Capital Structure and Firm Performance: A Comparative Study of Shariah-Compliant and Non-Shariah-Compliant Firms in Indonesia

Setiawan*

Department of Accounting, Politeknik Negeri Bandung, Bandung, Indonesia

Research article

***Corresponding author:** setiawan@polban.ac.id

Abstract: This study seeks to examine the extent of influence of capital structure towards firm performance in shariah-compliant firms (SCFs) and non-shariah-compliant firms (NSCFs) in Indonesia. Data used are from the companies listed in Indonesian Stock Exchange. For SCFs, it was the companies listed in Jakarta Islamic Index and Sharia Stock Index while NSCFs are companies that not listed there. Data collected are 273 SCFs and 71 NSCFs. Data analysis using Mann Whitney, Panel Fixed Effects Regression and Generalized Methods of Moments. The result of this study shows that debt-financed capital structure in SCFs is smaller than NSCFs. Whereas firm performance in SCFs is higher than NSCFs. Another finding in SCFs is that Debt to Equity Ratio and Debt to Assets Ratio affecting Return on Equity, while Return on Assets only affected by Debt to Assets Ratio. The implication of this finding is that firm performance achievement in SCFs very much depends on its capital structure policy, so that the stakeholders shall be more careful to get into debt.

Keywords: capital structure, firm performance, shariah-compliant firms, non-shariah-compliant firms.

1. Introduction

In finance literature, one of the most relevant factors in explaining firm performance is how the firm set its capital structure policy (Vo & Ellis, 2017). There are a lot of previous studies that find strong relationship between capital structure and firm performance, even today this is still an interesting topic to be discussed. Discussion on capital structure topic had initiated by Modligiani dan Miller by their theory that discuss irrelevant capital structure proposition (Modigliani & Miller, 1958a). Since then, researchers have proposed some development even rebuttal on capital structure theory that stated earlier, that it yielded a lot of either theoretical or empirical research which contradictive and inconsistent with each other between capital structure and financial performance.

One of theories that supports the benefit of capital structure is agency theory initiated by Jensen and Meckling, that debt has an important role in reducing agency cost between manager and owner. Other theory is trade-off theory that encourage optimum capital structure (Myers, 2001). Firm with high profitability rate will certainly try to reduce the tax by increasing its debt ratio, so that the additional debt will reduce the tax. On the other hand, there are theories that contradict the above theories, such as Pecking-order theory which stated that companies tend to choose internal funding as a priority.(Myers & Majluf, 1984a) In

addition to the differences in theory that underlines the thoughts regarding capital structure, there are also many empirical research results, some have found that capital structure has positive effect on firm performance (Degryse et al., 2012; Gungoraydinoglu & Oztekin, 2011), has a negative effect (Huang & Song, 2006; Li et al., 2019; Vo & Ellis, 2017), and there are those that did not find any influence between those two variables.

Most of the studies about the relationship between capital structure and firm performance conducted on conventional companied in developed countries, such as United States of America and Europe (Vo & Ellis, 2017). Whereas, empirical evidence obtained on companied in developing countries have not yet studied, especially with the existence of alternative of shariah capital market in various countries. Shariah capital market opens the opportunity for the companies in it to comply to shariah provisions. Such in Indonesia that has Jakarta Islamic Index (JII) and Indonesia Sharia Stock Index (ISSI). In its relation with capital structure, both shariah stock lists give conditions that companies which shares can be included in shariah category must have total interest-based debt compared with total assets not more than 45%.

Companies which shares get in the JII or ISSI category have differences or limitations than those that did not get in the categories, which in turn will affecting the capital structure decision. Other than that, does the limited capital structure decision not necessarily limit the firm performance? Therefore, it is important and interesting to examine regarding capital structure and firm performance in shariah companies listed in Indonesia Stock Exchange. Additionally, this study is trying to compare the capital structure and performance achievement in shariah-compliant firms and non-shariah-compliant firms (hereafter, SCFs and NSCFs).

