CHAPTER 5

RESULTS ANALYSIS

This chapter presents the empirical results of total Islamic leverage and interest-bearing debt and Islamic debt's effects on the performance of consistently listed *shari'ah*-compliant companies in Malaysia. Following this introduction, the rest of the chapter is organized in five other sections. Section 5.1 is a discussion of the descriptive statistics for the dataset, while the correlation matrix is the focus in section 5.2. Section 5.3 reports the panel data analysis. The findings of the effect of total Islamic leverage and the performance of consistently listed *shari'ah*-compliant companies in Malaysia are discussed in sub-section 5.3.1. Sub-Section 5.3.2. details the effect of total Islamic debt and total interest-bearing debt and the performance of consistently listed *shari'ah*-compliant companies in Malaysia. Short-term Islamic leverage and long-term Islamic leverage ratios and the performance of consistently listed *shari'ah*-compliant companies in Malaysia, followed by sub-section 5.3.3, which addresses the effects of interest-bearing debt ratios and Islamic debt ratios and performance level. Section 5.4 discusses the threshold regression models. The chapter summary is presented in section 5.5.

5.1 Descriptive Analysis

The section also provides the summary of statistics for the rest of DVs, IVs and CVs. It also gives hints about the behavior of *shari'ah*-compliant companies towards the type of

debt, i.e., interest-bearing debt and Islamic debt and as well as the length of debt financing, namely short-term or long term, using descriptive analysis as the analytical tool.

Table 5.1 provides a summary of descriptive analysis of the DVs, IVs and CVs of the research, including the mean, standard deviation, minimum and maximum. The mean of ROE and ROA are 0.0969 and 0.0605 respectively, which suggest the sampled *shari'ah*-compliant firms performed well during the selected study period. The two ratios indicate the *shari'ah* firm's ability to generate income by using its equity and assets, which is an efficiency sign for asset management. The descriptive analysis also reports that the short-term Islamic debt ratio represents the smallest debt ratio in the components of Islamic leverage ratios, which is 0.255%, while the average short-term interest-bearing debt holds 8.54% of overall debt-equity ratios of *shari'ah*-compliant firms. It is the larger debt ratio within the Islamic leverage components. The average mean of long-term Islamic debt is 0.01355, while the long-term interest-bearing debt's average mean is 0.0544. Moreover, the average means of the total Islamic debt and total interest-bearing debt are 0.0160 and 0.1397 respectively.

This consequently suggests that the sampled *shari'ah*-compliant firms rely less on debt for their financing at the rate 15.56% of total financing, attributable to the fact that debt financing decreases the growth, especially during times of limited economic opportunities (Ando, Matsumoto and Matsumoto, 2017). Within the Islamic debt, the descriptive analysis implies that the sampled *shari'ah*-compliant firms prefer interest-bearing debt as a source of financing over Islamic debt and within the interest-bearing debt, the short-term debt is the likely choice. One explanation for preferring interest-bearing debt

over Islamic debt is that the high cost of Islamic debt financing compared to the borrowing rate due to high default premium and overheads per capital ratios (Beik & Arsyianti, 2008). Within interest-bearing debt, the short-term debt represents 56% of total debt financing of *shari'ah*-compliant firms.

The average total Islamic leverage financing contributes 15.56% of the sampled *shari'ah* firms' total assets. The outcomes also indicate that the average total interest-bearing debt is 13.97%, which is lower than the conventional threshold ratio of 33% of firm's total assets (Securities Commission Malaysia, 2017). This is one of the primary requirements for *shari'ah*-compliant companies to maintain their status. Even if we take into the consideration the combined total Islamic leverage, which includes both total interest-bearing debt and total Islamic debt, it is still below the allocated threshold of conventional debt, which is equal to or less than 33% of firm's total assets. As such, the results imply that the selected *shari'ah*-compliant companies have maintained one of the key requirements for a firm to count into the sample list of this study.

Table 5.1 reports summary of descriptive analysis

Variables	**Mean**	**Std. Dev.**	**Min**	**Max**
ROE	0.096984	0.17947	-2.45	3.28
ROA	0.060463	0.143244	-0.59	5.65
STID	0.002557	0.01218	0	0.19
STIBD	0.085393	0.094653	0	1.39
LTID	0.013557	0.058455	0	0.69

LTIBD	0.054418	0.07206	0	0.77
TID	0.016029	0.06317	0	0.69
TIBD	0.139725	0.123784	0	1.39
TIL	0.155639	0.139751	0	1.39
AP	0.302246	2.806138	0	121.73
CR	2.675906	3.217004	0	64.15
AT	0.744467	0.517229	0	5.09
GRWTH	114.3396	1100.761	-100	31528.8
SIZE	2074876	1.43E+07	0	3.68E+08

Note: ROE: return on equity. ROA: return on assets. STID: short-term Islamic debt. STIBD: short-term interest-bearing debt. LTID: long-term Islamic debt. LTIBD: long-term interest-bearing debt. TID: total Islamic debt. TIBD: total interest-bearing debt. TIL: total Islamic leverage. AP: account payable. CR: current ratio. AT: assets turnover. GRWTH: firm growth. SIZE: firm size.

Account payable (AP) contains trade payables, account payables and other liabilities, rather than debt, i.e., Islamic debt and interest-bearing debt. The descriptive results state that the account payable made up 30.22% of average *shari'ah*-compliant companies' total financing. This ratio is even higher than the percentage of total Islamic leverage in the sampled *shari'ah*-compliant companies' debt-equity structure. This is because, the account payable is interest and profit-free liability and it is payable within three months of the date issued or within an agreed period for the involved parts. This is an indicator that the sampled *shari'ah*-compliant companies rely on internal financing and the account payable as means of short-term financing. This may positively affect the *shari'ah*-compliant companies' performance in the upcoming regression outcomes.

Current ratio is defined as "the ratio of current assets to current liabilities", which is the liquidity measure of this research (Moosa & Li, 2012). It is determined as greater or less than one (1). If the results record at 1, it means that a company's current asset is exactly the same as its current liability, which is an indicator of company's financial health (Fernando, 2020).

As the descriptive result shows, the average cash ratio of sampled *shari'ah*-compliant companies stands at 2.67%, which is greater than 1, suggesting that the sampled *shari'ah*-compliant companies have more current assets to meet their operational expenses and the periodic payments such as the principle and the interest/profit payments. The finding shows that *shari'ah*-compliant companies tend to prefer internally-generated funds over borrowing to fund their operations.

"Asset turnover" is defined as "an indicator of efficiency, which measures the company's use of its assets and its value varies across sectors" (Nurlaela et al., 2019). In this case, the mean of asset turnover ratio stands at 0.744, which is relatively less than 1, but, the low asset turnover ratio could be attributed to the fact that the sample size of the current study may contain a random selection of *shari'ah*-compliant companies across industries, which may have various asset turnover ratios. This is one of reasons that could cause a reduction in the overall average asset turnover ratio of the selected sample firms (Hayes, 2020). Despite the relatively low asset turnover ratio, the results may still suggest the turnover ratio positively affect *shari'ah*-compliant companies' performance in the upcoming regression estimations.

The growth averaged at 114, but its values ranged between -100 and 31528.8. The expectation is that the growth may end up having both positive and negative signs on the performance of *shari'ah*-compliant firms due to the type of performance measures. The overall size indicates the sampled firms are well established in terms of firm size presenting an average of 12.16 in log-term and within the range from 2.994 to 19.72. This is a clear indication that size will result in positive association with the performance of *shari'ah*-compliant firms in the upcoming regression results.

The table 5.2 provides a comparison between the means of the studied variables before and after the implementation of financial ratio benchmarks in November 2013, which requires the ratio of interest-bearing debt for *shariah* firm to be either equal or less than 33% of its assets. This is in order to list the firm as a *shariah*-compliant firm. For the purpose of achieving this, the sample was grouped into two sub-samples: Sub-sample 1 contains the period from 2010 to 2012, while sub-sample 2 covers 2014 to 2017 period.

The percentage change ratios show that *shari'ah*-compliant firms have enhanced their performance after adoption of financial ratio benchmarks at increasing rate of 13.85% and 21.77% under both adopted performance measures i.e., ROE and ROA respectively. Moreover, it generally indicates the Islamic debt ratios have increased across the three levels namely short-term, long-term and total Islamic debt ratios at 26.9%, 74.32% and 64.17% respectively. On the other hand, the ratios of interest-bearing debt have experienced a decreasing rate at short-term, long-term and total debts with the ratios of -12.32%, -5.25% and -9.64% respectively.

Moreover, the total Islamic leverage, which contains both Islamic debt and interest-bearing debt, have grown negatively at the rate of -4.37% meaning the gains from the Islamic debt are still far less from the losses of interest-bearing debt due to the newly adopted financial ratio benchmarks. This has affected negatively the ratio of current assets to current liability, which stood at -3.39%. As known, the debt is one of the major parts of financing and the reduction of debt ratio will lead to a shortage in current assets in order to meet the current liability.

On the other hand, the percentage change ratio recorded an increasing rate in account payables as a source of financing in order to meet the need for the short-term financing and cover the financing gap created by new financial ratio guidelines toward the acceptable ratio from the interest-bearing debt imposed by The *Shari'ah* Advisory Council of the Securities Commission Malaysia.

Table 5.2 compares descriptive analysis before and after implementation of financial ratio benchmarks

Variables	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Percentage change in means
Sub-sample1:2010 to 2012					**Sub-sample2: 2014 to 201**				
ROE	0.091451	0.162092	-0.936	1.31	0.104118	0.202295	-2.449	3.283	0.138511
ROA	0.054659	0.092111	-0.587	0.47	0.066561	0.183807	-0.495	5.653	0.21775
STID	0.002197	0.010338	0	0.11952	0.002788	0.012666	0	0.191819	0.269003
STIBD	0.092669	0.110334	0	1.38841	0.08125	0.082502	0	0.475452	-0.12322
LTID	0.009612	0.049476	0	0.64221	0.016756	0.06516	0	0.694051	0.743238
LTIBD	0.055919	0.070428	0	0.60431	0.052981	0.070404	0	0.648756	-0.05254
TID	0.011811	0.053512	0	0.64270	0.019389	0.069991	0	0.694051	0.641605
TIBD	0.148576	0.134886	0	1.39173	0.13424	0.113924	0	0.731468	-0.09649
TIL	0.160566	0.144262	0	1.39173	0.153539	0.135274	0	1.38166	-0.04376
AP	0.254274	0.88224	0.0021	24.4906	0.360941	3.900254	0.0160	121.7315	0.419496
CR	2.766117	3.058205	0.21	41.66	2.672382	3.126927	0.1	55.9	-0.03389
AT	0.712117	0.473283	0.01	3.36	0.793545	0.537364	0	5.09	0.114346
GRWTH	4.945896	75.03434	-100	1835.12	232.3416	1566.499	-100	31528.8	45.97664
SIZE	1641003	8690555	54.115	1.41E+0	2475808	1.81E+07	19.963	3.68E+08	0.508716

Note: ROE: return on equity. ROA: return on assets. STID: short-term Islamic debt. STIBD: short-term interest-bearing debt. LTID: long-term Islamic debt. LTIBD: long-term interest-bearing debt. TID: total Islamic debt. TIBD: total interest-bearing debt. TIL: total Islamic leverage. AP: account payable. CR: current ratio. AT: assets turnover. GRWTH: firm growth. SIZE: firm size.

