

CAPITAL STRUCTURE, OWNERSHIP CONCENTRATION AND FIRM PERFORMANCE: EVIDENCE OF REVERSE CAUSALITY HYPOTHESIS IN ASEAN COUNTRIES

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Abstract

This study aims to examine effect of capital structure and ownership structure on firm performance. In addition, this study also examines the existence of reverse causality of the relation between capital structure and performance of firms in three ASEAN countries. We test the reverse causality hypothesis of firm performance to capital structure, which is viewed in light of two competing hypotheses: the efficiency-risk hypothesis and franchise-value hypothesis. In general, the results support the agency-cost hypothesis, and confirm reverse causality hypothesis in in the sample firms, through the existence of entrenchment effect in firms with the lowest and highest level of ownership concentration and the franchise value hypothesis.

Keywords: Capital Structure, Ownership Structure, Firm Performance, Reverse Causality Hypothesis, ASEAN

JEL Classification: G3, L6, O32

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1 Introduction

Corporate ownership structures are commonly divided into two types of ownership, i.e: concentrated and dispersed ownership. In concentrated ownership, firms are generally controlled by its founders such as a family, an institution, or by other types of ownership. Meanwhile, dispersed firm are commonly manage by professional managers and controlled by individual investors (Cadbury, 1992). Scholarly literature on the relation between corporate governance and capital structure has been conducted to account for various issues. For example, Cespedes et al (2010) and Munisi et al (2014) examine the relationship between ownership concentration with capital structure respectively. In addition, Sun et al (2015) examine the relation between firm's ownership and financing decision, while Wang (2005), King and Santor (2008), and Xiaonian and Wang (1999) tested the relationship with firm's performance.

A well-known theory of the relationship between firm ownership structure and firm's performance is known as agency theory of Jensen and Meckling (1976) has been applied in many studies. They describe the relationship as a contract between a principal (shareholders) and agent (management) to conduct managerial activities, including delegation of authority in the decision-making process. Although this relationship may have the potential for conflict of interest between the two parties, the studies also suggest that it may enhance firm performance in the

case of an owner- manager (Shleifer and Vishny, 1986). This hypothesis supported by many empirical studies, like Demsetz and Lehn (1985). They concluded that firms with ownership dispersion would give more value to the stakeholders than those with more concentrated ownership. However, some studies did not support the previous findings. For example, King and Santor (2007) found ownership concentration does not significantly affect firm's performance, while other study by Margaritis and Psilaki (2010) suggest that firms with a concentrated by family ownership are found to have better performance than non-family firms In addition, Romano, et al., (2000 also found that family ownership significantly related to firm's debt. These inconclusive results bring question on the impact of ownership on firms' performance after controlling some environmental factors.

The choice of ownership structure cannot be separated from its capital structure, since both of them related to agency problem between owner and manager. In this case, managers will decide to use less leverage to reduce the possibility of bankruptcy, but to avoid over-investment, managers may decide to increase leverage in the case of excess cash flows (Jensen and Meckling, 1976; Fama, 1980; and Grossman and Hart, 1982). A firm's capital structure will significantly affect its performance, as suggested by Simerly and Li (2000). The influence of capital structure, which is measured as the ratio of debt to equity depends on the level of dynamicity of the

firm's environment. For example, in a less dynamic environment, leverage has a positive impact on a firm's performance as in Park and Jang (2013) and Masulis (1983) who found a positive relationship between debt and firm's performance. However, in a very dynamic environment, leverage may have a negative impact.

The impact of leverage on a firm's performance is explained by two hypotheses: the *agency-cost hypothesis* and *reverse causality hypothesis*, which is tested through the *efficiency-risk hypothesis* and the *franchise value hypothesis*. A study by Berger and Udell (2006) suggests that efficient firms will have better performance and generate higher returns. Therefore, they may have a better position to replace equity shares with debt in their capital structure. Based on the *efficiency-risk hypothesis*, to lessen the possibility of bankruptcy and financial distress, firms with better performance will choose a higher leverage ratio. In contrast, the *franchise-value hypothesis* suggests that firms with better performance will choose a lower leverage ratio to protect their future income. This hypothesis is supported by Berger and Udell (2006) and Demsetz (1973), who found that efficient firms increase their efficiency by lowering the ratio of debt to equity. In addition, lower leverage is needed to sustain the *economic rents* or *franchise value* to avoid liquidation. A recent study by Margaritis and Psillaki (2010) concluded that leverage has a positive impact on firm efficiency, and vice versa. Furthermore, they also found that firms

with family ownership were more efficient than firms with other types of ownership. However, there is no significant influence of types of ownership on capital structure. Based on those previous studies, it is important that firms manage its owned capital structure based on good corporate governance in order to achieve high efficiency.