2. Literature Review

2.1. Theory of Capital Structure

Capital structure has attracted attention the academic researchers since Modligiani and Miller propose the MM theory which stated that capital structure is irrelevant to firm value in perfect market condition (Modigliani & Miller, 1958b). However, perfect market has never existed in reality, so that MM theory is not applicable. Jensen and Meckling propose agency theory regarding capital structure, and optional capital structure is determined by agency costs which is the result of conflict between owner and manager (Jensen & Meckling, 1976). Further, Jensen implies that funding options fulfilled through debts can reduce available firm cash flow for the manager, so it reduces the agency costs (Jensen, 1986). Stulz explains that debts can prevent the manager to fund investment projects that are not profitable (Stulz, 1990). Several decades ago, study conducted by Hart and Moore proves that funding from debt can play an important role in reducing agency costs occurred between manager and shareholders (Hart & Moore, 1995).

Myers and Majluf propose the trade-off theory, which shows that companies in determining its capital structure conducted through the balance between benefits and costs related to debts, that is trade-off between tax protection benefits and bankruptcy risk (Myers & Majluf, 1984a). This theory implies the positive relationship between capital structure and firm performance (Strebulaev, 2007). On contrary, pecking-order theory argue that companies tend to use internal funding that has the smallest risk, namely through retained earnings first; second is debts, and followed by equity as the last option for funding sources (Myers & Majluf, 1984b). Pecking-order theory shows that capital structure has negative effect on firm performance (Çekrezi, 2013).

2.2. Capital Structure and Firm Performance

Previously conducted theoretical and empirical studies report that there is inconsistent and contradictive relationship between capital structure and firm performance (Li et al., 2019). On one side, many empirical studies show that between capital structure and firm performance lies negative relationship which consistent with pecking-order theory (Chakraborty, 2010; Huang & Song, 2006; Margaritis & Psillaki, 2010). The negative relationship between capital structure and firm performance also proven by the result of previous studies (Li et al., 2019; Vo & Ellis, 2017). Conversely, there are some previous studies that prove that capital structure positively correlated with firm performance which consistent with trade-off theory (Degryse et al., 2012; Gungoraydinoglu & Oztekin, 2011). Trade-off theory explains that positive relationship between capital structure and firm performance occurs due to the profitable companies will have lower financial distress costs. This resulted in funding using debt become cheaper. The result of studies above allows the two ways of relationship between capital structure and firm performance.

This study uses two approaches, first to test the differences of capital structure and firm performance in SCFs and NSCFs. The second is to test the influence of capital structure to firm performance. Therefore, the hypothesis are as follows:

Ha.1 : There are differences in capital structure in SCFs and NSCFs.
Ha.2 : There are differences in firm performance in SCFs and NSCFs.
Hb.1 : There are significant influence of capital structure to Return to Equity in SCFs.
Hb.2 : There are significant influence of capital structure to Return to Equity in NSCFs
Hc.1 : There are significant influence of capital structure to Return to Assets in SCFs.
Hc.2 : There are significant influence of capital structure to Return to Assets in NSCFs

2.3. Control Variables

This study is including firm-specific factors as control variables. As mentioned, that it is included in this study to minimize the bias from the developed specific equation model (Dawar, 2014; Detthamrong et al., 2017). The existence of control variable is not hypothesized. However, technically the relationship between capital structure and firm performance will be different, whether the relationship direction, coefficient amount, and its significance, when the existence or inexistence of other variables, and that is the function of control variables.

Firm-specific factors that placed in control variables in this study consists of firm size and firm age. Size can have influence on firm performance since the difference in operational environment, access to capital market, business diversification, and asymmetrical information (Frank & Goyal, 2003; Sadeghian et al., 2012). Previous study has proven that firm size has positive influence on firm performance (Dawar, 2014; Vo & Ellis, 2017). However, there are studies that proven that firm size negatively affects firm performance (Li et al., 2019).