On the other hand, the sampled *shari'ah*-compliant firms mainly concentrate on eight sectors out of thirteen economic sectors namely construction, consumer products, industrial products, infrastructure (IPC), plantation, properties, technology and trading/services. The table 5.3 summarizes the sample representation of the eight mentioned economic sectors. Moreover, 72.13% of the sampled firms are originated from three major sectors, which are industrial products, trading/services and consumer products representing 33.44 %, 19.67% and 19.02% respectively. Infrastructure (IPC) sector maintains the lowest ratio in overall the sample size at the rate of 0.66%, followed by technology sector at the rate of 4.26%. Because, the Infrastructure (IPC) is a small sector with total number of five companies.

Table 5.3 reports frequencies and precents

Industry	**Freq.**	**Companies**	**Percent**	**Cum.**
Construction	200	25	8.2	8.2
Consumer Products	464	58	19.02	27.21
Industrial Products	816	102	33.44	60.66
Infrastructure (IPC)	16	2	0.66	61.31
Plantation	200	25	8.2	69.51
Properties	160	20	6.56	76.07
Technology	104	13	4.26	80.33

Trading/Services	480	60	19.67	100
Total	2,440	305	100%	

5.2 Correlation Matrix

It is important that the variables used in the model do not exhibit perfect collinearity. It is one of the issues that lead to biased estimates. Therefore, correlation matrix is the perfect measure to determine its existence within the adopted variables. Its value ranges from -1 to +1. The -1 value indicates a perfect negative correlation, while +1 suggests a prefect positive correlation. Zero value indicates no correction within the values. The closer value to 1 shows a strong correlation.

To avoid perfect collinearity issues, three separated models are run, where the first model applies only total Islamic leverage (TIL) containing both total Islamic debt and total interest-bearing debt, while the second model utilizes total interest-bearing debt (TIBD) and total Islamic debt (TID) and third model adopts short-term Islamic debt, short-term interest-bearing debt, long-term Islamic debt and long-term interest-bearing debt as Islamic debt proxies

Table 5.4 shows that the ROE is correlated positively and significantly with asset turnover and firm size, while it is related negatively with firm growth at a significant level. The ROA has a negative and significant relationship with total Islamic leverage, while it ended with a significant and positive with current ratio, asset turnover and firm size.

Table 5.4 reports correlations matrix in the first model

Variables	ROE	ROA	TD	AP	CR	AT	GRWTH	LSIZE
ROE	1							
ROA	0.4883*	1						
TIL	0.0042	-0.0743*	1					
AP	-0.009	-0.0115	-0.0001	1				
CR	0.0105	0.0846*	-0.2302*	0.0175	1			
AT	0.2390*	0.1424*	-0.0104	-0.0258	-0.0934*	1		
GRWTH	-0.0429*	-0.0281	-0.0541*	0.0313	0.0063	-0.0572*	1	
SIZE	0.0896*	0.0475*	0.1046*	-0.0401*	-0.0216	-0.1325*	-0.0179	1

Note: ROE: return on equity. ROA: return on assets. TIL: total Islamic leverage. AP: account payable. CR: current ratio. AT: assets turnover. GRWTH: firm growth. SIZE: firm size.

The correlation matrix in the second model shows that the ROE is correlated positively and significantly with total Islamic debt, asset turnover and firm size, while it is related negatively with firm growth at a significant level as it is displayed in table 5.5. The ROA has a negative and significant relationship with total interest-bearing debt, while it ended with a significant and positive with current ratio, asset turnover and firm size.

Table 5.5 Display of correlation matrices in the second model

	ROE	ROA	TID	TIBD	AP	CR	AT	GRWTH	LSIZE
ROE	1								
ROA	0.4883*	1							
TID	0.0799*	0.0041	1						
TIBD	-0.0355	-0.085*	0.0138	1					
AP	-0.009	-0.0115	0.0017	-0.0011	1				
CR	0.0105	0.0846*	-0.0592*	-0.2293*	0.0175	1			
AT	0.2390*	0.1424*	-0.143*	0.0601*	-0.0258	-0.093*	1		
GRWTH	-0.042*	-0.0281	-0.0186	-0.051*	0.0313	0.0063	-0.0572*	1	
SIZE	0.0896*	0.0475*	0.1561*	0.0358	-0.040*	-0.0216	-0.132*	-0.0179	1

Note: ROE: return on equity. ROA: return on assets. TID: total Islamic debt. TIBD: total interest-bearing debt. AP: account payable. CR: current ratio. AT: assets turnover. GRWTH: firm growth. SIZE: firm size.

The correlation matrix in the third model reports that the ROE is correlated positively and significantly with long-term Islamic debt, asset turnover and firm size, while it is related negatively with short-term interest-bearing debt and firm growth at a significant level. The ROA has a negative and significant relationship with short-term interest-bearing debt, while it ended with a significant and positive with current ratio, asset turnover and firm size.

Table 5.6 summaries correlation matrices in the third model

	ROE	ROA	STID	STIBD	LTID	LTIBD	AP	CR	AT	GRWTH	LSIZE
ROE	1										
ROA	0.4883*	1									
STID	0.0089	-0.0121	1								
STIBD	-0.062*	-0.085*	0.0028	1							
LTID	0.0853*	0.008	0.3056*	-0.074*	1						
LTIBD	0.0201	-0.0348	0.1108*	0.0848*	0.1037*	1					
AP	-0.009	-0.0115	0.012	0.0061	-0.0007	-0.0094	1				
CR	0.0105	0.0846*	-0.045*	-0.193*	-0.054*	-0.140*	0.0175	1			
AT	0.2390*	0.1424*	-0.073*	0.1850*	-0.140*	-0.137*	-0.025	-0.09*	1		
GRWTH	-0.042*	-0.0281	0.0063	-0.0396	-0.0216	-0.0369	0.0313	0.0063	-0.05*	1	
SIZE	0.089*	0.047*	0.114*	-0.054*	0.142*	0.127*	-0.04*	-0.021	-0.13*	-0.0179	1

Note: ROE: return on equity. ROA: return on assets. STID: short-term Islamic debt. STIBD: short-term interest-bearing debt. LTID: long-term Islamic debt. LTIBD: long-term interest-bearing debt. AP: account payable. CR: current ratio. AT: assets turnover. GRWTH: firm growth. SIZE: firm size.

5.3 Panel Regression Analysis

In this section, the study aims to achieve two objectives, which are, to analyse the effect of interest-bearing debt ratios and Islamic debt ratios on the performance of consistently listed *shari'ah*-compliant companies in Malaysia using separated debt data. Therefore, in order to achieve the two research objectives, seven debt proxies, namely total Islamic leverage, total interest-bearing debt and total Islamic debt, long-term interest-bearing debt, long-term Islamic debt, short-term interest-bearing debt and short-term Islamic debt are employed. For this purpose, the study applies two major accounting-based performance measures, namely, ROE and ROA. The study also adopts panel data techniques such as pooled OLS, random effects and fixed effects, which is a statistical method that contains two dimensions, including time series and cross-sectional.

The rest of the section is organised as follows. Sub-section 5.3.1 covers the outcomes of total Islamic leverage and performance of *shari'ah*-compliant companies in Malaysia. Next section presents the results of total interest-bearing debt and total Islamic debt and performance of *shari'ah*-compliant companies in Malaysia. The next sub-section 5.3.3 reports the outcome of short-term interest-bearing debt, short-term Islamic debt, long-term interest-bearing debt and long-term Islamic debt and the performance of *shari'ah*-compliant companies in Malaysia. Section 5.4 discusses the threshold regression models. Finally, section 5.5 provides a summary of the analysis results.

5.3.1 Total Islamic leverage and the performance of *shari'ah*-compliant companies in Malaysia

5.3.1.1 ROE is the performance indicator

Model 1 is used for determining the impact of total Islamic leverage on the performance of constantly listed *shari'ah*-compliant companies in Malaysia using ROE as performance indicator. The model is formulated as follow:

$$\mathrm{PERF}_{i,t} = \alpha + \beta_1 \mathrm{TIL}_{i,t} + \beta_2 \mathrm{TIL}_{i,t}^2 + \beta_3 \mathrm{AP}_{i,t} + \beta_4 \mathrm{CR}_{i,t} + \beta_5 \mathrm{AT}_{i,t} + \beta_6 \mathrm{Growth}_{i,t} + \beta_7 \mathrm{Lnsize}_{i,t} + \beta_8 \mathrm{Dummy\ Bef-after\ 2013} + \mu_{i,t} \quad \text{Model (1)}$$

where:

PERF is return on equity (ROE),

TIL is total Islamic Leverage,

TIL^2 is squared of TL to measure the nonlinearity of TIL

AP is account payable,

CR is current ratio,

AT is assets turnover,

Growth is firm growth

Lnsize is firm size and

Dummy FRB=a dummy for after implementation if financial ratio benchmark, 1=after implementation and 0=before implementation.

Various tests are applied to the model 1. Breusch-Pagan LM test is utilised to compare POLS model with random effects model. It assumes that all individual specific

variance components are zero. So, in this case, the p value of BP test result is 0.0000, which is less than 0.05. It clearly rejects the null hypothesis and concludes that the random effects model is more appropriate than the POLS model.

The Hausman test can be further employed to select fixed effects over random effect. The test statistic is $X^2 = 20.94$, which is significant at 1%, meaning the unobservable ROE effect is not correlated with the exogenous variables, and fixed effects model is a more efficient estimator than random effects model. Therefore, the fixed effects model is preferred and the current analysis is solely based on it.

The overall p. value is associated with F value under fixed effects model 0.000, which is less than 0.05 measuring the fitness of model indicating the model is quite good. The explanatory variables reliably predict the dependent variable, which is in this case ROE. The study checks the present of heteroscedasticity within the explanatory variables. The result indicates that the probability value of the chi-square statistic is less than 0.05 implying that the null hypothesis of constant variance can be rejected at 5% level of significance, which is an indication of the presence of heteroscedasticity in the residuals. Therefore, to correct heteroscedasticity, the study applies robust standard error.

The study pursues the serial correlation test to check the presence of serial correlation within the variables. The probability value of f-stat is 0.47, which is higher than 0.05 and it shows that no serial correlation exists within the studied variables. On the other hand, the study includes the time dummies to in order measure the effect of total Islamic leverage before and after the adoption of the newly-imposed 33% of firm's total assets as

a maximum ratio for conventional debt financing. It also applies time dummies to measure the time effects within the study period.

