Advances in Natural and Applied Sciences, 7(2): 131-137, 2013
ISSN 1995-0772

This is a refereed journal and all articles are professionally screened and reviewed

ORIGINAL ARTICLE

Sukuk Rating, Default Risk And Earnings Response Coefficient

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ABSTRACT

This paper empirically examines the effect of Sukuk (Islamic bond) rating as an additional risk in explaining the earning response coefficient based on a sample of 255 firms listed on the Bursa Malaysia from 2008 to 2011. This study tests whether Sukuk rating affect ERC after controlling the ERC determinants—beta, growth, earnings persistence and size. The study finds that Sukuk rating is strongly correlated to default risk measure. Using reverse regression, the study also confirms that Sukuk rating is significant and negative to ERC. The study thus provides systematic and comprehensive evidence on the effect of Sukuk rating on ERC. Of itself this is an important contribution to the literature but especially so given that the evidence comes from Malaysia—the leaders of Sukuk issuance across the globe.

Key words: Sukuk rating, defaul risk, earnings response coefficient

Introduction

Sukuk represents a value of an asset and frequently referred to as an Islamic bond. Sukuk, which are compliant with Shariah Islamic law (Wilson, 2004), are an attractive investment instruments for Islamic banks, takaful or Islamic insurance companies and Shariah managed funds that cannot be invested in conventional securities that involve payment of riba or interest. Sukuk enhance the stability of financial institutions by providing them with improved portfolio, liquidity, and risk management tools. Sukuk have developed as one of the most significant mechanisms to raise finance in the market through Islamically-acceptable structure (Mohamed, 2008).

Sukuk also known as Islamic bond. Both Sukuk and conventional bond have fixed term maturity, bear profit (coupon) and are tradable at normal yield price. However, Bakar (2008) argues that Sukuk are different from the conventional bond as it represents the undivided shares in ownership of assets, usufruct, projects and services. Sukuk also demonstrate the partnership relationship between the issuer and the investor. Meanwhile, conventional bond is debt obligation, which can be either secured against certain underlying assets or unsecured in the form of promise to pay. In return, the issuer promises the investors to pay back the amount plus interest at its maturity date. In terms of differences between conventional bond and Sukuk; conventional bond is clearly a debt instrument while Sukuk may be debt or equity instruments. In conventional bond, bondholder owns the cash flow rather than the asset in Sukuk. Sukuk have several types depending on its usefulness. The most important and common among those are Mudarabah (capital sharing), Musharakah (investment), Ijarah (leasing), and Istisna' (construction capital provider). There are also other diversified and mixed asset Sukuk that emerged in the market such as hybrid Sukuk, where the underlying pool of assets can comprise of Ijarah as well as Istisna'.

In Malaysia, beginning in 1990s, the debt capital market has exhibited tremendous growth especially in the area of Islamic securities. The consistent growth of Sukuk issuance, increase in knowledge and expertise amongst market players, progressive development of the Malaysian regulatory framework and desire to seek a wider investor base especially from the Middle East, have prompted the promulgation of Sukuk. Appetite among investors to launch Shariah compliant bonds to an increasingly receptive audience points to a bumper year ahead for Gulf's Sukuk issuer (Gavin, 2012). Standard & Poor's (2009) reported that the past decade witnessed the Islamic financial services sector growing at a rate of more than 10 per cent annually and has accumulating assets estimated to be worth USD 700 billion worldwide. However, in the wake of a series of high profile Sukuk defaults in the Gulf Corporation Countries, such as Investment Dar, Saad Group and Dubai World's Nakheel Sukuk in 2009, Sukuk are alleged to have lost credibility as feasible and viable Islamic long-term project financing instrument (Raja Abd Aziz, 2010).

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On the other hand capital market researchers have consistently found the following factors to be significant determinants of earnings response coefficient (ERC): beta, growth, earnings persistence, size and some non-financial variables such as industry (see Bernard and Ruland, 1987; Easton and Zmijewski, 1989; Collins and Kothari, 1989; Biddle and Seow, 1991; Cho and Jung, 1991; Dhaliwal and Reynolds, 1994; Kai, 2002; Kim, 2005; Cheng and Nasir, 2010). The study of ERC has led to a better appreciation of the nature of earnings information and the role of accounting information within the market's overall information structure. Any unexpected earnings may cause investors to revise their expectations of future dividends thus leading to security price changes (Collins and Kothari, 1989; and Dhaliwal and Reynolds, 1994).