Older companies will be able to reach profitable economic scale and able to face the modernization demands (Lappalainen & Niskanen, 2012). However, the study from Dawar proves that firm age negatively affects firm performance, this means that younger companies are more able to adapt with the change of competitive products and market factors (Dawar, 2014). The study result from Li, Niskanen and Niskanen concludes that control variable of firm age and firm size have negative effect on firm performance, this shows that younger and smaller companies perform better (Li et al., 2019).

3. Research Method

This study uses secondary data which published by Indonesia Stock Exchange. Population if

this study is all listed companies in Indonesia Stock Exchange. Samples for this study are determined by purposive sampling, as for the criteria used that the companies shall: 1) did not experience delisting during observation period which is 2016 to 2018; 2) has published the financial report for 2016 to 2018; and 3) do not include in financial sector companies (since they have different capital structure policy). After that companies will be divided into 2 groups which are SCFs and NSCFs. Companies that get into each group must be consistent from 2016 to 2018 in such grouping. For the group of SCFs, they must be listed in Jakarta Islamic Index (JII) and Indonesia Sharia Stock Index (ISSI).

Table 1. Definitions of Variables

Variables	Definition	Measure
Dependent variables		
ROE	Return on Equity	Net profits to total equity at the end of year t.
ROA	Return on Assets	Net profits to total assets at the end of year t.
Independent variables		
DER	Debt to Equity	Total debt to total equity at the end of year t.
DAR	Debt to Assets	Total debt to total assets at the end of year t.
Control variables		
Size	Firm Size	The natural logarithm of total assets
Age	Firm Age	Number of years at the end of year t since the company was listing

This study uses three types of variables, consists of: 1) Dependent Variable, which is Firm Performance; 2) Independent Variable, which is Capital Structure; and 3) Control Variable, which is Firm-specific Factors in the form of firm size and firm age. For more details can be seen in table 1.

The data obtained will be tested using descriptive statistic and difference test using Mann-Whitney. After that data will be analyzed with Panel Fixed Effects Regression method and analysis tool used is E-views. To see the robustness of the model formed, it will be tested using Generalized Methods of Moments. As for the model or statistic equation developed for SCFs and NSCFs is as follows:

$$ROE_{it} = €_0 + €_1 DER_{i,t} + €_2 DAR_{i,t} + €_3 SIZE_{i,t} + €_4 AGE_{i,t} + \varepsilon_{i,t} \dots\dots\dots (1)$$
$$ROA_{it} = ¥_0 + ¥_1 DER_{i,t} + ¥_2 DAR_{i,t} + ¥_3 SIZE_{i,t} + ¥_4 AGE_{i,t} + \varepsilon_{i,t} \dots\dots\dots (2)$$

4. Results and Discussion

4.1. Descriptive Statistic and Mann Whitney Test

Based on the result of data collection, the companies that fulfill the sample criteria are 344 companies, consists of 273 SCFs and 71 NSCFs. Observation conducted for 3 years from 2016 to 2018, so that the amount of data analyzed is 1047 pairs of data. Table 2 below shows descriptive statistic for the analyzed data.

Table 2 shows the result of descriptive statistic test and Mann-Whitney difference test of SCFs and NSCFs. In descriptive test, obtained the mean result of ROE and ROA of SCFs are bigger compared with NSCFs. Conversely, the DER and DAR of SCFs are smaller compared with NSCFs. Size and age of NSCFs are bigger than SCFs but the difference is relatively small. Median, maximum value, minimum value, and standard deviation SCFs and NSCFs shows pattern that is not too different with the mean result above.