Indonesia, Malaysia and Singapore are three big members of the original ASEAN community. The main goal of the ASEAN community establishment is to promote and have an effective collaboration in economics, social and cultural aspects of the member countries. To achieve the goal, they agree to collaborate effectively by utilizing their capacities in agriculture, trade as well as the communication facilities. The collaboration of these member countries has achieved a remarkable economic collaboration. For example, ASEAN members share in trade was increasing from 17 percent in 1993 to 25 percent in 2013 (ACIF, 2014). As indicated in the Table 1 below, intra-trade between ASEAN community members conducted by the three countries except for Singapore were higher than trade to other countries. Singapore, is known as a the best practice of corporate governance in Asia, which use as benchmark for market discipline, transparency, independency, responsibility and fairness (CLSA, Corporate Governance Rating in South Asia, 2001). On the other hand, Indonesia as an emerging economy lies on the last position, while Malaysia on the average, albeit both Indonesia and Malaysia are emerging economies.

Table 1. Trade activities of sample countries

Countries	Intra-ASEAN	Others
	Import	Export
Indonesia	29	18.5
Malaysia	26.7	18.8
Singapore	20.9	27.4

Source: ACIF (2014)

In order to enhance intra – ASEAN trade between the sample countries and other members as well as other countries in the world, they need to have a good practice of corporate governance. This study, therefore aims to examine the impact of capital structure and ownership structure on firms' performance in countries with different level of corporate governance levels after controlling for firms' specific factors. In addition, to enrich the results we choose three different industries which have high growth rate such as *Food & Beverages*, *Personal Goods*, and *Telecommunication*.

This study contributes to the existing literature of relationship between corporate governance and firm performance in two ways. Firstly, this study focuses on ASEAN countries which actively doing intra-country trade activities, but have different levels of

corporate governance practices. This condition is interesting to be observed, whether the different practice different corporate governance between the sample countries will have different impact in the relationship between capital structure and performance. Secondly, this study examines the reverse causality hypothesis of three high growing industries.

To examine the impact of leverage on performance and vice versa, this study examine the existence of the *reverse causality hypothesis* which is can also be described through *efficiency-risk hypothesis* and the *franchise value hypothesis* of the three ASEAN countries using panel data of 215 firms from 2008 to 2011. Overall, results of the study show a support for the *reverse causality hypothesis*, which show a positive and significant relation between firm's

leverage and performance and between romance and leverage. However, when we take into account country's effect on the sample, we found that both Indonesian and Malaysian firms have significant effect in lowering efficiency of the sample firm's entire observation periods, which implies that Singaporean firms are more efficient than those of Indonesian and Malaysian. We also taking into account the effect of industry, and found that food and beverages and personal goods will lower the efficiency of the industry.

The paper is organised as follows: section 2 provides a brief review of literature on the relation between firm capital structure, ownership structure and firm performance; section 3 discusses data and model specification; section 4 analyses all empirical results from model estimation, and section 5 presents the conclusions.

2 Determinants of capital structure and firm performance

The free-cash flow theory suggests that in general, firms with large excess cash flows tend to be inefficient because the managers may use the cash to invest in unprofitable projects. In addition, management may also increase the dividend payment to increase shareholder value. This strategy is used to lessen unprofitable investments. Furthermore, the theory also suggests that using more leverage to increase interest expenses and principal payments may be applied when the firm has excess free cash flow. In conclusion, management may increase the use of leverage to increase firm performance in the view of shareholders. Jensen and Meckling (1976) suggest that higher leverage will lower agency costs and increase efficiency and firm performance. In addition, a firm's performance is also affected by factors such as profitability, size, asset structure, growth, ownership structure and types of ownership (Margaritis and Psillaki, 2010), *leverage* (Masulis, 1983; Harris and Raviv, 1991; Rajan and Zingales, 1995; Park and Jang, 2013; Fosu, 2013), and well as competition (Fosu, 2013).

Chen and Strange (2005) suggested that a firm's capital structure is affected by profitability, size, risk and sales growth. They also found that profitability is negatively related to leverage, which is consistent with the *pecking order theory*. This indicates that firms with higher profitability will have more internal funds, and therefore will tend to use less debt (Myers, 1977). Other studies by Demsetz and Lehn (1985), Titman and Wessel (1988) and Booth (2001) show that leverage is negatively affected by business risk. Diamond (1991) found that large firms have more debt in their capital structure. Furthermore, Chen Yang et al. (2010) show that from the capital structure perspective, high growth firms have a high possibility

of an *underinvestment problem*; therefore, they tend to have a lower debt ratio.

2.1 Agency problems, capital structure and firm performance

Stiglitz (1992) found that the existence of imperfect information in the relationship between managers as agent and owner as a principal may cause agency problems. Furthermore, Reihelstein (1992) suggested that agency problems occur when the agent who manages the firm does not receive a sufficient reward from the principal.