According to the Capital Asset Pricing Model (CAPM) of Sharpe (1964), Lintner (1965) and Black (1972), beta is the sole determinant of systematic risk — it reflects sensitivity to variations in return on the market portfolios of all risky assets. In mathematical terms, the systematic risk, SR_j, in portfolio (or security) $_j$ is given by $SR_j = \beta_j^2 \sigma^2_m$, where β_j is the beta of the portfolio and σ^2_m is the variance of return on the market portfolio. Despite these theoretical links, empirical studies have found either no link or weak links between beta and return. In particular, as reported above, Fama and French (1992) find weak links. However, the results of the empirical studies are subject to the difficulty of conducting tests with proxies for the market portfolio of risky assets rather than the true market portfolios and therefore inconclusive (Roll, 1977; and Roll and Ross, 1994). Nevertheless, Dhaliwal *et al*. (1991) find that default risk appears to complement beta in explaining return. Market-perceived equity risk of a firm increases as the default risk of its debt increases (Bhamra, Kuehn and Strebulaev, 2010).

Research on determinants of ERC and corporate governance has been dominated by studies on developed countries. There is an increasing awareness that theories corroborated by research on developed countries such as the USA and the UK may have limited applicability to emerging markets. Emerging markets have different characteristics such as different political, economic and institutional conditions, which may limit the application of theoretical models used to explain behaviour in developed markets.

Malaysian is one of Sukuk issuer exemplary country. Sukuk become highly demanded as there are an increasing number of Muslims of high net worth, who want their asset holdings to comply with Islamic law (Wilson, 2008). Recent modernization in Islamic finance has changed the dynamics of Islamic financial industry. The demand for Sukuk or Islamic securities has become increasingly popular in the last few years and has gained universal acceptance as a feasible alternative to conventional financial products. Thus it is interesting to examine the possible Sukuk rating role as an additional risk for the ERC among the Sukuk issuer.

This study would therefore examine the role of Sukuk rating in explaining ERC among Sukuk issuer. This study would also test the correlation between Sukuk rating and default risk established measurements. The paper is organized as follows; Section two discusses the literature review on Sukuk rating and other ERC determinants. While Section three discusses the research methodology, Section four discusses the findings on Sukuk rating correlation with default risk and the effect of Sukuk rating on ERC. The conclusion of the paper will be presented in the last section.

Literature Review And Hypotheses Development:

The study of ERC has led to a better appreciation of the nature of earnings information and the role of accounting information within the market's overall information structure. Earnings-returns studies tend to start with a valuation model that links dividend, cash flows or earnings, to value. Cho and Jung (1991), for instance, suggest that all earnings-returns studies use a valuation model that discounts future dividends or cash flows. In explaining ERC it is assumed that accounting earnings are closely related to future dividends. Hence, any unexpected earnings may cause investors to revise their expectations of future dividends thus leading to security price changes (Collins and Kothari, 1989; and Dhaliwal and Reynolds, 1994).

Capital market researchers have consistently found the following factors to be significant determinants of ERC: beta, growth, earnings persistence, size and some non-financial variables such as industry (see Bernard and Ruland, 1987; Easton and Zmijewski, 1989; Collins and Kothari, 1989; Biddle and Seow, 1991; Cho and Jung, 1991; Dhaliwal and Reynolds, 1994; Kai, 2002; Kim, 2005; Cheng and Nasir, 2010).

ERC declines with increasing expected rate of return. That is, given the common association of higher risk with higher expected return, ERC declines with increasing risk. Consistent with Collins and Kothari (1989), Easton and Zmijewski (1989) find that ERC is negatively related to beta. Subsequent studies that have tested various capital market phenomena using ERC have included beta as a control variable and found a negative relationship (for example, Vafeas, 2000; Shangguan, 2007; and Cheng, Crabtree and Smith, 2008).

Besides beta, the systematic risk, default risk has a role in explaining ERC as beta may not fully capture the relevant risk of particular securities or portfolios (Fama and French, 1992). Beta may be an inadequate measure of risk. The firm's debt to equity ratio can act as a more natural proxy for the risk to common equity of a firm (Laxmi, 1988). Dhaliwal and Reynolds (1994) find that the effect of default risk is negative and significant to

ERC. Shangguan (2007) documents evidence that the negative marginal effect of default risk on ERC is mitigated by illiquid growth opportunities.

