavior & Organization* **76**(3): 805-820.

MIFC (Malaysia International Islamic Financial Centre). 2014. http://www.mifc.com/index.php (25 Feb 2014).

MIDF (Malaysian Industrial Development Finance Berhad). 2014. http://www.midf.com.my/index.php (18 Mar 2014).

Miller N. D., Challoner J. & Atta A. 2007. UK welcomes the Sukuk. *International Financial Law Review* **26**: 24-25.

Moody’s. 2015. Moody's: Malaysia's *sukuk* volumes will be stable, driven by corporate and sovereign refinancing. https://www.moodys.com/research/Moodys-Malaysias-sukuk-volumes-will-be-stable-driven-by-corporate--PR_325842 (15 September 2015).

Pesaran M.H., Shin Y.C. & Smith R.J. 2001. Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics* **16**: 289 - 326.

School of Mathematical Sciences
Faculty of Science and Technology
Universiti Kebangsaan Malaysia
43600 UKM Bangi
Selangor DE, MALAYSIA
E-mail: humaida@ukm.edu.my, atikah@ukm.edu.my*

*Corresponding author

Appendix A

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	4.234002	(2, 68)	0.0185
Chi-square	8.468004	2	0.0145

Null Hypothesis: C(4)=C(5)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(4)	-0.117324	0.040512
C(5)	-0.002139	0.002694

Restrictions are linear in coefficients.

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	-0.336834	68	0.7373
F-statistic	0.113457	(1, 68)	0.7373
Chi-square	0.113457	1	0.7362

Null Hypothesis: C(3)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(3)	-0.002172	0.006447

Restrictions are linear in coefficients.

Dependent Variable: D(INFLASI)
Method: Least Squares
Date: 06/02/14 Time: 19:04
Sample (adjusted): 2006M12 2012M12
Included observations: 73 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004018	0.002160	1.860150	0.0672
D(INFLASI(-1))	0.539340	0.108890	4.953062	0.0000
D(GII31(-1))	-0.002172	0.006447	-0.336834	0.7373
INFLASI(-1)	-0.117324	0.040512	-2.896070	0.0051
GII31(-1)	-0.002139	0.002694	-0.793903	0.4300

R-squared	0.297354	Mean dependent var	-0.000234
Adjusted R-squared	0.256022	S.D. dependent var	0.008076
S.E. of regression	0.006966	Akaike info criterion	-7.029513
Sum squared resid	0.003300	Schwarz criterion	-6.872633
Log likelihood	261.5772	Hannan-Quinn criter.	-6.966994
F-statistic	7.194248	Durbin-Watson stat	2.114905
Prob(F-statistic)	0.000068		

Appendix B

Tables: F-statistics and t-statistics

Table CI. Asymptotic critical value bounds for the *F*-statistic. Testing for the existence of a levels relationship[a]

Table CI(iii) Case III: Unrestricted intercept and no trend

	0.100		0.050		0.025		0.010		Mean		Variance	
k	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)
0	6.58	6.58	8.21	8.21	9.80	9.80	11.79	11.79	3.05	3.05	7.07	7.07
1	4.04	4.78	4.94	5.73	5.77	6.68	6.84	7.84	2.03	2.52	2.28	2.89
2	3.17	4.14	3.79	4.85	4.41	5.52	5.15	6.36	1.69	2.35	1.23	1.77
3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61	1.51	2.26	0.82	1.27
4	2.45	3.52	2.86	4.01	3.25	4.49	3.74	5.06	1.41	2.21	0.60	0.98
5	2.26	3.35	2.62	3.79	2.96	4.18	3.41	4.68	1.34	2.17	0.48	0.79
6	2.12	3.23	2.45	3.61	2.75	3.99	3.15	4.43	1.29	2.14	0.39	0.66
7	2.03	3.13	2.32	3.50	2.60	3.84	2.96	4.26	1.26	2.13	0.33	0.58
8	1.95	3.06	2.22	3.39	2.48	3.70	2.79	4.10	1.23	2.12	0.29	0.51
9	1.88	2.99	2.14	3.30	2.37	3.60	2.65	3.97	1.21	2.10	0.25	0.45
10	1.83	2.94	2.06	3.24	2.28	3.50	2.54	3.86	1.19	2.09	0.23	0.41

Table CII. Asymptotic critical value bounds of the *t*-statistic. Testing for the existence of a levels relationship[a]

Table CII(iii) Case III: Unrestricted intercept and no trend

	0.100		0.050		0.025		0.010		Mean		Variance	
k	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)
0	−2.57	−2.57	−2.86	−2.86	−3.13	−3.13	−3.43	−3.43	−1.53	−1.53	0.72	0.71
1	−2.57	−2.91	−2.86	−3.22	−3.13	−3.50	−3.43	−3.82	−1.53	−1.80	0.72	0.81
2	−2.57	−3.21	−2.86	−3.53	−3.13	−3.80	−3.43	−4.10	−1.53	−2.04	0.72	0.86
3	−2.57	−3.46	−2.86	−3.78	−3.13	−4.05	−3.43	−4.37	−1.53	−2.26	0.72	0.89
4	−2.57	−3.66	−2.86	−3.99	−3.13	−4.26	−3.43	−4.60	−1.53	−2.47	0.72	0.91
5	−2.57	−3.86	−2.86	−4.19	−3.13	−4.46	−3.43	−4.79	−1.53	−2.65	0.72	0.92
6	−2.57	−4.04	−2.86	−4.38	−3.13	−4.66	−3.43	−4.99	−1.53	−2.83	0.72	0.93
7	−2.57	−4.23	−2.86	−4.57	−3.13	−4.85	−3.43	−5.19	−1.53	−3.00	0.72	0.94
8	−2.57	−4.40	−2.86	−4.72	−3.13	−5.02	−3.43	−5.37	−1.53	−3.16	0.72	0.96
9	−2.57	−4.56	−2.86	−4.88	−3.13	−5.18	−3.42	−5.54	−1.53	−3.31	0.72	0.96
10	−2.57	−4.69	−2.86	−5.03	−3.13	−5.34	−3.43	−5.68	−1.53	−3.46	0.72	0.96

Source: Pesaran *et al.* (2001)