Agency problems caused by managers' dissatisfaction may take place in the form of capital structure strategy. Jensen and Meckling (1976), Fama (1980), and Grossman and Hart (1992) suggested that management will allocate low leverage in the firm's capital structure to avoid the risk of bankruptcy. However, the firm will set high leverage when the owner fears the firm's over-investment (Jensen, 1986). These problems are consistent with agency theory suggested by Jensen and Meckling (1976) and Stiglitz (1992) on the conflict between agent and principal. According to Reichelstein (1992), such conflict may occur because both managers and owners have different personal interests. Therefore, the owners may reduce such conflict by monitoring the managers to act on behalf of their interests.

Agency problems may also be caused by the ownership structure, namely, ownership concentration and ownership composition. There are two different views on the effect of the ownership concentration on leverage. For example, Stulz (1990) found that firms with high ownership concentration tended to have a high level of leverage to reduce the possibility of take-over risk by the owners. In contrast, Holderness and Sheehan (1988) suggested that managers in firms with high ownership concentration tend to choose low leverage in their capital structure. Morck, Shleifer and Vishny (1988) found that ownership concentration less than or equal to 5 % with *alignment-interest effect* will improve firm performance. In addition, the existence of the *entrenchment effect* at 5-25 % concentration will decrease performance. However, performance will rise when the ownership concentration is above 25 % due to the weakening of the entrenchment effect.

The composition of firm ownership is the classification of the types of owners and how they control the firm. Claessen et al. (1992) suggested that a firm's owners can be classified into individual shareholders or family, government and institutions. If the majority of shareholders are family or a group of families, they will focus on the benefits and profitability of the firm. In contrast, when the majority shareholders are institutions, then they will only pursue the firm's profits. Meanwhile, if the firm is owned by owner-managers, then managers may adjust

their interest to align with other shareholders (Jensen and Meckling, 1976).

A firm's performance is an important factor that aligns the interest of owners and managers because it can be used as a mechanism to reduce the agency problem between managers and shareholders (See also Agrawal and Knoeber, 1996; Bebchuk and Fried, 2003; and Core et al., 1999). According to Ross et al. (2008), the *free cash flow theory* postulates that firms with lower *free cash flows* tend to invest in profitable assets and are more efficient than those with higher *free cash flows*. In addition, there is a potential agency conflict between owners and creditors in relation to bankruptcy risk due to *underinvestment* or *debt overhang*. This condition indicates that debt has a negative impact on the firm due to inefficiency in decision making (Myers, 1977).

According to the *efficiency-risk hypothesis* and *franchise-value hypothesis*, a firm's performance is also affected by the choice of capital structure. The *efficiency-risk hypothesis* suggests that firms with better performance will choose high leverage in their capital structure to reduce bankruptcy risk and problems caused by agency costs. In contrast, the *franchise-value hypothesis* proposes a lower level of leverage to assure a high level of efficiency and to protect the firm's economic rents or its franchise value from liquidation (Berger and Bonaccorsi di Patti, 2006). The effect of a firm's performance on its capital structure and vice versa is known as *reverse causality hypotheses*.

2.2 Benchmarking firm performance

There are a variety of performance measurements. The common method used to evaluate firm performance is financial measures. Financial measures are widely used and are mandated in evaluation literature to evaluate firms' financial performance, as distinct from production efficiency. Sharma (2001) suggested the main reasons for performance measurement. The reasons are relating to the issue of time value of money, economics condition, as well as administration and management issues. A commonly used tool to assess firm financial performance is financial ratio analysis. Ratios provide tools for managing information to analyse a firm's financial condition and performance (Shapiro et al. (2000; 36)). These can provide a profile of a firm's economic characteristics, competitive strategies, operating, financial, and investment decisions in relation to other firms or to its industry (White et al. (1998; 41)). The specific financial ratios that are used depend on the assessment purposes. For example, a study that aims to measure the quality of management in terms of efficient use of working capital may use turnover ratios, such as sales efficiency, and inventory turnover (Harper (2002) and Parker and Hartley (1991)).

However, there are also limitations and problems in the use and implementation of financial ratios as performance measures. First, problems may occur in implementing the ratios to analyse a firm's financial performance. For example, sometimes it is not easy to recognise meaningful industry averages for the industry to which a firm belongs. Therefore, the firm must decide on its own peer firm and create a standard with no reference to industry norms. In addition, if inflation has negatively impacted a firm's balance sheet, financial ratios generated from these numbers must be interpreted with care. Seasonal factors can also distort the ratio analysis; therefore, balance sheet entries and their corresponding ratios will vary with the time of year when the statements are prepared (Brigham and Gapenski (1990), and Keown et al. (1996)).

Other measures that increasingly are applied to evaluate firms' performance are production efficiency measures of data envelopment analysis (DEA), which is used to circumvent the inadequacy of measuring financial performance. This approach provides a tool for measuring and evaluating a firm's performance beyond those available from accounting ratios measures. DEA is used to measure a firm's efficiency by taking into account multiple input factors required to generate the output produced by a firm. This ratio is thought to be superior to the common efficiency measures from financial ratios (such as labour contribution to sales), which often address partial efficiency without controlling for the effect of other inputs such as capital efficiency.