As other conventional bonds, Sukuk may also promote default risk. Sukuk however are claiming to be safer than conventional bonds as they theoretically transfer ownership of the underlying assets to the holders, who in turn will earn a return on holding that asset (Othman and Kamarudzaman, 2012). This is regarded as protection for the Sukuk holders in case of default. Even if the issuer defaults or goes bankrupt, investors should be in a good position to recover much of their contributions. Therefore, providing asset security or corporate guarantees (referred as *Special Vehicle* in Sukuk contracts) to investors is vital in Sukuk structures. Sukuk also have to undergo credit rating similar to conventional bonds. Rating on Sukuk reflects the creditworthiness of the issuer and stability of Sukuk. By having the annual rating reviews conducted by the respective rating agencies, Sukuk investors are adequately informed of the issuer's status and progress. In addition, negative rating migration (i.e. from A to B) on Sukuk may be significant to the possibility of Sukuk default to a certain extent. Generally, Sukuk with higher ratings are unlikely to default and vice versa. Therefore it is interesting to examine whether Sukuk rating could have any significant and negative effect in explaining ERC after controlling the effect of earnings persistence, growth, size and risk. Thus the study hypothesize,

H1 Sukuk Rating has a strong and negative correlation to default risk

H2 Ceteris paribus, Sukuk Rating has a significant negative relationship with ERC

Methodology:

To test for the impact of Sukuk rating on ERC the following regression equation is estimated together with other ERC established determinants:

$$UX/P = a_0 + a_1\, UR + a_2\, UR * SUKUK + a_3\, UR * BETA + a_4\, UR * GROWTH + a_5\, UR * EPERS + a_6\, UR * SIZE + \varepsilon \quad (3.1)$$

and $\square_2 < 0$ and significant would indicate that Sukuk rating (SUKUK) has a positive impact on ERC while controlling for beta, growth earnings persistence and size.

This study is based on a period of 4 years data from 2008 to 2011. The sample selection process began by identifying 308 listed Sukuk issuer firms during 2008 to 2011 from Rating Agency of Malaysia database. All types of Sukuk issued were taken into the count. A sample of 37 firms belonging to the financial services sector (banks and insurance) and REITS were also excluded because of: (i) their unique economic characteristics — most notably, high leverage; and (ii) the different compliance and regulatory environments under which they operate (they were subject to the Malaysia Banking and Financial Institutions Act 1989). And finally, a further 16 firms were excluded due to insufficient data to allow computation of CAR and earnings persistence for these companies. The selection process thus resulting a final sample comprised of 255 firms. To minimise the effect of outliers, all variables were winsorized to the 1 and 99 per cent levels.

3.1Measurements of variables:

Unexpected earnings:

The present study assumes a random walk and hence unexpected earnings is calculated as the change in annual EPS (current year EPS minus previous year EPS). The unexpected earnings are then deflated by the previous year stock price.

Unexpected Returns:

Unexpected return is estimated by annual Cumulative Abnormal Return (CAR). Abnormal return is the difference between actual return and expected return where expected return is estimated by use of Sharpe's (1963) market model. Monthly share prices and monthly Kuala Lumpur Composite Index (KLCI) data from Thomson Datastream was used to calculate monthly returns using the formula Ln (month $_t$ / month $_{t-1}$) and the market model was then estimated for each company using 60 monthly returns:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (2.4)$$

where:
R_{it} = rate of return on firm *i* for month *t,* and

R_{mt} = rate of return of KLCI for month *t*

Thus, for example, for 2008 the market model was estimated using monthly returns calculated for January 2003 to December 2007. The resulting estimates of the regression coefficients, $\hat{\alpha}_i$ and $\hat{\beta}_i$ are then used to calculate monthly abnormal returns (AR_{it}) for 2008 as:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \quad (3.2)$$

The CAR for 2007 is then calculated by cumulating the AR for the 12 months of 2008.

Sukuk Rating (SUKUK):

A value is assigned for each Sukuk rating. Higher rating shows lower risk of default thus the scale begins with AAA with a value of 21 and ended with D with a value of 1.

Default risk:

Default risk is measured by the ratio of long term debt to equity. The higher the debt to equity ratio (DER), the higher the defaults risk.