Table 5.7: Panel data regression results of total Islamic leverage and sampled *shari'ah*-compliant companies in Malaysia

Model	**Pooled OLS**	**Random Effects**	**Fixed Effects**	**Fixed Effects Robust Std. Err: before-after2013-dummy**		**Fixed Effects Robust Std. Err.: Year dummies**	
				Without TL2	With TL2	Without TL2	With TL2
Variables	ROE	ROE	ROE	ROE	ROE	ROE	ROE
TL	0.00095(0.04)	-0.0147(-0.50)	-0.0425(-1.21)	-0.0424(-1.08)	-0.0413(-0.85)	-0.0418(1.06)	-0.0406(0.84)
AP	0.00017(0.14)	0.00078(0.69)	0.00085(0.70)	0.00085(1.67)	0.00085(1.64)	0.00094(1.81)	0.0009(1.78)
CR	0.00208(1.85)	0.0028(1.93)**	0.00468(2.28)**	0.0047(2.23)**	0.0046(2.19) **	0.0049(2.31) **	0.0049(2.28) **
AT	0.0892(12.95)***	0.1088(11.57)***	0.1416(10.6)***	0.1408(3.77)***	0.1408(3.77)***	0.1410(3.76)***	0.1410(3.7) ***
GRWTH	-4.26E-0(-1.32)	-5.31E-0(-0.19)	6.14E-0(0.21)	5.99E-0(0.36)	5.99E-07(0.36)	3.66E(0.21)	3.67E-(0.21)
LSIZE	0.0088(6.25)***	0.0078(3.47)***	-0.0039(-0.70)	-0.0041(-0.63)	-0.00413(-0.63)	-0.0039(0.60)	-0.0039(0.60)
After20131 Dummy				-0.0048(-0.73)	-0.0049(-0.73)		
Before 20132 Dummy				-0.0033(-0.51)	-0.0032(-0.50)		
DUM1						-0.0119(1.10)	-0.0120(1.11)
DUM2						-0.0033(0.29)	-0.0033(0.29)
DUM3						0.0035(0.33)	0.0035(0.33)
DUM4						0.0009(0.10)	0.0009(0.10)
DUM5						0.0127(0.77)	0.0127(0.77)
DUM6						-0.0174(1.36)	-0.0174(1.36)
DUM7						-0.0046(0.65)	-0.0046(0.75)
TL2					-0.0133(-.06)		-0.0140(0.07)
Constant	-0.0819(-4.2)***	-0.0851(-2.8)***	0.0328(0.47)	0.0395(0.46)	0.0395(0.46)	0.0359(0.41)	0.0359(0.41)
No. of Observations	2,434	2434	2434	2434		2434	
R-squared	0.0738						
Prob > F=	32.25(0.000)		19.46(0.000)	2.60(0.0091)	2.42(0.0115)	2.51(0.0028)	2.38(0.0036)
Multicollinearity (Mean VIF)	1.04						
Wald chi2(6) Prob>chi2		140.39(0.000)					
Breusch-Pagan LM test	702.97(0.000)						
Hausman Test chi2(5) Prob>chi2		20.94(0.0008)					
Hetero (χ^2 – stat)			1.5e+(0.000)				
Serial Correlation (F-stat)			0.511(0.47)				
Time-effect Test-Prob>F				0.05(0.822)	0.05(0.817)	0.99(0.434)	0.99(0.435)

1. Figures in the parentheses are t-statistics, except for Prob, Breusch-Pagan LM test, Hausman test, Hetero and Serial Correlation, which are p-values.
2. ** and *** indicate the respective 5% and 1% significance levels.

As reported in Table 5.7, the results of fixed effects show that total Islamic leverage negatively and insignificantly affect *shari'ah*-compliant companies' performance. This negative effect may arise due to the realisation that high debt ratio increases high agency costs and the default rate, which consequently leads to the risk of losing control of the company (Yazdanfar & Öhman, 2014). This is unlikely to occur in this study as the descriptive analysis suggests. Other reasoning is that the use of debt may exceed the threshold limit at which a firm can maximise its value. In addition, high growth opportunities suggest that debt financing negatively affects firm performance, while the opposite is true for firms with fewer opportunities (Mishra & Dasgupta, 2019).

The findings were supported by lenka (2017) and Ebaid (2009), which were conducted in the Czech Republic and Egypt respectively, confirming the existence of a negative effect between total debt and firm performance measured by ROE. In contrast, the finding also contradicts Abor's (2005) study in Ghana, which reported a positive effect between total debt and firm performance employing Ordinary Least Squares (OLS).

The nonlinear relationship between the squared total Islamic leverage and the performance of *shari'ah*-compliant companies is conducted in order to examine the quadratic relationship between them. The results indicate that it is negative and insignificant meaning it failed to establish the existence of nonlinear effect of total Islamic leverage of firm performance.

As the panel data-fixed effects regression's findings indicate that account payable positively affects *shari'ah*-compliant companies' performance, but is not significant. As the descriptive analysis suggests the account payable represents 30% of total financing and

it is a liability with zero interest and profit payments. This is an indication that the account payable positively affects *shari'ah*-compliant companies' performance. This finding contradicts what Yazdanfar and Öhman (2015) reported, which is a negative and significant relationship between account payable and firm performance. Even though Yazdanfar and Öhman's study and the current study have examined separately the account payable and adopted large sample size, the results have ended in two different dimensions. This could be attributed to the fact that the studies were conducted in two different financial regulatory environments and markets.

"Current ratio" as deemed as one of the liquidity proxies in this study is "the ratio of current assets to current liabilities, which measures a firm's ability to meet its short-term financial obligations and operational running costs" (Zeb et al, 2016). The reported panel data fixed effects results in the table show that the current ratio is positively and significantly related to *shari'ah* -compliant firms' performance as in terms of ROE. This positive relationship was supported by the studies of Zainudin et al. (2017), Alina Zeb, Sher Khan and Muhammad Iqbal (2016) and Dawar (2014) in Malaysia, Indonesia and India respectively. This positive effect is a commonly observed relationship, but it may result in negative effect according to Asimakopoulos et al. (2009) in Greek non-financial firms. Therefore, it is worth noting that firm managers have to seek a fine line dealing with liquidity, because in some cases, high ratio of current assets may lead to lower profitability (Asimakopoulos and et al. 2009).

"Asset turnover ratio" (AT) is "an efficient measure. It is an indicator that the assets utilisation in executing the operational activities is efficient, which in turn enhances the

performance of the firms (Nurlaela et al., 2019). According to the results reported in Table 5.3, the fixed effects model suggests that asset turnover ratio is positively and significantly related to *shari'ah*-compliant companies' performance measured by ROE as the descriptive analysis suggested, implying that the *shari'ah*-compliant companies have efficiently managed their assets, which at the end contributes positively to the overall performance level of *shari'ah*-compliant companies. This finding is in line with the study by Nurlaela et al. (2019', which reported similar conclusions in the consumption industry sector's firms in Indonesia.

The fixed effects model indicates that the growth has a positive relationship with *shari'ah*-compliant companies' performance measured by ROE, but it is not significant. The finding also was supported by previous studies (Sheikh & Wang, 2013, Asimakopoulos et al., 2009; and Ahmed & Afza, 2019).

Finally, the results of fixed effects suggest that firm size has positive but insignificant effects on *shari'ah*-compliant companies' performance measured by ROE. This is because large firms enjoy economies of scale and benefit from strong bargaining power over its suppliers and advantage of controlling reasonable size of market share, which are the key factors in establishing the cost of borrowing (Akinyi & Oima, 2019, and Dawar, 2015). This finding is corroborated by a number of previous studies (Vieira, 2017, Khasawneh and A. Dasouqi, 201, Dawar, 2014, Abor, 2005, and Ahmed & Afza, 2019). The positive effect is in line with the predictions of the TOT, suggesting that bigger firms have a tendency to borrow more because of their ability to spread the risk.

It is of importance to note that the effect of size varies between the studied economic industries, even though positive effect was recorded in the selected companies. However, in some cases, the firm size resulted in negative and significant effect on firm performance (Abor, 2007).

Finally, Time-effect test probabilities are 0.817and 0.435 under before-after2013 dummy and year effects dummy respectively, which are greater than 0.05 indicating that there is no significant effect for total Islamic leverage before and after its adoption of 33% criteria of conventional debt in November 2013. It also implies that the null hypothesis that all year's coefficients are jointly significant and therefore, there is no time effects within the study period.

5.3.1.2. ROA is the performance indicator

Model 2 is used for determining the impact of total Islamic leverage on the performance of constantly listed *shari'ah*-compliant companies in Malaysia using ROA as performance indicator. The model is formulated as follow:

$$\mathrm{PERF}_{i,t} = \alpha + \beta_1 \mathrm{TIL}_{i,t} + \beta_2 \mathrm{TIL}_{i,t}^2 + \beta_3 \mathrm{AP}_{i,t} + \beta_4 \mathrm{CR}_{i,t} + \beta_5 \mathrm{AT}_{i,t} + \beta_6 \mathrm{Growth}_{i,t} + \beta_7 \mathrm{Lnsize}_{i,t} + \beta_8 \mathrm{Dummy\ Bef-after\ 2013} + \mu_{i,t} \quad \text{Model (2)}$$

where:

PERF is return on assets (ROA),

TIL is total Islamic Leverage,

TIL^2 is squared of TL to measure the nonlinearity of TIL

AP is account payable,

CR is current ratio,

AT is assets turnover,

Growth is firm growth

Lnsize is firm size and

Dummy FRB=a dummy for after implementation if financial ratio benchmark, 1=after implementation and 0=before implementation.

Various tests are applied to the model 1. Breusch-Pagan LM test is utilised to compare POLS model with random effects model. It assumes that all individual specific variance components are zero. So, in this case, the p value of BP test result is 0.0000, which is less than 0.05. It clearly rejects the null hypothesis and concludes that the random effects model is more appropriate than the POLS model.

The Hausman test can be further employed to select fixed effects over random effect. The test statistic is $X^2 = 19.83$, which is significant at 1%, meaning the unobservable ROA effect is not correlated with the exogenous variables, and fixed effects model is a more efficient estimator than random effects model. Therefore, the fixed effects model is preferred and the current analysis is solely based on it.

The overall p. value is associated with F value under fixed effects model 0.0042, which is less than 0.05 measuring the fitness of model indicating the model is quite good. The explanatory variables reliably predict the dependent variable, which is in this case ROA. The study checks the present of heteroscedasticity within the explanatory variables. The result indicates that the probability value of the chi-square statistic is less than 0.05

implying that the null hypothesis of constant variance can be rejected at 5% level of significance, which is an indication of the presence of heteroscedasticity in the residuals. Therefore, to correct heteroscedasticity, the study applies robust standard error.