This study measures a firm's performance by its efficiency in using its sources to produce outputs, by applying a non-parametric linear programming technique of *data envelopment analysis* (DEA). The firm's efficiency is measured by comparing output produced to the input used to generate the outputs. Higher efficiency indicates that the firm can reduce the use of input to the minimum required to produce a certain level of outputs (Coelli, et al., 2005).

3 Data and model specification

3.1 Data and sample selection

The sample includes all of the firms in three industries, i.e., *Food & Beverages* (*Food Producers* and *Beverages*), *Personal Goods* and *Telecommunication* (*Fixed Line* and *Mobile Telecommunication*) of three ASEAN countries, Indonesia, Malaysia and Singapore. Data were taken from the Thomson Reuters database for the period from 2008 to 2011 and represent a panel total of 215 firms. These industries were chosen based on their relatively high growth rate. We exclude financial firms from the sample due to their special asset composition, stringent government regulation and the uniqueness of the industry. To avoid the effect of

country and currency exchange rate, all data has been adjusted to US dollar.

3.2 Empirical models

To obtain answers to the research questions, this study was conducted in two steps. In the first step, the firms' performance is measured by technical efficiency of each firm and calculated by applying non-parametric DEA methods. In the second step, two empirical models were employed. The first model is used to test the existence of the *agency cost hypothesis* which investigates factors affected firms' efficiency performance. Furthermore, the second model is employed to test the presence of the *reverse causality hypothesis* that can be tested by estimating by the *efficiency-risk hypothesis* and *franchise-value hypothesis*.

The first step in this study is to measure firm's performance by measuring its efficiency using Data envelopment analysis (DEA). DEA is a non-parametric approach to measure firms' efficiency by incorporating the contribution of input factors to produce outputs in a production process. It involves the use of linear programming methods to construct a non-parametric piece-wise (frontier) over the data. It utilizes data as inputs and output quantities of a group of firms or decision making units (DMUs) to construct a piece-wise frontier over the data points. This frontier is constructed by the solution of a sequence of linear programming problems, one for each DMU in the sample. Efficiency scores are then estimated relative to this frontier, which corresponds to an efficient technology. The benefits of employing this approach in the calculation of firm's efficiency are that one's do

not need to specify either the structure of production function or the weights for outputs and inputs used. In addition, this approach can take into account the multiple inputs used to produce a single or multiple outputs (Coelli, et al., 1995). DEA can be estimated either input-oriented or output-oriented. In the input-oriented, the DEA approach defines the frontier by seeking for the maximum possible reduction in input usage, with output held constant, vice versa. This study used sales as output variable and fixed assets and number of employees as inputs. To measure the efficiency score, this study used the variable returns to scale (VRS) to accommodate the difference characteristics of the industries, as well of the countries (Coelli, et al., 2005). The input orientation DEA is as follows:

$$\begin{aligned} \min_{\lambda, x_i^*} & W_i X_i \\ \text{st} & -y_i + Y\lambda \geq 0, \\ & x_i^* - X\lambda \geq 0 \\ & N1' \lambda = 1 \\ & \lambda \geq 0, \end{aligned}$$

where w_i is a vector of input prices for the i -th firm and x_i^* is the cost minimizing vector of input quantities for the i -th firm, given the input prices w_i and the output quantity y_i .

Model 1 is used to test the effect of leverage on firm's performance after controlling firm-specific factors, such as profitability, company size, assets structure, growth, ownership concentration, and types of ownership on firm's performance measured by efficiency. By estimating the model, we would like to investigate the existence of *agency cost hypothesis*, *under investment* and *irrelevance theory* of capital structure. The model is as follows:

$$EFF_{i,t} = a_0 + a_1 LEV_{i,t-1} + a_2 LEV_{i,t-1}^2 + a_3 Z_{1i,t-1} + u_{i,t} \quad (1)$$

where EFF is the performance of firm i at time t . In this model, EFF is influenced by independent variables such as LEV measured as long-term debt divided by total company assets. The *agency cost hypothesis* argues that the relation between a firm's leverage and its efficiency is expected to be positive. However, when the leverage reaches a certain (sufficient) debt level (LEV^2), the effect may turn negative (non-linear) due to growth opportunity, which is known as under investment or debt overhang theory (Myers, 1977; Jensen, 1986; and McConnell and Servaes, 1995), and irrelevance theory of capital structure as suggested by Modigliani and Miller (1958). Z_1 is a vector of control variables, including profitability (Measured by EBIT/Total assets), company size (ln of total assets), assets structure/tangibility (ratio of fixed assets to total

assets), growth (% sales growth), ownership concentration and company's type of ownership (Rajan and Zingales, 1995).