The difference of variable values between SCFs and NSCFs emphasized with the result

Table 2. Descriptive Statistic and Differences

Variables	Mean		Median		Max		Min		Std. Deviation		Differences	
	SCFs	NSCFs	SCFs	NSCFs	SCFs	NSCFs	SCFs	NSCFs	SCFs	NSCFs	t-Test	Mann Whitney U
ROE	0.0616	-0.0339	0.0593	0.0342	5.4698	2.5545	-2.8345	-10.9898	0.3114	0.9384	-2.2509** (0.0244)	78501.0000
ROA	0.0347	-0.0311	0.0320	0.0026	1.0889	2.1921	-1.8051	-2.0842	0.1214	0.2985	-7.0859* (0.0000)	59764.5000
DER	0.7853	1.3648	0.6979	1.7723	34.0556	94.0997	-110.7679	-270.8668	4.2741	28.9653	-7.1143* (0.000)	59654.5000
DAR	0.4679	1.5427	0.4195	0.7281	11.6669	22.6106	0.0064	0.0340	0.5976	3.3653	-13.9601* (0.0000)	33125.5000
Size	6.4391	6.4830	6.4394	6.4814	8.5375	8.1029	3.3325	3.9754	0.7129	0.7709	-0.8850 (0.3762)	83794.0000
Age	16.8020	17.1174	17.4583	16.7167	39.4111	40.1889	0.2556	0.0000	9.3306	10.6783	-0.5889 (0.5559)	84941.5000

*Significant at 1% level, ** Significant at 5% level, *** Significant at 10% level.*

of difference test using Mann-Whitney. The result shows that: 1) ROE of SCFs significantly bigger by 5% than SCFs; 2) ROA of SCFs significantly bigger by 1% than NSCFs; 3)DER of NSCFs significantly bigger by 1% than SCFs; 4) DAR of NSCFs significantly bigger by 1% than SCFs; 5) there is no significant differences between the size of SCFs and NSCFs; and 6) there is no significant differences between the age of SCFs and NSCFs.

Overall, the mean of debt of SCFs still below NSCFs (especially DAR), however it can be seen that the mean value reach 46.79%. It means that the average of debt composition of SCFs exceeds the applicable requirement limit for SCFs.

4.2. The Influence of Capital Structure to Firm Performance

In this part, it discussed about the empirical founding according to regression model that has been proposed in the beginning. Below in table 3 is the result of fixed effect regression test.

Table 3 presents the result of regression analysis using Fixed Effect model to test the influence of capital structure to firm financial performance on SCFs and SCFs. For equation model 1 on SCFs, shows that DER negatively influenced ROE with coefficient value of -0.0507, and significance rate of 1%. This shows that SCFs with smaller Debt to Equity proportion in their capital structure can achieve higher Return on Equity. However, on the contrary, DAR has positive influence on ROE with coefficient value of 0.1040. This shows that SCFs with bigger Debt to Assets proportion in their capital structure can achieve higher Return on Equity. Capital structure in the form of DER and DAR in the case in NSCFs do not have significant influence on ROE. While for equation model 2 on SCFs, shows that only DAR that has influence on ROA with coefficient value of -0.2310, with significance rate of 1%, and relationship

direction is negative. This shows that SCFs with smaller Debt to Assets proportion in their capital structure can achieve higher Return on Assets.

In the case of SCFs, the influence od capital structure (DER and DAR) to ROE in this study is not in line. This indicates that there is an optimum point to be taken for capital structure policy of SCFs to obtain the optimum ROE. This finding is in line with trade-off theory proposed Myers and Majluf, which shows that companies in determining their capital structure conducted through the balance between tax protection benefits and debt-related bankruptcy costs.(Myers & Majluf, 1984a) While in obtaining large ROA, SCFs must have low DAR composition. This indicates that SCFs are rely more on internal funding for working capital or investment. Aside from that, SCFs shall control the debt policy to not reach 45% from total assets or more. This finding is in line with agency theory proposed by Jensen and Meckling which explains that the option of debt funding can reduce agency costs between manager and shareholders since debts can prevent manager to fund projects that not profitable (Jensen & Meckling, 1976).