Control variables:

The control variables in this study are the established determinants of ERC: beta, growth, earnings persistence and size.

a)Equity beta (BETA):

The estimation of beta were obtained simultaneously with estimation of CAR.

b)Growth opportunity (GROWTH):

Growth opportunity is measured by market value of the firm to the book value of its equity.

c)Earnings persistence (EPERS):

In this study, firms' EPS for twenty consecutive quarters prior to the test period were collected and used to estimate ARIMA (0,1,1,) to forecast earnings persistence. These quarterly EPS were used to generate the moving average parameter estimate (*q*). 1- *q* represents the earnings persistence.

d)Firm size (SIZE):

The present study used firms' total assets as the measure of size.

Analysis Of Results

4.1 Descriptive analysis:

Table 1 shows the descriptive statistics of the determinants of ERC and the continuous corporate governance variables. The mean and median for dividend payout ratio is 0.36 and 0.411. The mean (median) of beta is 1.082 (1.036) indicates that the firms in the sample are not unusually highly geared.

Table 1: Descriptive statistics of the ERC determinants and Sukuk Rating

	JXP	CAR	SUKUK	BETA	GROWTH	EPERS	SIZE
Mean	005	006	360	.082	931	022	403.011
Median	003	001	411	.036	833	026	332.021
Std. Deviation	018	233	744	613	334	014	31.107
Minimum	.038	.503	063	.637	183	000	288.877
Maximum	407	547	.108	2.713	.812	057	587.602

UXP is ratio of changes in annual EPS (unexpected earnings) to previous year equity price. **CAR** is cumulative abnormal return derived from the market model using Kuala Lumpur Composite Index (KLCI).

SUKUK is the scale assigned to each rating. **BETA** is systematic risk from market model using Kuala Lumpur Composite Index (KLCI). **GROWTH** is ratio of market to book value of equity. **EPERS** is square root of earnings persistence factor. **SIZE** is total assets in million (RM).

Table 2: Correlation between Sukuk Rating and Default risk

		SUKUK	DER
Sukuk Rating (SUKUK)	Pearson Correlation	1.000	-.627**
	Sig. (2-tailed)		.000
	N	255	255
Debt to Equity (DER)	Pearson Correlation	-.627**	1.000
	Sig. (2-tailed)	.000	
	N	255	255

. Correlation is significant at the 0.01 level (2-tailed). **SUKUK is the scale assigned to each rating.
DER is debt-to-equity ratio representing default risk calculated by dividing total long term debt by total equity.

As shown in Table 2, the debt to equity ratio of these 255 firms and their Sukuk ratings were found to be significantly and negatively correlated, thus explaining that Sukuk rating is suitable to represent the default risk. This result supports hypothesis 1, Sukuk Rating has a strong and negative correlation to default risk. This implies that better Sukuk rating is obtained whenever the debt to equity ratio is smaller. The result also adding confidence that Sukuk rating may have significant effect to ERC.

Being aware of misspecification problem, this study following Kim (2005) carried out a linktest to perform the model specification test. The linktest result shows a non-significant result of _hatsq evidenced by a *p* value of 0.279 ($p > 0.05$). This result suggests that the ERC determinants model used in this study is specified correctly. This evidence suggests that the model is free from omitted variables or other specification errors.

Two regression equations were then estimated as follows:

$$UX_{it}/P_{it} = \alpha_0 + a_1 CAR_{it} + a_2 CAR*BETA_{it} + a_3 CAR*GROWTH_{it} + a_4 CAR*EPERS_{it} + a_5 CAR*SIZE_{it} + \varepsilon_{it} \quad (1)$$

$$UX_{it}/P_{it} = \alpha_0 + a_1 CAR_{it} + a_2 CAR*SUKUK_{it} + f\,(control\ variables) + \varepsilon_{it} \quad (2)$$

The predictions outlined in the hypotheses are in terms of the relationship between ERC and equity beta (-), growth (+), earnings persistence (+), and size (+). In reverse regressions, these relations are inverted as it estimates the abnormal return response coefficient (RRC). Predictions for the RRC are thus the converse of ERC.

4.2 The effect of Default risk and Sukuk rating on ERC:

Table 3 presents the results of regressing UX/P on CAR, the interactions of CARwith beta, growth, earnings persistence and size in the estimation of ERC determinants. The interaction of CAR with ERC determinants and other variables from the use of reverse regression in order to minimise the measurement error associated with unexpected earnings. The result shows that the coefficient of the interaction of CAR with beta is significant and positive in all the regressions, both pooled and year wise indicates that beta has a significant negative relationship with ERC. This result is consistent with prior research (e.g., Dhaliwal *et al*., 1991; Dhaliwal and Reynolds, 1994; Billings, 1999; Shangguan, 2007). These prior studies suggest that systematic risk is negatively related to ERC.