The efficiency score is estimated using the *Data Envelopment Analysis* (DEA) approach, which computes the efficiency of a firm relative to other firms in the sample. The efficiency value entered in the equation of model (1) is obtained from

$$\frac{1}{(2-DEA \text{ score})}$$

The second model was applied to examine the *reverse causality hypothesis*, which is the effect of firms' performance on leverage. The effect is measured by *testing efficiency-risk hypothesis* and *franchise value hypothesis*. The model is as follows.

$$LEV_{i,t} = \beta_0 + \beta_1 EFF_{i,t-1} + \beta_2 Z_{2i,t-1} + v_{i,t} \quad (2)$$

In this equation, the dependent variable is leverage (LEV) and the independent variables are company efficiency (EFF) and control variables. As discussed earlier, the *efficiency-risk hypothesis* suggests that a firm's efficiency may positively affect its leverage (Berger and Bonaccorsi Di Patti, 2006 and Margaritis and Psilaki, 2010) whereas the *franchise-value hypothesis* suggests a negative impact (Demsetz, 1973, and Berger and Bonaccorsi Di Patti, 2006). The control variable (Z_2) used in the second equation corresponds to Z_1 in the first equation.

This study also examines the effect of ownership concentration on firm's performance. As suggested by theory and previous studies, the effect might be positive that indicates incentive alignment effect (Grossman and Hart, 1982; Jiraporn and Gleason, 2007, and Margaritis and Psilaki, 2010); negative effect which implies entrenchment effect as suggested by Jensen and Meckling (1976), Demsetz (1983), Mork et al and Friend and Lang (1988). Furthermore, the effect may also zero (Zero net effect) as suggested by Demsetz and Lehn (1985), John and John (1993) and Demsetz and Vilalunga (2001). The ownership concentration was determined by comparing the share of the largest shareholders and total shares, and divided into three categories: (1) low concentration (OWN1), where the largest shareholder owns less than 25 % of total shares; (2) medium concentration (OWN2) when the largest ownership stake is 25 % to 50 % and high concentration (OWN3), indicating the

largest ownership when the largest ownership stakes is more than 50 %. It is expected that various ownership concentrations will have different influences on a firm's efficiency performance. In addition, this study also examines the effect of types of family ownership on firm's performance to test the above relationships. It categorised firms as family-owned and non-family-owned. Following Arifin (2003), a firm is also categorised as family-owned when the largest owner among individual or listed firms is a member of the firm's founding family. This classification is not applied to foreign companies and financial institution.

4 Results

4.1 Descriptive statistic

Table 1 shows the summary statistics for the main variables in the study. Averaging all observations, the mean efficiency is 0.747, and its sample variation is relatively small at 18.78 per cent. The mean value for leverage is 0.096, and its sample variation is smaller (0.1285). Growth and profitability averages are 0.152 and 0.092, respectively. The average size for the sample is 14.567 with relatively small dispersion. The mean value for tangibility is 0.612. The sample variation is substantial, as indicated by large standard deviations. The mean value for ownership concentration is 0.408 with relatively small variation. All series are normally distributed.

Table 1. Descriptive statistics for the variables

	Efisiensi	Leverage	Growth	Profitability	Size	Tangibility	Ownership Concentration
Mean	0.7467	0.0959	0.1517	0.0922	14.5672	0.6118	0.4083
Median	0.6732	0.0446	0.1033	0.0867	13.0711	0.6344	0.3759
Maximum	1.0000	0.6958	3.4165	1.6963	24.9522	2.5619	0.9799
Minimum	0.5048	0.0000	-0.7173	-0.3930	8.1176	0.0056	0.0300
Std. Dev.	0.1878	0.1285	0.3326	0.1408	3.9697	0.2819	0.1940
Skewness	0.3242	1.8508	3.8063	3.3901	0.9283	0.6307	0.6484
Kurtosis	1.4506	6.6656	30.5741	42.0144	2.6553	7.6108	2.9323
Obs	430	430	430	430	430	430	430

4.2 Results

The analysis of results from the estimation of the two estimation models using a random effect model (REM) will be divided into two parts. The first part shows results from model 1: the effect of leverage and other firm-specific factors, such as profitability, company size, asset structure, growth, ownership concentration and types of ownership on efficiency performance. The second model examines the *reverse causality hypothesis* of a firm's efficiency on its leverage. Furthermore, the analysis of each estimation model is presented in terms of (1) a panel of all firms

in all industries, (2) each country and all industries and (3) each industry for all countries.

4.2.1 The effect of leverage on firm's performance (The agency-cost hypothesis)

The effect of leverage on firm's performance is estimates by testing *agency cost* hypothesis, underinvestment, and irrelevance theory of capital structure. Table 2 reports the estimates of the efficiency model (Equation 1) for all firms in three industry categories from three countries.