The study pursues the serial correlation test to check the presence of serial correlation within the variables. The probability value of f-stat is 0.3044, which is higher than 0.05 and it shows that no serial correlation exists within the studied variables. On the other hand, the study includes the time dummies to in order measure the effect of total Islamic leverage before and after the adoption of the newly-imposed 33% of firm's total assets as a maximum ratio for conventional debt financing. It also applies time dummies to measure the time effects within the study period

Table 5.8: Panel data regression results of total Islamic leverage and sampled *shari'ah*-compliant companies in Malaysia

Model	**Pooled OLS**	**Random Effects**	**Fixed Effects**	**Fixed Effects Robust Std. Err: before-after2013-dummy**		**Fixed Effects Robust Std. Err.: Year dummies**	
				Without TL2	With TL2	Without TL2	With TL2
Variables	ROA	ROA	ROA	ROA	ROA	ROA	ROA
TL	-0.0638(-3.02)***	-0.03804(1.58)	-0.01028(0.33)	-0.00907(-0.38)	-0.01304(-0.47)	-0.00814(0.34)	-0.01253(0.45)
AP	-0.00027(-0.27)	0.000401(0.41)	0.001198(1.09)	0.0011305(1.35)	0.00114(1.36)	0.001132(1.36)	0.001142(1.36)
CR	0.0038(-4.22)***	0.00484(4.30)***	0.0075(4.12)***	0.0075712(1.54)	0.007599(1.54)	0.007638(1.55)	0.007668(1.55)
AT	0.04384(7.82)***	0.05063(7.07)***	0.0739(6,24)***	0.0705(3.27)***	0.0705(3.27)***	0.0692(3.18)***	0.0693(3.18)***
GRWTH	-2.75E-06(-1.05)	-3.36E-06(1.34)	-3.92E-06(1.53)	-4.29E-0(-0.89)	-4.30E-0(-0.89)	-4.62E-06(0.98)	-4.62E-06(0.98)
LSIZE	0.00432(3.77)***	0.003976(2.49)**	-0.00261(0,53)	-0.00383(-0.96)	-0.00382(-0.96)	-0.00434(1.05)	-0.00431(1.05)
After20131 Dummy				-0.00446(-1.18)	-0.00441(-1.17)		
Before 20132 Dummy				0.004008(0.59)	0.003923(0.58)		
DUM1						-0.01627(1.93)	-0.01611(1.92)
DUM2						-0.01334(1.60)	-0.0132(1.60)
DUM3						-0.00599(0.79)	-0.00588(0.79)
DUM4						-0.00727(1.13)	-0.00719(1.12)
DUM5						-0.0084(1.39)	-0.00842(1.39)
DUM6						-0.0131(1.91)	-0.01315(1.91)
DUM7						0.009064(0.61)	0.009078(0.61)
TL2					0.047785(0.49)		0.052893(0.55)
Constant	-0.0247027(-1.56	-0.0323735(1.50)	0.0187595(0.31)	0.0356209(0.73)	0.035718(0.73)	0.049585(0.94)	0.049597(0.95)
No. of Observations	2,434	2434	2434	2434		2434	
R-squared	0.0387						
Prob > F=	16.28(0.000)		9.42(0.000)	2.88 (0.0042)	2.59(0.0068)	2.57(0.0022)	2.43(0.003)
Multicollinearity (Mean VIF)	1.04						
Wald chi2(6) Prob>chi2		73.1(0.000)					
Breusch-Pagan LM test	203.33(0.000)						
Hausman Test chi2(5) Prob>chi2		19.83(0.0013)					
Hetero (χ^2 – stat)			8.6e+06(0.000)				
Serial Correlation (F-stat)			5.999(0,0149)				
Time-effect Test-Prob>F				1.06(0.3044)	1.04(0.3087)	1.06(0.3888)	1.05(0.391)

3. Figures in the parentheses are t-statistics, except for Prob, Breusch-Pagan LM test, Hausman test, Hetero and Serial Correlation, which are p-values.
4. ** and *** indicate the respective 5% and 1% significance levels.

The results of fixed effects show that total Islamic leverage negatively and insignificantly affect *shari'ah*-compliant companies' performance using ROA a performance indicator. This negative effect may arise due to the realisation that high debt ratio increases high agency costs and the default rate, which consequently leads to the risk of losing control of the company (Yazdanfar & Öhman, 2014). This is unlikely to occur in this study as the descriptive analysis suggests. Other reasoning is that the use of debt may exceed the threshold limit at which a firm can maximise its value. In addition, high growth opportunities suggest that debt financing negatively affects firm performance, while the opposite is true for firms with fewer opportunities (Mishra & Dasgupta, 2019).

The findings were supported by lenka (2017) and Ebaid (2009), which were conducted in the Czech Republic and Egypt respectively, confirming the existence of a negative effect between total debt and firm performance measured by ROE. In contrast, the finding also contradicts Abor's (2005) study in Ghana, which reported a positive effect between total debt and firm performance employing Ordinary Least Squares (OLS).

The nonlinear relationship between the squared total Islamic leverage and the performance of *shari'ah*-compliant companies is conducted in order to examine the quadratic relationship between them. The results indicate that it is negative and insignificant meaning it failed to establish the existence of nonlinear effect of total Islamic leverage of firm performance.

As the panel data-fixed effects regression's findings indicate that account payable positively affects *shari'ah*-compliant companies' performance, but is not significant. As the descriptive analysis suggests the account payable represents 30% of total financing and

it is a liability with zero interest and profit payments. This is an indication that the account payable positively affects *shari'ah*-compliant companies' performance. This finding contradicts what Yazdanfar and Öhman (2015) reported, which is a negative and significant relationship between account payable and firm performance. Even though Yazdanfar and Öhman's study and the current study have examined separately the account payable and adopted large sample size, the results have ended in two different dimensions. This could be attributed to the fact that the studies were conducted in two different financial regulatory environments and markets.

"Current ratio" as deemed as one of the liquidity proxies in this study is "the ratio of current assets to current liabilities, which measures a firm's ability to meet its short-term financial obligations and operational running costs" (Zeb et al, 2016). The reported panel data fixed effects results in the table show that the current ratio is positively and insignificantly related to *shari'ah* -compliant firms' performance as in terms of ROA. This positive relationship was supported by the studies of Zainudin et al. (2017), Alina Zeb, Sher Khan and Muhammad Iqbal (2016) and Dawar (2014) in Malaysia, Indonesia and India respectively. This positive effect is a commonly observed relationship and it also in with Asimakopoulos et al. (2009)'s study in Greek non-financial firms. Therefore, it is worth noting that firm managers have to seek a fine line dealing with liquidity, because in some cases, high ratio of current assets may lead to lower profitability (Asimakopoulos and et al. 2009).

"Asset turnover ratio" (AT) is "an efficient measure. It is an indicator that the assets utilisation in executing the operational activities is efficient, which in turn enhances the

performance of the firms (Nurlaela et al., 2019). According to the results reported in Table 5.3, the fixed effects model suggests that asset turnover ratio is positively and significantly related to *shari'ah*-compliant companies' performance measured by ROA as the descriptive analysis suggested, implying that the *shari'ah*-compliant companies have efficiently managed their assets, which at the end contributes positively to the overall performance level of *shari'ah*-compliant companies. This finding is in line with the study by Nurlaela et al. (2019', which reported similar conclusions in the consumption industry sector's firms in Indonesia.

The fixed effects model indicates that the growth has a negative relationship with *shari'ah*-compliant companies' performance measured by ROA, but it is not significant. The finding also was supported by previous studies (Sheikh & Wang, 2013, Asimakopoulos et al., 2009; and Ahmed & Afza, 2019).

Finally, the results of fixed effects suggest that firm size has negative but insignificant effects on *shari'ah*-compliant companies' performance measured by ROA. This finding is in line with Abor's study (2007) in Ghana and South Africa, which which investigated the effect of debt policy on financial performance of SMEs.

Finally, Time-effect test probabilities are 0.817and 0.435 under before-after2013 dummy and year effects dummy respectively, which are greater than 0.05 indicating that there is no significant effect for total Islamic leverage before and after its adoption of 33% criteria of conventional debt in November 2013. It also implies that the null hypothesis that all year's coefficients are jointly significant and therefore, there is no time effects within the study period.

5.3.2. Total Islamic debt and total interest-bearing debt and the performance of *shari'ah*-compliant companies in Malaysia

5.3.2.1 ROE is the performance indicator

Model 3 is used for determining the impact of total interest-bearing debt and total Islamic debt on the performance of constantly listed *shari'ah*-compliant companies in Malaysia using ROE as performance indicator and it is constructed as below:

$$\mathrm{PERF}_{i,t} = \alpha + \beta_1 \mathrm{TIBD}_{i,t} + \beta_2 \mathrm{TID}_{i,t} + \beta_3 \mathrm{AP}_{i,t} + \beta_4 \mathrm{CR}_{i,t} + \beta_5 \mathrm{AT}_{i,t} + \beta_6 \mathrm{Growth}_{i,t} + \beta_7 \mathrm{Lnsize}_{i,t} + \beta_8 \mathrm{Dummy\ Bef-after\ 2013} + \mu_{i,t} \quad \text{Model (3)}$$

where:

PERF is return on equity (ROE),

TIBD is total interest-bearing debt,

TID is total Islamic debt,

AP is account payable,

CR is current ratio,

AT is assets turnover,

Growth is firm growth

Lnsize is firm size and

Dummy FRB=a dummy for after implementation if financial ratio benchmark, 1=after implementation and 0=before implementation.

Various tests are applied to the model 1. Breusch-Pagan LM test is utilised to compare POLS model with random effects model. It assumes that all individual specific variance components are zero. So, in this case, the p value of BP test result is 0.0000, which is less than 0.05. It clearly rejects the null hypothesis and concludes that the random effects model is more appropriate than the POLS model.

The Hausman test can be further employed to select fixed effects over random effect. The test statistic is $X^2 = 33.35$, which is significant at 1%, meaning the unobservable ROE effect is not correlated with the exogenous variables, and fixed effects model is a more efficient estimator than random effects model. Therefore, the fixed effects model is preferred and the current analysis is solely based on it.

The overall p. value is associated with F value under fixed effects model 0.000, which is less than 0.05 measuring the fitness of model indicating the model is quite good. The explanatory variables reliably predict the dependent variable, which is in this case ROE. The study checks the present of heteroscedasticity within the explanatory variables. The result indicates that the probability value of the chi-square statistic is less than 0.05 implying that the null hypothesis of constant variance can be rejected at 5% level of significance, which is an indication of the presence of heteroscedasticity in the residuals. Therefore, to correct heteroscedasticity, the study apply robust standard error.

The study pursues the serial correlation test to check the presence of serial correlation within the variables. The probability value of f-stat is 0.4573, which is higher than 0.05 and it shows that no serial correlation exists within the studied variables. On the other hand, the study includes the time dummies to in order measure the effect of total

interest-bearing debt before and after the adoption of the newly-imposed 33% of firm's total assets as a maximum ratio for conventional debt financing. It also applies time dummies to measure the time effects within the study period.

Table 5.9: Panel data regression results of total Islamic debt and total interest-bearing debt and the performance of *shari'ah*-compliant companies in Malaysia

Model	**Pooled OLS**	**Random Effect**	**Fixed Effect**	**Fixed Effects with Robust Std. Err.: before-after2013-dummy**	**Fixed Effects with Robust Std. Err.: Year dummies**
Variables	ROE	ROE	ROE	ROE	ROE
TIBD	-0.074865(-2.58)***	-0.0472292(-1.43)	-0.03301(-0.85)	-0.0323155(-0.66)	-0.0317885(0.65)
TID	0.2942397(5.22)***	0.1355101(1.93)**	-0.08925(-1)	-0.092094(-0.81)	-0.0909046(0.8)
AP	0.0001611(0.13)	0.0007694(0.68)	0.000841(0.68)	0.000831(1.6)	0.000923(1.74)
CR	0.0018266(1.63)	0.0028182(1.95)**	0.004628(2.25)**	0.00465(2.18)**	0.0048949(2.26)**
AT	0.0947288(13.71)***	0.109784(11.75)***	0.14177(10.61)***	0.1407321(3.77)***	0.140863(3.76)***
GRWTH	-4.25E-06(-1.32)	-6.37E-07(-0.22)	6.35E-07(0.22)	5.96E-07(0.36)	3.53E-07(0.21)
LSIZE	0.0079448(5.64)***	0.0074718(3.34)***	-0.0039(-0.7)	-0.0041948(-0.63)	-0.0040653(0.6)
dumbefafter20131 (after 2013)	-	-	-	-0.0030023(-0.46)	
dumbefafter20132(before 2013)	-	-	-	-0.0051168(-0.78)	
DUM1					-0.012714(1.17)
DUM2					-0.0040228(0.35)
DUM3					0.0030522(0.29)
DUM4					0.0005494(0.06)
DUM5					0.0125345(.75)
DUM6					-0.0175159(-1.37)
DUM7					-0.0047467(0.66)
Constant	-0.068807(-3.52)***	-0.078923(-2.64)***	0.03231(0.47)	0.0399419(0.45)	0.0369531(.41)
No. of Observations	2434	2434	2434	2434	2434
R-squared	0.0866				
Prob > F=	32.86(0.0000)***		16.72(0.0000)***	2.52(0.0085)***	2.43(0.0031)***
Wald chi2(7)Prob>chi2	-	146.96(0.0000)***	-	-	-
Multicollinearity (Mean VIF)	1.04	-	-	-	-
Breusch-Pagan LM test chibar2(01) Prob > chibar2	632.03(0.0000)***		-	-	-
Hausman Test chi2(6)Prob>chi2	-	33.35(0.0000)***		-	-
Hetero (χ^2 – stat)	-	-	1600000(0.000)***	-	-
Serial Correlation (F-stat)	-	-	0.511(0.4753)		
Time-effect Test-Prob>F	-	-	-	0.09 (0.7604)	1.00(0.4279)

5. Figures in the parentheses are t-statistics, except for Prob, Breusch-Pagan LM test, Hausman test, Hetero and Serial Correlation, which are p-values.
6. ** and *** indicate the respective 5% and 1% significance levels.