Table 3. Panel Fixed Effects Regression

Variables	Return on Equity		Retur non Assets	
	SCFs	NSCFs	SCFs	NSCFs
Constant	-1.9144*	1.4878	0.2655	3.9264*
	(0.0000)	(0.7363)	(0.2341)	(0.0000)
DER	-0.0507	-0.0036	0.0022	-0.0001
	(0.0000)*	(0.1770)	(0.9819)	(0.8462)
DAR	0.1040*	-0.0457	-0.2310*	-0.0061
	(0.0000)	(0.5913)	(0.0000)	(0.7267)
Size	0.3487*	-0.4649	-0.0184	-0.6462*
	(0.0000)	(0.4985)	(0.6174)	(0.0000)
Age	-0.0167**	0.0916	-0.01834	0.0141
	(0.0148)	(0.2993)	(0.9461)	(0.4342)
R-squared	0.8509	0.2379	0.6975	0.6864
Adjusted R-squared	0.7750	0.1624	0.5435	0.5282
F-Statistic	11.2064	0.5943	4.5286	4.0814
Prob(F-Statistic)	0.0000	0.9927	0.0000	0.0000
Firms	273	71	273	71
Observations	819	213	819	213
Estimator	FE	FE	FE	FE

* Significant at 1% level, ** Significant at 5% level, *** Significant at 10% level.

4.3. Generalized Methods of Moments

Generalized Methods of Moments (GMM) is a measurement taken to verify the result of the estimated fixed effect model in previous discussion. According to Chowdhury and Rasid, other than able to resolve the problem faced by fixed effect regression method, GMM is able to fix the problem in the correlation between lagged in dependent variable and the mistakes in independent variable.(Chowdhury & Rasid, 2016) The result of GMM test is as shown in table 4 as follows.

Based on the robustness test using GMM in table 4 above, it is known that the result tends to be stable compared to previous test. In variable of lagged ROE, only DAR that is insignificant for SCFs. Whereas in NSCFs there is influence of DER to lagged ROE. In variable of lagged ROA, all control variables have significant influence in SCFs. While in NSCFs have

the same pattern with previous result.

Table 4. GMM Model Estimation

Variables	Return on Equity		Return on Assets	
	SCFs	NSCFs	SCFs	NSCFs
Constant	-0.2006**	0.2526	-0.5714*	-1.5367*
	(0.0148)	(0.9474)	(0.0000)	(0.0093)
DER	-0.0197*	0.0043***	-0.0006	0.0001
	(0.0000)	(0.0612)	(0.3496)	(0.7772)
DAR	-0.0020	-0.0033	0.2118*	0.0131
	(0.8900)	(0.9646)	(0.0000)	(0.2432)
Size	0.0358*	0.0686	0.0889*	0.2579*
	(0.0038)	(0.9083)	0.0001	(0.0050)
Age	0.0026*	-0.0429	-0.0889***	-0.0111
	(0.0048)	(0.5750)	(0.0876)	(0.3419)
R-squared	0.1178	0.4022	0.8733	0.8348
Adjusted R-squared	0.1135	0.0817	0.8087	0.7462
J-Statistic	0.0000	0.0000	0.0000	0.0000
Firms	273	71	273	71
Observations	819	213	819	213
Estimator	FE	FE	FE	FE

* Significant at 1% level, ** Significant at 5% level, *** Significant at 10% level.

5. Conclusions

The result of Mann-Whitney test reveals that debts in SCFs is smaller than NSCFs, then firm performance in SCFs is higher than NSCFs. While the result of Panel Fixed Effects Regression test finds that DER and DAR in SCFs can affect ROE, while ROA only affected by DAR. In NSCFs, capital structure does not influence firm performance (either DER or DAR).

This study result shows that firm performance achievement in SCFs very much depends on its capital structure policy. Therefore, it is highly recommended for policy makers to be more careful to decide on the capital structure policies of the company that related to the amount of debt to fund the working capital or investment.

References

Çekrezi, A. (2013). Impact of Firm Level Factors on Capital. *European Journal of Sustainable Development*, *2*(4), 135–148.

Chakraborty, I. (2010). Capital structure in an emerging stock market: The case of India. *Research in International Business and Finance*, *24*(3), 295–314.