Table 2. The effects of leverage, and other firm's specific factors on efficiency performance

Variable	ALL	Indonesia	Malaysia	Singapore	F&B	PG	Telecommunication
C	1.599718*	4.966621***	3.457182***	2.988238***	1.297091***	1.917277***	0.887
Lev	0.094608*	-0.116232***	0.010938	0.234356*	0.447894***	-0.112495	-0.087
Lev^2	"-0.056912*	0.278219***	-0.056768	0.51093	0.076001***	0.704268	0.186
Own-Conc 1	-0.156171**	-0.339981	-0.516257**	0.10081	-0.066114	-0.802153***	0.345
Own-Conc 2	0.092322***	0.023708	0.11574***	0.119447*	0.05298***	0.131767***	0.294
Own-Conc 3	-0.022594	0.021232	0.111909***	-0.172893***	-0.029508	-0.222739***	-0.091
Family	0.012993	-0.032503	0.048897***	-0.030936	0.006185	-0.043146***	0.041
growth	0.033126***	-0.021194*	0.033915***	0.104974***	0.022856***	0.105817***	-0.038
profitability	-0.049153*	-0.078725**	-0.011468	0.026619	-0.061282	0.047063	0.221
Size	-0.084596***	-0.41519***	-0.401774***	-0.317976***	-0.06883***	-0.094173***	-0.006
Size^2	0.003023***	0.010717***	0.016262***	0.011296***	0.002122**	0.002634***	0.000
Tangibility	-0.186217***	-0.238469**	-0.345813***	-0.085514	-0.21664***	-0.1451	0.088
Tangibility^2	0.077314***	0.166324***	0.182634***	0.012203	0.102441***	0.055146	-0.088
Indonesia	-0.272044***				-0.536138***	-0.174817***	-0.007
Malaysia	-0.057459*				-0.332813	-0.086385***	-0.109
F&B	-0.178795***	-0.154099***	-0.103365***	-0.351546			
PG	-0.035436*	-0.120325***	0.074153***	0.180687			
Adjusted R^2	0.191719	0.185416	0.253772	0.09589	0.042037	0.185095	-0.072
Fstat(prob)	0	0.003022	0	0.04825	0.032292	0.001	0.648

*Significant at 10 per cent level

** Significant at 5 per cent level

*** Significant at 1 per cent level

Results in column 2 show overall, firm's leverage has a positive impact on its efficiency. When examine the effect separately by country, the impact is significant in Singapore (at 1 per cent level) and in Indonesia with 10 per cent level. Industrial analysis shows that the efficiency performance of the firms in the Food & Beverages industry is the most affected by level of leverage. This indicates a support for the *agency cost hypothesis* that the use of debt in firm's capital structure will have a positive impact on performance. This implies that firms with high debt will increase its efficiency in order to reduce agency cost (Grossman and Hart, 1982). However, when a firm's leverage increases and passes a certain limit, then its leverage impact will be inversely proportional to its efficiency. This indicates a non-linearity due to conflict of interest between debt holders and shareholders which creates underinvestment or investing in low risk assets as suggested by Myers (1977).

When investigating the effect of ownership concentration on firm's performance, we found negative and significant relationship when largest shareholder owns less than 25 % of total shares (Own-Conc1). This indicates that when ownership is more dispersed, the control is weak, which leads to low performance. Furthermore, it also indicates the presence of agency cost in the sample firms as results of poor alignment and managerial entrenchment between management incentives and shareholder interest in the firms with low level ownership. This findings in line with Chen et al., (2005); Demsetz and

Lehn (1985), and Himmelberg et al., (1999) who examine the relationship of ownership concentration and firms' performance of Hong Kong firms. This finding is consistent with Jensen and Meckling (1976), and in line with Friend and Lang (1988), Mork et al (1988), and Demsetz (1983). However, when the ownership increases to 25%-50%, the effect is positive due to increasing shareholders' control. This can be explained by *incentive alignment effect* as suggested by Demsetz (1983) and Mork et al (1988). The theory stated that a positive effect related to the willingness of the shareholder to spend money as monitoring cost to control managerial performance. However, when the firm's ownership is concentrated above 50 per cent, then there will be no significant effect on firm's performance. In addition, in overall we found a positive but not significant evidence of the effect of family ownership on performance. This finding implies although family ownership increases agency cost by increasing leverage, they may still have personal advantages (Demsetz, 1983). Furthermore, when we control country's effect on the sample, we found that both Indonesian and Malaysian firms have significant effect in lowering efficiency of the sample firm's entire observation periods. Thus, it implies that Singaporean firms are more efficient than those Indonesian and Malaysian. We also taking into account the effect of industry, and found that food and beverages and personal goods will lower the efficiency of the industry.