As reported in Table 5.9, the results of fixed effects show that both the total interest-bearing debt and total Islamic debt have a negative and insignificant effect on the performance of *shari'ah*-compliant companies. This negative effect may arise due to the realisation that high debt ratio increases high agency costs and the default rate, which consequently leads to the risk of losing control of the company (Yazdanfar & Öhman, 2014). This is unlikely to occur in this study as the descriptive analysis suggests. Other reasoning is that the use of debt may exceed threshold limit at which a firm can maximise its value. In addition, high growth opportunities suggest that debt financing negatively affects firm performance, while the opposite is true for firms with fewer opportunities (Mishra & Dasgupta, 2019).

The findings were supported by lenka (2017) and Ebaid (2009), which were conducted in the Czech Republic and Egypt respectively, confirming the existence of a negative effect between total debt and firm performance measured by ROE. In contrast, the finding also contradicts Abor's (2005) study in Ghana, which reported a positive effect between total debt and firm performance employing Ordinary Least Squares (OLS).

As the panel data-fixed effects regression's findings indicate that account payable positively affects *shari'ah*-compliant companies' performance, but is not significant. As the descriptive analysis suggests the account payable represents 30% of total financing and it is a liability with zero interest and profit payments. This is an indication that the account payable positively affects *shari'ah*-compliant companies' performance. This finding contradicts what Yazdanfar and Öhman (2015) reported, which is a negative and significant

relationship between account payable and firm performance. Even though Yazdanfar and Öhman's study and the current study have examined separately the account payable and adopted large sample size, the results have ended in two different dimensions. This could be attributed to the fact that the studies were conducted in two different financial regulatory environments and markets.

Current ratio as deemed as one of the liquidity proxies in this study is "the ratio of current assets to current liabilities, which measures a firm's ability to meet its short-term financial obligations and operational running costs" (Zeb et al, 2016). The reported panel data fixed effects results in the table show that the current ratio is positively and significantly related to *shari'ah* -compliant firms' performance as in terms of ROE. This positive relationship was supported by the studies of Zainudin et al. (2017), Alina Zeb, Sher Khan and Muhammad Iqbal (2016) and Dawar (2014) in Malaysia, Indonesia and India respectively. This positive effect is a commonly observed relationship, but it may result in negative effect according to Asimakopoulos et al. (2009) in Greek non-financial firms. Therefore, it is worth noting that firm managers have to seek a fine line dealing with liquidity, because in some cases, high ratio of current assets may lead to lower profitability (Asimakopoulos and et al. 2009).

"Asset turnover ratio" (AT) is "an efficient measure. It is an indicator that the assets utilisation in executing the operational activities is efficient, which in turn enhances the performance of the firms (Nurlaela et al., 2019). According to the results reported in Table 5.3, the fixed effects model suggests that asset turnover ratio is positively and significantly related to *shari'ah*-compliant companies' performance measured by ROE as the descriptive

analysis suggested, implying that the *shari'ah*-compliant companies have efficiently managed their assets, which at the end contributes positively to the overall performance level of *shari'ah*-compliant companies. This finding is in line with the study by Nurlaela et al. (2019', which reported similar conclusions in the consumption industry sector's firms in Indonesia.

The fixed effects model indicates that the growth has a positive relationship with *shari'ah*-compliant companies' performance measured by ROE, but it is not significant. The finding also was supported by previous studies (Sheikh & Wang, 2013, Asimakopoulos et al., 2009; and Ahmed & Afza, 2019).

Finally, the results of fixed effects suggest that firm size has positive but insignificant effects on *shari'ah*-compliant companies' performance measured by ROE. This is because large firms enjoy economies of scale and benefit from strong bargaining power over its suppliers and advantage of controlling reasonable size of market share, which are the key factors in establishing the cost of borrowing (Akinyi & Oima, 2019, and Dawar, 2015). This finding is corroborated by a number of previous studies (Vieira, 2017, Khasawneh and A. Dasouqi, 201, Dawar, 2014, Abor, 2005, and Ahmed & Afza, 2019). The positive effect is in line with the predictions of the TOT, suggesting that bigger firms have a tendency to borrow more because of their ability to spread the risk.

It is of importance to note that the effect of size varies between the studied economic industries, even though positive effect was recorded in the selected companies. However, in some cases, the firm size resulted in negative and significant effect on firm performance (Abor, 2007).

Finally, Time-effect test probabilities are 0.7513 and 0.196 under before-after2013 dummy and year effects dummy respectively, which are greater than 0.05 indicating that there is no significant effect for total interest-bearing debt before and after its adoption of 33% criteria of conventional debt in November 2013. It also implies that the null hypothesis that all year's coefficients are jointly significant and therefore, there is no time effects within the study period.

5.3.2.2. ROA is the performance indicator

Model 4 is used to examine the effect of total interest-bearing debt and total Islamic debt on the performance of constantly listed *shari'ah*-compliant companies in Malaysia using ROA as performance indicator and is constructed below:

$$PERF_{i,t} = \alpha + \beta_1 TIBD_{i,t} + \beta_2 TID_{i,t} + \beta_3 AP_{i,t} + \beta_4 CR_{i,t} + \beta_5 AT_{i,t} + \beta_6 Growth_{i,t} + \beta_7 Lnsize_{i,t} + \beta_8 Dummy\ Bef - after\ 2013 + \mu_{i,t} \quad \text{Model (4)}$$

where"

PERF is return on assets (ROA),

TIBD is total interest-bearing debt,

TID is total Islamic debt,

AP is account payable,

CR is current ratio,

AT is assets turnover,

Growth is firm growth

Lnsize is firm size and

Dummy FRB=a dummy for after implementation if financial ratio benchmark, 1=after implementation and 0=before implementation.

To finalize the suitable model within the three models of panel data, several tests are carried out on model 1. The result of Breusch-Pagan LM test is 0.0000, which is less than 0.05, thus implying that it rejects the null hypothesis and concludes that the random effects model is more suitable than the POLS model. The Hausman test is conducted to select the fixed effects over random effect. The test statistic is $X^2 = 21.29$ which is significant at 1%, meaning the unobservable ROA effect is not correlated with the exogenous variables, and the fixed effects model offers greater efficiency as an estimator compared to random effects model. Therefore, the fixed effects model is preferred and the analysis is conducted based on the fixed effects model.

The overall p. value associated with F. value under fixed effects model 0.000 measures the fitness of the model and it suggests the model is quite good and the IVs reliably predict the dependent variable, which, in this case is ROA. The study examines the present of heteroscedasticity within the explanatory variables. The result indicates that the probability value of the chi-square statistic is less than 0.05 implying that the null hypothesis of constant variance can be rejected at 5% level of significance, which is an indication of the presence of heteroscedasticity in the residuals. Therefore, to correct heteroscedasticity, the study applies robust standard error. The research pursues the serial correlation test to check the existence of serial correlation within the studied variables. The

value of f-stat stands at 0.0148 and it is less than 0.05, indicating that there is a serial correlation within the studied variables. Therefore, the study adopts the fixed effect model with robust standard error to prevent the serial correlation and avoid biased findings. Besides that, the study also examines the time dummies to measure the time effects.

Table 5.10: panel data regression results of total Islamic debt and total interest-bearing debt and the performance of *shari'ah*-compliant companies in Malaysia

Model	**Pooled OLS**	**Random Effect**	**Fixed Effect**	**Fixed Effects with Robust Std. Err.: before-after2013-dummy**	**Fixed Effects with Robust Std. Err.: year dummies**
Variables	ROA	ROA	ROA	ROA	ROA
TIBD	-0.0932(-3.93)***	-0.05974(2.22)**	-0.01791(-0.52)	-0.01416(-0.54)	-0.01234(-0.48)
TID	0.051037(1.1)	0.053967(0.97)	0.026034(0.33)	0.014118(0.32)	0.010127(0.23)
AP	-0.00028(-0.27)	0.000388(0.4)	0.00121(1.1)	0.001141(1.36)	0.00114(1.37)
CR	0.003763(4.11)***	0.00481(4.28)***	0.00755(4.14)***	0.007603(1.54)	0.007664(1.55)
AT	0.045969(8.14)***	0.05184(7.23)***	0.07388(6.23)***	0.070552(3.27)***	0.06932(3.18)***
GRWTH	-2.75E-06(-1.05)	-3.37E-06(1.35)	-3.93E-06(-1.54)	-4.29E-06(-0.89)	-4.62E-06(-0.98)
LSIZE	0.003974(3.45)***	0.003693(2.31)**	-0.0027(-0.54)	-0.00387(-0.96)	-0.00436(-1.05)
dumbefafter20131 (after 2013)	-	-	-	0.00388(0.57)	
dumbefafter20132(before 2013)	-	-	-	-0.00435(-1.15)	
DUM1					-0.01603(-1.89)
DUM2					-0.01312(-1.58)
DUM3					-0.00582(-0.78)
DUM4					-0.00715(-1.11)
DUM5					-0.00834(-1.38)
DUM6					-0.01309(-1.91)
DUM7					0.009063(0.61)
Constant	-0.01949(-1.22)	-0.02817(1.3)	0.020317(0.33)	0.036261(0.74)	0.049974(0.95)
No. of Observations	2434	2434	2434	2434	2434
R-squared	0.0417	-	-	-	-
Prob > F=	15.07(0.0000)***		8.1(0.0000)***	2.58(0.0070)***	2.44(0.0029)***
Wald chi2(7)Prob>chi2	-	76.62(0.0000)***	-	-	-
Multicollinearity (Mean VIF)	1.04	-	-	-	-
Breusch-Pagan LM test chibar2(01)Prob > chibar2	195.18(0.0000)***		-	-	-
Hausman Test chi2(6)Prob>chi2	-	21.29(0.0016)***		-	-
Hetero (χ^2 – stat)	-	-	8100000(0.000)***	-	-
Serial Correlation (F-stat)	-	-	6.004(0.0148)**		
Time-effect Test-Prob>F	-	-	-	1.01(0.3157)	1.04(0.398)

1. Figures in the parentheses are t-statistics, except for Prob, Breusch-Pagan LM test, Hausman test, Hetero and Serial Correlation, which are p-values.
2. ** and *** indicate the respective 5% and 1% significance levels.