Similarly, the coefficient of the interaction of CAR with growth shows that growth has a significant positive relationship with ERC. This is consistent with the results found in the earlier studies (see Collins and Kothari, 1989; Martikainen, 1997; Billings, 1999; Park and Pincus, 2000; Kim, 2005; Ghosh *et al*., 2005; Shangguan, 2007). The coefficient of the interaction of CAR with earnings persistence shows that earnings persistence is also positive and significant in explaining ERC. This also confirms the findings of previous researchers (Kormendi and Lipe, 1987, Collins and Kothari, 1989; and Dhaliwal and Reynolds, 1994). Similarly the coefficient of CAR and size shows that size is positive and significant in explaining ERC. This result is consistent with Billings (1999) and Vafeas (2000). However, the result contradicts Martikainen (1997), who found that firm size is not a significant determinant of ERC; similarly for the UK study by Donelly and Walker (1995). Shangguan (2007) finds a significant result for the interaction of CAR with size but its significance decreased from 1% to 10% when fiscal year-end observations are used compared to those of December year-end.

Besides ERC established determinants, Table 3 also shows the effect of default risk and Sukuk rating on ERC. The coefficient of the interaction between CAR and DER is significant and negative thus default risk has a significant positive relationship with ERC. This also confirms the findings of previous researchers (Dhaliwal and Reynolds, 1994 and Shangguan, 2007). The results for other ERC established determinants—beta, growth,

earnings persistence and size remain as in the base model. The result for the interaction between CAR and Sukuk rating (SUKUK) is also significant and negative. This shows that Sukuk rating has a significant positive relationship with ERC. The results for other ERC determinants also remain the same. Thus, this result supports the hypothesis 2: Sukuk rating has a significant negative relationship with ERC. The results imply that default risk is another significant risk besides beta in explaining ERC. And most importantly Sukuk rating is also vital in explaining another element of risk in ERC.

A number of tests were carried out to ensure that the results obtained were robust. This involved tests on the statistical assumptions, multicollinearity, heteroscedasticity, and also sensitivity analyses. The normal P-Ps for all the regressions indicates that the points lie in reasonably straight diagonal lines, suggesting no major deviations from normality. The variance inflation factor (VIF) for each variable entering the regressions was checked and the results show no multicollinearity problem. The results of the Breusch–Pagan test for both regressions show small values of chi square (0.11 and 0.14) indicating the absence of serious heteroscedasticity.

Table 3: Results of the ERC determinants, default risk (DER) and Sukuk rating (SUKUK)

Independent Variables	ERC determinants	ERC determinants with DER	ERC determinants with SUKUK
Independent Variables	Estimate (t-stat)	Estimate (t-stat)	Estimate (t-stat)
CAR	.031	.030	.0301
	(6.31)**	(6.07)**	(6.12)**
CAR*BETA	.006	.006	.006
	(3.14)**	(3.09)**	(3.17)**
CAR*GROWTH	-.012	-.011	-.010
	(-4.74)**	(-4.10)**	(-3.76)**
CAR*EPERS	-.374	-.378	-.377
	(-6.67)**	(-6.97)**	(-6.81)**
CAR*SIZE	-17.145	-17.197	-17.234
	(-2.37)**	(-2.45)**	(-2.56)**
CAR*SUKUK			.024
			(5.12)**
CAR* DER		.018	
		(4.07)**	
Constant	.005	.005	.005
	(16.07)**	(16.13)**	(16.18)**
Observations	255	255	255
Adj.R^2	.213	.223	.222

Note: ** Significant at $p < 0.01$ (1-tailed) and * Significant at $p < 0.05$ (1-tailed).

Conclusion:

The results of this study confirm the expected significant negative relationship between Sukuk rating and ERC as additional risk in explaining ERC. This study also shows evidence that Sukuk rating and default risk is strongly correlated. The results of this study provide evidence that Sukuk rating in Islamic capital markets give a significant negative impact on ERC. The findings of this study could highlight some ideas to other researchers in capital market especially in the Islamic capital instruments that Sukuk is a viable source for Islamic financing. For future, wherever feasible the studies on other settings should cover a longer period of time and a larger number of Sukuk issuance firms.

Acknowledgements

The authors would like to acknowledge supports from Accounting Research Institute of Universiti Teknologi MARA and Accounting Faculty, Universiti Teknologi MARA, Segamat.

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