Column 4, 6, and 8 of the Table describes the results of model 1 estimation for each country. For

Indonesia, it appears that the level of leverage has a negative impact on a firm's efficiency. This indicates that the increased use of debt causes conflict between the shareholders and debt holders, which results in an underinvestment problem as discussed earlier. In contrast, if the firm continue increasing its debt, at some point it will cause a positive effect on performance. This condition may occur because higher debt level causes a higher agency cost; therefore, the firm needs to increase debt to lower agency cost, which supports the *agency cost hypothesis*. In contrast, although result indicates a positive effect of leverage on Malaysian firm's performance, however it is not significant. This result is consistent with *irrelevant theory* of capital structure (Modigliani and Miller, 1958). In contrast, there is a positive and significant effect of leverage on firm's performance in Singapore. This finding indicates the existence of the *agency cost hypothesis* as suggested by Jensen (1986), Grossman and Hart (1982), and Margaritis and Psilaki (2010).

Examining the effect of ownership concentration and family ownership on performance, we do not find significant effect of ownership concentration in each level in Indonesia. However, the effect is positive and significant when the largest ownership stake is 25 % to 50 % and high concentration indicating the largest ownership when the largest ownership stakes is more than 50 %, in Malaysia and at the largest ownership is more than 50% in Singapore. These results indicate the existence of alignment effect in both countries. In addition, we find a positive and significant effect of family ownership in Malaysia, which implies that family ownership will enhance firm's performance. This finding consistent with *incentive alignment* effect which suggested that family ownership will minimize agency cost, since it generally prefers to choose the managers from their own member. Thus, they will have a similar interest in the firm. This result is also in line with Morck et al (1988) and Villalonga & Amit (2006).

The effect of a firm's leverage on its efficiency differs among the industries studies. For example, the impact is only significant for the foods and beverages industry. In other industries, i.e., personal goods and telecommunication, the impact is negative and not significant. This implies the *irrelevance theory*, which states that there is no relation between capital structure and a firm's performance, which is suggested by Modigliani and Miller (1958),

However, when the model was estimated separately based on country and industry, we found that only Malaysian firms and firms in the personal goods industry were significantly affected by the concentration of ownership. In addition, the impact becomes positive and significant when the concentration increases to the medium level. These results indicate that when the ownership is dispersed, the control of the shareholders decreases. This situation creates a *free rider* situation in which small

shareholders are not interested in supervising the company because of the high cost for monitoring and the small financial benefit they would gain. Therefore, if all of the small shareholders behave the same, then there will be no one to control the firm's management. Furthermore, if the ownership concentration increases to 25 % or 50 % the impact becomes positive. This implies that the higher control of the shareholders increases the firm's ability to generate profits. In the case of Singapore, a firm's efficiency performance is positively and significantly affected by the medium level of ownership concentration. However, increasing the level of ownership concentration to greater than 50% will result negative impact on efficiency. This implies an existence of the *entrenchment effect* as suggested by Jensen and Meckling (1976).

When estimating the impact of ownership concentration on efficiency performance based on industry, we found no significant impact on the firms in the telecommunication industry. Therefore, the analysis is only based on two industries. In contrast, the impact is significant in the personal goods industry at the 10 % level. In addition, we also found that the lowest and highest levels of ownership concentration have a negative impact on firm efficiency performance, due to the *entrenchment effect*. This result is consistent with Morck et al. (1988), who suggested that there is a non-monotonic impact between ownership concentration and company performance. In the case of family ownership, the result shows that, in general, in all countries it appears to have no impact on firm performance. However, estimation by country suggests that family ownership does have a small impact on firms in Malaysia, but has a negative effect on firms in the personal goods industry. This also indicates that family ownership may create conflict between owner and managers because they need to use debt to discipline managers.

Overall, a firm's growth positively affected its performance. This result is similar to that of Claessens et al. (2002) and King and Santor (2008). This implies that high growth firms present a greater investment opportunity with more chance to generate profits. In addition, when we estimated the effect of a firm's past profitability on its efficiency performance, we found that on average the effect is negative and significant. This result is not as expected; more profitable firms are expected to be more efficient. However, in this case, past profitability was insufficient to increase firm efficiency. This situation may be due to a decrease in firm leverage, which due to *pecking order theory* (Myers, 1984) increases *agency cost*.

The effect of firm size measured by the natural log of the firm's sales is expected to have a positive impact on its performance. Findings from the regression analysis show the reverse. This indicates a significant non-monotonic impact on firm performance (Himmelberg, et al. 1999), which is probably due to high monitoring cost. However, when

a firm's growth reaches a certain point then the impact will be positive.

Examining the effect of a firm's tangibility, we found a negative and significant impact on firm efficiency performance for lower levels of tangible assets. This finding indicates that higher levels of tangible assets decrease a firm's opportunity for growth (Booth et al., 2001). However, continued reduction of a firm's tangible assets makes it harder control and more difficult to secure debt due to lack of

availability of good collateral which increases the agency cost.

4.2.2 The effect of firm's efficiency on leverage

To examine whether the reverse causality hypothesis held in the sample firms, we examine the effect of firm's efficiency on its leverage. Table 3 presents the estimation results of the impact of firm efficiency and other control variables on leverage.