Total interest-bearing debt is negatively associated with *shari'ah*-compliant companies' performance, but the negative relationship is insignificant. The result indicates that an increase in total interest-bearing debt causes a decrease in *shari'ah*-compliant companies' performance. The negative effect is due to the fact that firms are experiencing high growth opportunities (Mishra and Dasgupta, 2019). The negative effect acts such a sign that encourages *shari'ah*-compliant firms to use retained earnings as a source of financing instead of debt because of high financing cost (Khasawneh & Dasouqi, 2017).

This fact also is corroborated by the reported average current ratio in Table 5.1 of descriptive analysis, which suggests that the sampled companies have enough internal funds, which make them less inclined to seek external funds, which is debt in this case. This is a quite interesting finding because, the two types of Islamic leverage, i.e., total interest-bearing debt and total Islamic debt have produced two different effects with two dimensions; positive and negative under ROA as performance measure. Moreover, the total Islamic debt resulted in positive and insignificant relationships with firm performance, while its counterpart's outcome proved negative and insignificant under fixed effect model with robust standard error.

This negative effect was supported by some previous studies (Asimakopoulos et al., 2009); Abor, 2007; Sheikh & Wang, 2011), which were conducted in Greek, in Ghana and South Africa and in Pakistan respectively. The result indicated that an increase in total Islamic debt would lead to a decrease in *shari'ah*-compliant companies' performance. This is because the cost of debt financing is higher and raises information asymmetry compared to internal financing (Myers, 1984; Ahmed & Afza, 2019) under ROA as a performance measure.

The outcomes of fixed effects with robust standard error revealed that the total Islamic debt was positively and statistically insignificant in relation to the performance of *shari'ah*-compliant companies measured by ROA. This may arise because the total Islamic debt ratio of the *shari'ah*- compliant firms is smaller and below threshold limit at which a firm can maximise its value as the reported descriptive analysis implies. Another reason is that the growth opportunities are the major driver that determines the relationship between debt financing and firm performance (McConnell & Servaes, 1995). Therefore, *shari'ah*-compliant firms have experienced low-growth, in which, the total Islamic debt positively affects the performance of *shari'ah*-compliant companies.

This finding was supported by Dalci (2018). It implies that an increase in debt to a certain limit may enhance firms' performance (Myers, 2001). This agrees with what the reported descriptive analysis suggests, that the average total Islamic debt of the selected firms stood at 1.61%, which is very low compared to its counterpart ratio, indicating that there is still room to increase its proportion without facing risk of default. Another advantage of increasing debt ratio is reducing the conflict of interest between firm managers and firm shareholders (Jensen & Meckling, 1976).

As the panel data-fixed effects regression's finding indicates that account payable has a positive effect on *shari'ah*-compliant companies' performance, but is not significant. As the descriptive analysis suggests the account payable represents 30% of total financing and it is liability with zero interest or profit payments. This is an indication that it positively affects *shari'ah* -compliant companies' performance. This finding is in contrast to what Yazdanfar and Öhman (2015) found, which was a negative and significant between account payable and firm performance. Even though Yazdanfar and Öhman's study and the current study have examined account payable

separately and used large sample size, but there were in two opposing results. This may be because both studies were conducted in two different financial regulatory environments and markets.

Current ratio is defined as "the ratio of current assets to current liabilities" (Moosa & Li, 2012). It is deemed as a liquidity proxy in this study. It is a liquidity measure that reveals a firm's ability to meet its immediate and short-term financial obligations and operational running costs (Zeb et al., 2016). The reported panel data-fixed effects result in the table shows that the current ratio is positively related to *shari'ah*-compliant companies' performance measured by ROA, but the relationship is not significant. This positive relationship was supported by Zainudin et al.'s (2017) Study, Alina Zeb, Sher Khan & Muhammad Iqbal's (2016) study, and Dawar's (2014) study in Malaysia, Pakistan, Indonesia and India respectively. On the other hand, the finding is in contrast to Afza and Hussain's (2011) study in Pakistan which reasoned that the economic sector and the growth level are the major factors that lead to two different dimensions (Ando, Matsumoto & Matsumoto, 2017, and lenka, 2017).

Asset turnover ratio (AT) is an efficient measure. It indicates assets utilisation in executing the operational activities is highly efficient, which in turn enhances the performance of the firms (Nurlaela et al., 2019). According to the reported results in table 5.4, the fixed effects model suggests that asset turnover ratio is positively and significantly related to *shari'ah*-compliant companies' performance measured by return on assets as the descriptive analysis suggested, implying that the *shari'ah*-compliant companies have efficiently managed their assets, which at the end contributes positively to the overall performance level of *shari'ah*-compliant companies. This finding is in

line with the study by Nurlaela et al. (2019) which reached a similar conclusion in consumption industry firms in Indonesia.

Growth exhibits a negative effect on *shari'ah*-compliant companies' performance measured by ROA, but it is insignificant under fixed effect with robust standard error. The finding was supported by Abor's study (2007), which found that growth has a negative and significant effect based on ROA as performance indicator.

The finding of fixed effects with robust standard error indicates that the firm size resulted in a negative and insignificant relationship with *shari'ah*-compliant companies' performance measured by ROA. It was supported by the findings of Abor's study (2007) in Ghana and South Africa, which investigated the effect of debt policy on financial performance of SMEs. This finding was also corroborated by some of previous studies.

Finally, the probability of computed F values are 0.1647 and 0.2886, which is greater than 0.05 The result indicates there is no significant effect for total interest-bearing debt before and after its adoption of 33% criteria of conventional debt in November 2013. It also implies that the null hypothesis that all year's' s coefficients are jointly significant and therefore, there is no time effects within the study period.

5.3.3. Short-term Islamic leverage and long-term Islamic leverage ratios and the performance of *shari'ah*-compliant companies in Malaysia

5.3.3.1 ROE is the performance indicator

Model 5 is used for determining the impact of short-term interest-bearing debt, short-term Islamic debt, long-term interest-bearing debt and long-term Islamic debt on

the performance of constantly listed *shari'ah*-compliant companies in Malaysia using ROE as performance indicator and it is constructed as below:

$$PERF_{i,t} = \alpha + \beta_1 STIBD_{i,t} + \beta_2 STID_{i,t} + \beta_3 LTIBD_{i,t} + \beta_4 LTID_{i,t} + \beta_5 AP_{i,t} + \beta_6 CR_{i,t} + \beta_7 AT_{i,t} + \beta_8 Growth_{i,t} + \beta_9 Lnsize_{i,t} + \beta_{10} Dummy\ Bef-after\ 2013 + \mu_{i,t}$$ Model (5)

where:

PERF is return on equity (ROE),

STIBD is short-term interest-bearing debt,

STID is short-term Islamic debt,

LTIBD is long-term interest-bearing debt,

LTIBD is long-term Islamic debt

AP is account payable,

CR is current ratio,

AT is assets turnover,

Growth is firm growth

Lnsize is firm size and

Dummy FRB=a dummy for after implementation if financial ratio benchmark, 1=after implementation and 0=before implementation.

Various tests are applied to the model 1. Breusch-Pagan LM test is utilised to compare POLS model with random effects model. It assumes that all individual specific variance components are zero. So, in this case, the p value of BP test result is 0.0000,

which is less than 0.05. It clearly rejects the null hypothesis and concludes that the random effects model is more appropriate than the POLS model.

The Hausman test can be further employed to select fixed effects over random effect. The test statistic is $X^2 = 46.32$, which is significant at 1%, meaning the unobservable ROE effect is not correlated with the exogenous variables, and fixed effects model is a more efficient estimator than random effects model. Therefore, the fixed effects model is preferred and the current analysis is solely based on it.

The overall p. value is associated with F value under fixed effects model 0.000, which is less than 0.05 measuring the fitness of model indicating the model is quite good. The explanatory variables reliably predict the dependent variable, which is in this case ROE. The study checks the present of heteroscedasticity within the explanatory variables. The result indicates that the probability value of the chi-square statistic is less than 0.05 implying that the null hypothesis of constant variance can be rejected at 5% level of significance, which is an indication of the presence of heteroscedasticity in the residuals. Therefore, to correct heteroscedasticity, the study applies robust standard error.

The study pursues the serial correlation test to check the presence of serial correlation within the variables. The probability value of f-stat is 0.4739, which is higher than 0.05 and it shows that no serial correlation exists within the studied variables. On the other hand, the study includes the time dummies to in order measure the effect of total interest-bearing debt before and after the adoption of the newly-imposed 33% of firm's total assets as a maximum ratio for conventional debt financing. It also applies time dummies to measure the time effects within the study period.

Table 5.11: Panel data regression results of total Islamic leverage ratios and the performance of *shari'ah*-compliant companies in Malaysia

Model	**Pooled OLS**	**Random Effect**	**Fixed Effect**	**Fixed Effects with Robust Std. Err.: before-after2013-dummy**	**Fixed Effects with Robust Std. Err.: Year dummies**
Variables	ROE	ROE	ROE	ROE	ROE
STID	-0.25799(-0.86)	0.032872(0.11)	-0.00667(-0.02)	-0.0121(-0.05)	-0.00984(0.04)
STIBD	-0.19474(-5.1) ***	-0.11721(-2.71) ***	-0.04351(-0.85)	-0.04207(-0.7)	-0.04239(0.71)
LTID	0.323645(5.11) ***	0.140571(1.86)	-0.09662(-1.03)	-0.09928(-0.83)	-0.09852(0.82)
LTIBD	0.125323(2.51) **	0.063245(1.12)	-0.01747(-0.27)	-0.01769(-0.23)	-0.01633(0.21)
AP	0.000275(0.22)	0.0008(0.70)	0.000846(0.68)	0.000835(1.61)	0.000928(1.75)
CR	0.001802(1.62)	0.002833(1.97) **	0.00465(2.26) **	0.004671(2.18) **	0.004918(2.27) **
AT	0.10189(14.5) ***	0.11156(11.99) ***	0.14158(10.58) ***	0.140581(3.76) ***	0.140714(3.75) ***
GRWTH	-3.94E-06(-1.24)	-6.23E-07(-0,22)	6.24E-07(0,22)	5.85E-07(0.35)	3.42E-07(0.20)
LSIZE	0.007383(5.24) ***	0.007141(3.24) ***	-0.00398(-0.71)	-0.00427(-0.63)	-0.004138(0.61)
dumbefafter20131 (after 2013)	-	-		-0.00496(-0.75)	
dumbefafter20132(before 2013)	-	-		-0.00287(-0.44)	
DUM1					-0.0127(1.17)
DUM2					-0.00396(0.35)
DUM3					0.003091(0.29)
DUM4					0.000423(0.04)
DUM5					0.012602(0.76)
DUM6					-0.01749(1.37)
DUM7					-0.00482(0.66)
Constant	-0.06697(-3.44) ***	-0.0761089(-2.58) ***	0.033242(0.48)	0.0407266(0.46)	0.037855(0.42)
No. of Observations	2,434	2434	2434	2434	2434
R-squared	0.0969				
Prob > F=	28.89(0.000) ***		13.01(0.000) ***	2.08(0.0215) **	2.14(0.0069) ***
Multicollinearity (Mean VIF)	1.07				
Wald chi2(7)Prob>chi2		154.97(0.000) ***	-	-	-
Breusch-Pagan LM test chibar2(01) Prob > chibar2	577.73(0.000) ***		-	-	-
Hausman Test chi2(6)Prob>chi2	-	46.32(0.000) ***		-	-

Hetero (χ^2 – stat)	-	-	1.6e+06(0.000) ***	-	-
Serial Correlation (F-stat)	-	-	0.514(0.4739)		
Time-effect Test-Prob>F	-	-	-	0.09(0.7642)	1.00(0.4275)

1. Figures in the parentheses are t-statistics, except for Prob, Breusch-Pagan LM test, Hausman test, Hetero and Serial Correlation, which are p-values.
2. ** and *** indicate the respective 5% and 1% significance levels.