Chowdhury, M. A. F., & Rasid, M. E. S. M. (2016). Determinants of Performance of Islamic Banks in GCC Countries: Dynamic GMM Approach. In D. S. Mutum, M. Mohsin Butt, & M. Rashid (Eds.), *Advances in Islamic Finance, Marketing, and Management* (pp. 49–80). Emerald Group Publishing Limited. https://doi.org/10.1108/978-1-78635-899-820161005

Dawar, V. (2014). Agency theory, capital structure and firm performance: Some Indian evidence. *Managerial Finance*, *40*(12), 1190–1206.

Degryse, H., de Goeij, P., & Kappert, P. (2012). The impact of firm and industry characteristics on small firms' capital structure. *Small Business Economics*, *38*(4), 431–447.

https://doi.org/10.1007/s11187-010-9281-8

Detthamrong, U., Chancharat, N., & Vithessonthi, C. (2017). Corporate governance, capital structure and firm performance: Evidence from Thailand. *Research in International Business and Finance*, *42*, 689–709. https://doi.org/10.1016/j.ribaf.2017.07.011

Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of Financial Economics*, *67*(2), 217–248. https://doi.org/10.1016/S0304-405X(02)00252-0

Gungoraydinoglu, A., & Oztekin, O. (2011). Firm- and country-level determinants of corporate leverage: Some new international evidence. *Journal of Corporate Finance*, *17*(5), 1457–1474.

Hart, O., & Moore, J. (1995). Debt and Seniority: An Analysis of the Role of Hard Claims in Constraining Management. *American Economic Review*, *85*(3), 567–585.

Huang, G., & Song, F. M. (2006). The determinants of capital structure: Evidence from China. *China Economic Review*, *17*(1), 14–36.

Jensen, M. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review*, *76*(2), 323–329. https://doi.org/10.2307/1818789

Jensen, M., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360.

Lappalainen, J., & Niskanen, M. (2012). Financial performance of SMEs: Impact of ownership structure and board composition. *Management Research Review*, *35*(11), 1088–1108. https://doi.org/10.1108/01409171211276954

Li, K., Niskanen, J., & Niskanen, M. (2019). Capital structure and firm performance in European SMEs. *Managerial Finance*, *45*(5), 582–601. https://doi.org/10.1108/MF-01-2017-0018

Margaritis, D., & Psillaki, M. (2010). Capital structure, equity ownership and firm performance. *Journal of Banking & Finance*, *34*(3), 621–632.

Modigliani, F., & Miller, M. H. (1958a). The Cost of Capital, Corporation Finance, and the Theory of Investment. *The American Economic Review*, *48*(3), 261–297. https://doi.org/10.1136/bmj.2.3594.952

Modigliani, F., & Miller, M. H. (1958b). The Cost of Capital, Corporation Finance, and the Theory of Investment. *The American Economic Review*, *48*(3), 261–297. https://doi.org/10.1136/bmj.2.3594.952

Myers, S. C. (2001). Capital Structure. *Journal of Economic Perspectives*, *15*(2), 81–102. https://doi.org/10.1257/jep.15.2.81

Myers, S. C., & Majluf, N. S. (1984a). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Myers, S. C., & Majluf, N. S. (1984b). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Sadeghian, N. S., Latifi, M. M., Soroush, S., & Aghabagher, Z. T. (2012). Debt Policy and Corporate Performance: Empirical Evidence from Tehran Stock Exchange Companies. *International Journal of Economics and Finance*, *4*(11), 217–224. https://doi.org/10.5539/ijef.v4n11p217

Strebulaev, I. (2007). Do Tests of Capital Structure Theory Mean What They Say? *Journal of Finance*, *62*(4), 1747–1787.

Stulz, RenéM. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics*, *26*(1), 3–27. https://doi.org/10.1016/0304-405X(90)90011-N

Vo, X. V., & Ellis, C. (2017). An empirical investigation of capital structure and firm value in Vietnam. *Finance Research Letters*, *22*, 90–94. https://doi.org/10.1016/j.frl.2016.10.014