Table 3. Effects of efficiency and other firm-specific factors on performance leverage

Variables	All	Indonesia	Malaysia	Singapore	Food&Beverages	Personal Goods	Telecommunication
C	0.032195	0.020815	0.15846	-0.04733	0.06531	0.27228	-0.13212
Efisiensi	0.074278***	-0.101514***	0.05067	0.083103***	-0.082805***	0.06946***	0.200605***
Own-Conc 1	0.242188***	0.587907***	0.234286***	-0.240343*	0.244267*	-0.13700	0.403305***
Own-Conc 2	-0.07373	-0.05391	-0.257533***	0.209735**	-0.131995***	0.17179	-0.28160
Own-Conc 3	-0.02250	-0.04565	0.172274***	-0.08284	0.02000	-0.352572***	0.22232
Family	-0.01911	-0.02051	-0.033039**	0.01520	-0.00898	-0.01846	-0.064078***
growth	0.016835***	0.020169***	0.01423	-0.044808*	0.017508***	-0.02496	0.090783***
profitability	0.027229***	-0.459647***	0.414082**	0.02437	-0.124168**	0.025184**	-0.00198
Size	0.00762	0.015704***	-0.00084	0.016184***	0.01159	-0.018927**	0.010109***
Tangibility	-0.15194***	-0.168787***	-0.194158**	-0.091067***	-0.193449**	-0.04008***	-0.099776**
Indonesia	0.00616				-0.01886	0.363127***	-0.015084**
Malaysia	0.00583				0.026373**	-0.034055*	-0.071296**
F&B	-0.079825***	-0.099905**	-0.042367***	-0.089778***			
PG	-0.111628***	-0.164242***	-0.095683**	-0.09842			
Adjusted R ²	0.19426	0.22344	0.26480	0.23350	0.15497	0.22815	0.46460
Fstat(prob)	0.00000	0.00028	0.00000	0.00009	0.00000	0.00004	0.00128

*Significant at 10 per cent level

** Significant at 5 per cent level

*** Significant at 1 per cent level

Table 3 reports the estimates of the leverage model to examine the *reverse causality hypothesis*. The results from model estimation show that in general the effect of efficiency on leverage is positive, which supports the *efficiency-risk hypothesis*. This indicates that an efficient firm will reduce liquidity risk and financial difficulty, which leads to reducing agency cost. This finding is consistent with the Margaritis and Psillaki (2010) studies of French manufacturing firms. In contrast, a country-based analysis found that for Indonesian firms and firms in the *Food & Beverages* industry, the impact is negative. This supports the *franchise-value hypothesis*, where firms choose to decrease debt when the firm becomes more efficient in an attempt to protect *economic rents* or *franchise value* generated from the performance in order to guard against threats to liquidity and to retain more profits.

We find that in general, firms with low and more concentrated ownership have more debt in their capital structure in both the food and beverages and telecommunication industries. However, in Singapore, the effect of ownership concentration is negative. This

implies that when the shareholders' rights are relatively low then they expect to choose more debt on the capital structure to handle the agency cost problem (Jiraporn and Gleason, 2007). In addition, family firms choose to have less leverage. This finding supports Friend and Lang (1988), who argue that *insider ownership*, such as *family ownership*, will reduce debt to protect investment capital in the company and generate higher profits. Furthermore, firms with more tangible assets tend to use less debt, indicating greater use of internal financing in their capital structure (Cheng & Tzeng, 2011).

5 Conclusion

This study investigates the effect of capital structure and ownership structure on firm performance. In addition, the study also examines the *reverse causality hypothesis* using firm-level data from three industries of three ASEAN countries: Indonesia, Malaysia and Singapore.

To test the hypotheses, the study applied two stage estimation methods. First, we measured the

effect of capital structure and ownership structure on firm performance. Firm performance was measured using the non-parametric approach of *Data Envelopment Analysis* (DEA). Second, we tested the *reverse causality hypothesis* from firm performance to capital structure, which was viewed from the perspective of two competing hypotheses, i.e., *efficiency-risk hypothesis* and *franchise-value hypothesis*.

In general, the results of this study support the agency–cost hypothesis (Jensen and Meckling, 1976), which states that higher leverage improved a firm’s efficiency, and reverse causality hypothesis. However, in the case of Indonesia, it appears that higher levels of leverage decrease firm efficiency. This suggests that the increased use of debt causes conflict between the shareholders and debt holders, which results in an underinvestment problem (Myers, 1977). In addition, we also found *entrenchment effect* in firms with the lowest and highest level of ownership concentration.

The results from model estimation also show that in overall, the effect of efficiency on leverage is positive which supports the *efficiency-risk hypothesis*. This finding is consistent with Margaritis and Psillaki (2010). Furthermore, we also found that family owned firms use less debt in their capital structure.

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