As reported in Table 5.11, the results of fixed effects show that short-term and long-term interest-bearing debt ratios and short-term and long-term Islamic debt ratios negatively and insignificantly affect *shari'ah*-compliant companies' performance. This negative effect may arise due to the realisation that high debt ratio increases high agency costs and the default rate, which consequently leads to the risk of losing control of the company (Yazdanfar & Öhman, 2014). This is unlikely to occur in this study as the descriptive analysis suggests. Other reasoning is that the use of debt may exceed threshold limit at which a firm can maximise its value. In addition, high growth opportunities suggest that debt financing negatively affects firm performance, while the opposite is true for firms with fewer opportunities (Mishra & Dasgupta, 2019).

The findings were supported by lenka (2017) and Ebaid (2009), which were conducted in the Czech Republic and Egypt respectively, confirming the existence of a negative effect between total debt and firm performance measured by ROE. In contrast, the finding also contradicts Abor's (2005) study in Ghana, which reported a positive effect between total debt and firm performance employing Ordinary Least Squares (OLS).

As the panel data-fixed effects regression's findings indicate that account payable positively affects *shari'ah*-compliant companies' performance, but is not significant. As the descriptive analysis suggests the account payable represents 30% of total financing and it is a liability with zero interest and profit payments. This is an indication that the account payable positively affects *shari'ah*-compliant companies' performance. This finding contradicts what Yazdanfar and Öhman (2015) reported, which is a negative and significant relationship between account payable and firm performance. Even though Yazdanfar and

Öhman's study and the current study have examined separately the account payable and adopted large sample size, the results have ended in two different dimensions. This could be attributed to the fact that the studies were conducted in two different financial regulatory environments and markets.

"Current ratio" as deemed as one of the liquidity proxies in this study is "the ratio of current assets to current liabilities, which measures a firm's ability to meet its short-term financial obligations and operational running costs" (Zeb et al, 2016). The reported panel data fixed effects results in the table show that the current ratio is positively and significantly related to *shari'ah* -compliant firms' performance as in terms of ROE. This positive relationship was supported by the studies of Zainudin et al. (2017), Alina Zeb, Sher Khan and Muhammad Iqbal (2016) and Dawar (2014) in Malaysia, Indonesia and India respectively. This positive effect is a commonly observed relationship, but it may result in negative effect according to Asimakopoulos et al. (2009) in Greek non-financial firms. Therefore, it is worth noting that firm managers have to seek a fine line dealing with liquidity, because in some cases, high ratio of current assets may lead to lower profitability (Asimakopoulos and et al. 2009).

"Asset turnover ratio" (AT) is "an efficient measure. It is an indicator that the assets utilisation in executing the operational activities is efficient, which in turn enhances the performance of the firms (Nurlaela et al., 2019). According to the results reported in Table 5.3, the fixed effects model suggests that asset turnover ratio is positively and significantly related to *shari'ah*-compliant companies' performance measured by ROE as the descriptive analysis suggested, implying that the *shari'ah*-compliant companies have efficiently

managed their assets, which at the end contributes positively to the overall performance level of *shari'ah*-compliant companies. This finding is in line with the study by Nurlaela et al. (2019', which reported similar conclusions in the consumption industry sector's firms in Indonesia.

The fixed effects model indicates that the growth has a positive relationship with *shari'ah*-compliant companies' performance measured by ROE, but it is not significant. The finding also was supported by previous studies (Sheikh & Wang, 2013, Asimakopoulos et al., 2009; and Ahmed & Afza, 2019).

Finally, the finding of fixed effects with robust standard error indicates that the firm size resulted in a negative and insignificant relationship with *shari'ah*-compliant companies' performance measured by ROA. It was supported by the findings of Abor's study (2007) in Ghana and South Africa, which investigated the effect of debt policy on financial performance of SMEs. This finding was also corroborated by some of previous studies.

Finally, Time-effect test probabilities are 0.7642 and 0.4275 under before-after2013 dummy and year effects dummy respectively, which are greater than 0.05 indicating that there is no significant effect for total interest-bearing debt before and after its adoption of 33% criteria of conventional debt in November 2013. It also implies that the null hypothesis that all year's coefficients are jointly significant and therefore, there is no time effects within the study period.

5.3.3.2. ROA is the performance indicator

Model 6 is used to examine short-term interest-bearing debt, long-term interest-bearing debt, short-term Islamic debt and long-term Islamic debt on the performance of constantly listed *shari'ah*-compliant companies in Malaysia using ROA as performance indicator and is constructed below:

$$PERF_{i,t} = \alpha + \beta_1 STIBD_{i,t} + \beta_2 STID_{i,t} + \beta_3 LTIBD_{i,t} + \beta_4 LTID_{i,t} + \beta_5 AP_{i,t} + \beta_6 CR_{i,t} + \beta_7 AT_{i,t} + \beta_8 Growth_{i,t} + \beta_9 Lnsize_{i,t} + \beta_{10} Dummy\ Bef - after\ 2013 + \mu_{i,t} \quad \text{Model (6)}$$

Where:

PERF is return on assets (ROA),

STIBD is short-term interest-bearing debt,

STID is short-term Islamic debt,

LTIBD is long-term interest-bearing debt,

LTIBD is long-term Islamic debt

AP is account payable,

CR is current ratio,

AT is assets turnover,

Growth is firm growth

Lnsize is firm size and

Dummy FRB=a dummy for after implementation if financial ratio benchmark, 1=after implementation and 0=before implementation.

To finalize the suitable model within the three models of panel data, several tests are carried out on model 1. The result of Breusch-Pagan LM test is 0.0000, which is less

than 0.05, thus implying that it rejects the null hypothesis and concludes that the random effects model is more suitable than the POLS model. The Hausman test is conducted to select the fixed effects over random effect. The test statistic is $X^2 = 26.74$ which is significant at 1%, meaning the unobservable ROA effect is not correlated with the exogenous variables, and the fixed effects model offers greater efficiency as an estimator compared to random effects model. Therefore, the fixed effects model is preferred and the analysis is conducted based on the fixed effects model.

The overall p. value associated with F. value under fixed effects model 0.000 measures the fitness of the model and it suggests the model is quite good and the IVs reliably predict the dependent variable, which, in this case is ROA. The study examines the present of heteroscedasticity within the explanatory variables. The result indicates that the probability value of the chi-square statistic is less than 0.05 implying that the null hypothesis of constant variance can be rejected at 5% level of significance, which is an indication of the presence of heteroscedasticity in the residuals. Therefore, to correct heteroscedasticity, the study applies robust standard error. The research pursues the serial correlation test to check the existence of serial correlation within the studied variables. The value of f-stat stands at 0.0148 and it is less than 0.05, indicating that there is a serial correlation within the studied variables. Therefore, the study adopts the fixed effect model with robust standard error to prevent the serial correlation and avoid biased findings. Besides that, the study also examines the time dummies to measure the time effects

Table 5.12: Panel data regression results of short-term and long-term Islamic leverage ratios and the performance of *shari'ah*-compliant companies in Malaysia

Model	**Pooled OLS**	**Random Effect**	**Fixed Effect**	**Fixed Effects Robust Std. Err: before-after2013-dummy**	**Fixed Effects Robust Std. Err.: Year dummies**
Variables	ROA	ROA	ROA	ROA	ROA
STID	-0.11007(-0.45)	0.002237(0.01)	0.071109(0.25)	0.057969(0.46)	0.030803(0.25)
STIBD	-0.14881(-4.75)***	-0.09397(2.65)***	-0.00521(0.11)	-0.0005(-0.01)	0.002161(0.07)
LTID	0.057268(1.1)	0.055191(0.91)	0.02518(0.30)	0.01277(0.29)	0.010607(0.23)
LTIBD	-0.00202(-0.05)	-0.00676(0.15)	-0.03912(0.67)	-0.03641(-0.86)	-0.03579(-0.85)
AP	-0.00023(-0.23)	0.000397(0.40)	0.001195(1.09)	0.001124(1.33)	0.001124(1.33)
CR	0.003755(4.11)***	0.004803(4.29)***	0.007519(4.11)***	0.007565(1.53)	0.007629(1.54)
AT	0.049287(8.55)***	0.053198(7.38)***	0.07404(6.24)***	0.070703(3.26)***	0.069482(3.17)***
GRWTH	-2.63E-06(-1)	-3.32E-06(1.33)	-3.95E-06(1.54)	-4.31E-06(-0.90)	-4.63E-06(0.98)
LSIZE	0.003677(3.18)	0.003506(2.21)**	-0.00262(0.53)	-0.0038(-0.94)	-0.00432(1.03)
dumbefafter20131 (after 2013)				-0.00445(-1.18)	
dumbefafter20132(before 2013)				0.003807(0.55)	
DUM1					-0.01605(1.89)
DUM2					-0.01315(1.58)
DUM3					-0.00585(0.78)
DUM4					-0.00704(1.08)
DUM5					-0.00835(1.38)
DUM6					-0.01307(1.89)
DUM7					0.009113(0.61)
Constant	-0.01824(-1.14)***	-0.0267327(1.24)	0.019219(0.31)	0.0354263(0.71)	0.0493742(0.92)
No. of Observations	2,434	2434	2434	2434	2434
R-squared	0.0449				
Prob > F=	12.65(0.000)***		6.32(0.000)***	2.18(0.0154)**	2.23(0.0047)***

Multicollinearity (Mean VIF)	1.07				
Wald chi2(7) Prob>chi2		79.32(0.000)***			
Breusch-Pagan LM test chibar2(01) Prob > chibar2	183.35(0.000)***				
Hausman Test chi2(6)Prob>chi2		26.74(0.0008)***			
Hetero (χ^2 – stat)			8.3e+06(0.0000)***		
Serial Correlation (F-stat)			6.003(0.0148)**		
Time-effect Test-Prob>F				1.02 (0.3124)	1.06(0.3893)

1. Figures in the parentheses are t-statistics, except for Prob, Breusch-Pagan LM test, Hausman test, Hetero and Serial Correlation, which are p-values.
2. ** and *** indicate the respective 5% and 1% significance levels.

Short-term interest-bearing debt and long-term interest-bearing debt are negatively associated with *shari'ah*-compliant companies' performance, but the negative relationship is insignificant. The result indicates that an increase in short-term and long-term interest-bearing debt ratios cause a decrease in *shari'ah*-compliant companies' performance. The negative effect is due to the fact that firms are experiencing high growth opportunities (Mishra and Dasgupta, 2019). The negative effect acts such a sign that encourages *shari'ah*-compliant firms to use retained earnings as a source of financing instead of debt because of high financing cost (Khasawneh & Dasouqi, 2017).

This fact also is corroborated by the reported average current ratio in Table 5.1 of descriptive analysis, which suggests that the sampled companies have enough internal funds, which make them less inclined to seek external funds, which is debt in this case. This is a quite interesting finding because, the two types of Islamic leverage, i.e., interest-bearing debt ratios and Islamic debt ratios have produced two different effects with two dimensions; positive and negative under ROA as performance measure. Moreover, short-term Islamic debt and long-term Islamic debt resulted in positive and insignificant relationships with firm performance, while its counterpart's outcome proved negative and insignificant under fixed effect model with robust standard error.

This negative effect was supported by some previous studies (Asimakopoulos et al., 2009); Abor, 2007; Sheikh & Wang, 2011), which were conducted in Greek, in Ghana and South Africa and in Pakistan respectively.

The outcomes of fixed effects with robust standard error revealed that Short-term Islamic debt and long-term Islamic debt were positively and statistically insignificant in relation to the performance of *shari'ah*-compliant companies measured

by ROA. This may arise because the total Islamic debt ratio of the *shari'ah*- compliant firms is smaller and below threshold limit at which a firm can maximise its value as the reported descriptive analysis implies. Another reason is that the growth opportunities are the major driver that determines the relationship between debt financing and firm performance (McConnell & Servaes, 1995). Therefore, *shari'ah*-compliant firms have experienced low-growth, in which, the Islamic debt ratios positively affects the performance of *shari'ah*-compliant companies.

As the panel data-fixed effects regression's finding indicates that account payable has a positive effect on *shari'ah*-compliant companies' performance, but is not significant. As the descriptive analysis suggests the account payable represents 30% of total financing and it is liability with zero interest or profit payments. This is an indication that it positively affects *shari'ah* -compliant companies' performance. This finding is in contrast to what Yazdanfar and Öhman (2015) found, which was a negative and significant between account payable and firm performance. Even though Yazdanfar and Öhman's study and the current study have examined account payable separately and used large sample size, but there were in two opposing results. This may be because both studies were conducted in two different financial regulatory environments and markets.

Current ratio is defined as "the ratio of current assets to current liabilities" (Moosa & Li, 2012). It is deemed as a liquidity proxy in this study. It is a liquidity measure that reveals a firm's ability to meet its immediate and short-term financial obligations and operational running costs (Zeb et al., 2016). The reported panel data-fixed effects result in the table shows that the current ratio is positively related to *shari'ah*-compliant companies' performance measured by ROA, but the relationship is

not significant. This positive relationship was supported by Zainudin et al.'s (2017) Study, Alina Zeb, Sher Khan & Muhammad Iqbal's (2016) study, and Dawar's (2014) study in Malaysia, Pakistan, Indonesia and India respectively. On the other hand, the finding is in contrast to Afza and Hussain's (2011) study in Pakistan which reasoned that the economic sector and the growth level are the major factors that lead to two different dimensions (Ando, Matsumoto & Matsumoto, 2017, and lenka, 2017).

Asset turnover ratio (AT) is an efficient measure. It indicates assets utilisation in executing the operational activities is highly efficient, which in turn enhances the performance of the firms (Nurlaela et al., 2019). According to the reported results in table 5.4, the fixed effects model suggests that asset turnover ratio is positively and significantly related to *shari'ah*-compliant companies' performance measured by return on assets as the descriptive analysis suggested, implying that the *shari'ah*-compliant companies have efficiently managed their assets, which at the end contributes positively to the overall performance level of *shari'ah*-compliant companies. This finding is in line with the study by Nurlaela et al. (2019) which reached a similar conclusion in consumption industry firms in Indonesia.

Growth exhibits a negative effect on *shari'ah*-compliant companies' performance measured by ROA, but it is insignificant under fixed effect with robust standard error. The finding was supported by Abor's study (2007), which found that growth has a negative and significant effect based on ROA as performance indicator.

The finding of fixed effects with robust standard error indicates that the firm size resulted in a negative and insignificant relationship with *shari'ah*-compliant companies' performance measured by ROA. It was supported by the findings of Abor's study (2007) in Ghana and South Africa, which investigated the effect of debt policy on

financial performance of SMEs. This finding was also corroborated by some of previous studies.

Finally, the probability of computed F values are 0.3124 and 0.3893, which is greater than 0.05 The result indicates there is no significant effect for total interest-bearing debt before and after its adoption of 33% criteria of conventional debt in November 2013. It also implies that the null hypothesis that all year's' s coefficients are jointly significant and therefore, there is no time effects within the study period.

5.4 The threshold regression models: ROE and ROA

Threshold extends linear regression to allow coefficients to differ across regions. Those regions are identified by a threshold variable being above or below a threshold value. The analysis is based on 305 constantly listed s*hari'ah*-compliant companies on the Main Market of Bursa Malaysia. Total Islamic leverage is the IV and the threshold variable, which contains both total Islamic debt and total interest-bearing debt within the range of equal to or less than 33% of firm's total assets. The study also employs a number of control variables including account payable, current ratio, asset turnover, growth and firm size. Return on equity and return on assets are the DVs and the accounting-based performance measures.

This is to investigate the optimal level of total Islamic leverage for the constantly listed *shariah*-compliant companies in Malaysia at which a *shariah* firm may maximise its performance. Therefore, the study runs two separate threshold regression models with two threshold ratios due to the adoption of two DVs. Table 5.13 presents the findings of both threshold regression models.

Table 5.13: Summary of the findings of both of threshold regressions

Models	**Threshold Regression Model (1)**	**Threshold Regression Model (2)**
Variables	ROE	ROA
REGION1		
TIL	0.007671(.14)	-0.1817(-1.78)
AP	6.88E-05(.05)	-0.00037(-.31)
CR	0.002047(1.74)	0.002682(2.69)***
AT	0.105564(13.24)***	0.041204(5.28)***
GRWTH	-3.93E-06(-1.21)	-3.52E-06(-1.03)
LSIZE	0.007807(4.66)***	0.004923(2.75)***
Constant	-0.08085(-3.55)	-0.01909(-.8)
Single Threshold	$\gamma 1 \leq 24\%$	$\gamma 2 \leq 12\% \leq 12\%$
REGION2		
TIL	0.046454(.82)	-0.03126(-.94)
AP	0.000452(.17)	0.000127(.06)
CR	0.003178(.67)	0.010074(3.76)***
AT	0.045414(3.31)***	0.047992(5.94)***
GROWTH	-9.85E-06(-.34)	-1.76E-06(-.43)
LSIZE	0.010712(4.06)***	0.004147(2.77)***
Constant	-0.09518(-2.12)	-0.04736(-2.02)
Single Threshold	$\gamma 1 > 24\% 2 > 24\%$	$\gamma 2 > 12\% 2 > 12\%$

Under threshold regression model 1, the estimated threshold accounted for 24% and splits the sampled *shariah*-compliant companies into two regions. Region1 corresponds to the portion of the sampled *shariah*-companies in which the total Islamic leverage is either less than or equal to 24%. Region2 corresponds to the portion of the sampled *shariah* companies in which the total Islamic leverage is greater than 24%.

The results of Model 1 indicate that the estimated coefficient of the first region is 0.00767, which is not statistically significant. In the second region, in which the total Islamic leverage ratio is greater than 24%, the estimated coefficient is reported at 0.010712. However, it is also not significant as in the case of the first region. Therefore, the findings indicate that there is no relationship between total Islamic leverage and

shari'ah-compliant companies' performance under both regions of Model 1 implying that there is no threshold ratio at which the shariah firms can maximise its performance.

As the first region of Model 1 reported, the estimated coefficients of asset turnover and firm size are 0.105564 and 0.007807 respectively, which are significant at 1%. On the other hand, the coefficients of asset turnover and firm size stand at 0.045414 and 0.010712 respectively according to the second region's results in Model 1 and both are significant at 1%.

So, the results of threshold regression Model 1 suggest that asset turnover and firm size have positively and significantly be correlated to *shariah*-compliant companies' performance implying that these two DVs are the key predictors of *shar'iah*-compliant companies' performance under both regions of Model 1.

The threshold regression Model 2 suggests that the estimated threshold accounted for 12% and splits the sampled *shariah*-compliant companies into two regions, namely, region 1 and region 2. Region 1 corresponds to the portion of the sampled *shariah* companies in which the total Islamic leverage is less than or equal to 12%. Region2 corresponds to the portion of the sampled *shariah* companies in which the total Islamic leverage is greater than 12%.

The first region's estimated coefficient under Model 2 is -0.1817, which is insignificant. However, the total Islamic leverage ratio is greater than 12% with an estimated coefficient of -0.03126 in the second region. However, it is also not significant as in the case of the first region. Thus, the finding implies that there is no relationship between total Islamic leverage and *shariah*-compliant companies' performance under both regions implying that there is no threshold ratio at which the shariah firms can maximise its performance.

The threshold regression results of Model 2 show that under the first region, the estimated coefficients of current ratio, asset turnover and firm size are 0.002682, 0.041204 and 0.004923 respectively, which are significant at 1%. In contrast, the coefficients of current ratio, asset turnover and firm size stand at 0.010074, 0.047992 and 0.004147 respectively under the second region and they are significant at 1%.

Based on these grounds, the results of threshold regression Model 2 show that current ratio, asset turnover and firm size have positive and significant correlation with *shariah*-compliant companies' performance, implying that they are the key predictors of *shari'ah*-compliant companies' performance under both regions.

This finding states clearly that there is no threshold value, which significantly affects the performance of *shariah*-compliant companies under both models.

The current findings contradict what Ahmad and Abdullah (2013) found, that there is threshold value at 64.33% under the lower regime, which indicates that an additional debt does not lead to add value on the firm's original value. A study by Ahmad and Abdullah (2013) in Malaysia, listed firms used total debt, which measured as total liabilities to total assets, while this study adopted a deep measure, which measures total Islamic leverage as both total interest-bearing debt and total Islamic debt (without other liabilities) to total assets. Another difference is that this study only focused on firms continuously listed as *shariah*- compliant companies, which, as it is known, face a limited conventional debt ratio, while Ahmad and Abdullah's study targeted a broad sample size/the listed firms, which include *shari'ah* and non-*shari'ah* firms, so, the ratio of liability is likely to be much higher, since there is no a ceiling ratio for interest-bearing debt.

5.5 Summary of the results

This is a pioneering study of its kind to measure the effect of total Islamic leverage ratios on the performance of continuously listed *shari'ah*-compliant firms on the Main Market of Bursa Malaysia using separated debt data over the period from 2010 to 2017. Moreover, it also examines separately the impact of total interest-bearing debt and total Islamic debt and long-term interest-bearing debt, long-term Islamic debt, short-term interest-bearing debt and short-term Islamic debt on the performance of continuously listed *shari'ah*-compliant companies in Malaysia. It also investigates the optimal level of total Islamic leverage for continuously listed *shari'ah*-compliant companies in Malaysia at which a *shari'ah* firm may maximise its performance.

The panel data models are applied to achieve the two main objectives of the study, which are to examine the effect of total Islamic leverage and the impact of interest-bearing debt ratios and total Islamic debt ratios on *shari'ah*-compliant companies' performance in Malaysia. The Objective three was addressed in section 5.4.3 of this chapter, which is namely to investigate the optimal level of total Islamic leverage for continuously listed *shariah*-compliant companies in Malaysia at which a *shariah* firm may maximise its performance. The interesting findings were presented, which will be discussed in chapter 6.