COST STICKINESS EFFECT ON FIRM'S PERFORMANCE: INSIGHTS FROM MALAYSIA

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ABSTRACT

This study examines the relationship between cost stickiness and firm performance for a sample of 315 listed firms in Malaysia over 2010-2014. The estimation model is built based on previous empirical findings and the agency theory. It is tested using panel regression with the fixed effects model while controlling the Heteroskedasticity and autocorrelation problem. The results show the significant role of cost stickiness on firm performance confirming the alignment proposition of the agency theory. Our research further indicates that some of the managers focus on future projects instead of anchoring to past information due to certain factors such as change in technology used, economis and politics, which is in line with the institutional theory.

Keywords: sticky cost, ROA, Tobin's Q, performance, Malaysia

INTRODUCTION

Cost behaviour provides crucial information to the manager of an organization. The information allows managers to prepare budgets, to estimate cash flows, to plan dividend payments, and to help in evaluating project profitability. Cost information also provides scientific analysis for the facts and figures and managers pay attention on how to minimize the risks involved in projects. Traditional costing studies rarely examine cost behavior, and its effect on performance despite its importance for managerial decision making. Moreover, most of the existing literature in this area is based on the advanced markets and little is known about cost behavior effect on firm performance from the context of emerging countries (e.g. Szulanski, 1996; Anderson et al, 2003; Calleja et al, 2006). Comparatively, the economic fluctuations and economy of scale in developed countries are different from emerging countries leading to different cost behaviour (Stiglitz, 2000; Brummitt et al, 2017), which could offer a different snapshot of the relationship between cost behavior and performance. In other words, the benefit and cost of cost behavior strategy for firms in emerging countries may not necessarily be at the same magnitude with developed countries. Building on these theoretical assumptions, this research aims to investigate the performance of cost behavior strategy such as sticky cost for firms in emerging countries like Malaysia.

In the perspective of managerial accounting, traditional costing studies distinguish between fixed and variable costs with respect to its sensitivity towards organization activities. The variable costs change when the activity volume changes. Costs that do not change as the volume changes within the relevant range is known as fixed cost (Hilton, Maher, & Selto, 2008). This means that the volume and cost have a directproportional relationship, without management intervention. Costs increase or decrease in the same percentage when the volume is increased or decreased. However**,** Cooper and Kaplan (1998) discovered that costs raise more as the activity volume increases, then they fall as the volume decreases. Anderson et al (2003) suggest that fixed costs such as selling, general, and administrative costs respond differently to changes in organizational activity, a dimension that is referred to as "Sticky Cost". This cost increases more when revenue increases then they fall when revenue decreases by an equivalent amount. Subramaniam and Weidenmier (2003) extend the items of sticky costs

by including the behaviour of cost of good sold (COGS). The stickiness of COGS has been attributed to aspects of managerial behaviour where managers have retained more of COGS materials in the event of a decline in revenues rather than incur the cost of renegotiating with the suppliers.

Prior research such as Anderson et al (2003) and Novák and Popesko (2014) use the agency theory to explain the association between sticky cost and performance. They argue that there are two observations about this sticky cost behaviour related to the agency issue. First, managers make decisions to adjust resources which has caused the cost to rise. Second, resources adjustment such as dismissal payments to employees, costs for training new workers, installation and disposal costs for capital equipmentcan be expensive in the short term. Therefore, complex dynamics occur in the option of resource levels establish from the interaction of manager's consideration when making decision and the resource adjustment costs.

When the economy is good, many firms increase the sticky cost to increase production and meet quantity demanded by the market. When the sale is good, the revenue will increase more and this leads to a higher profitability. Whereas when the economic growth declines, the quantity demanded will decline. Firms may want to decrease their stickiness cost due to bad economic conditions to retain their profits. However, firms may have the possibility to bear higher costs. In order to solve this problem, managers need to consider the choices to retain the unutilized resources or do adjustments to the costs. Retaining the unutilized resources incurs costs. This is because the level of the resources is more than what the firms need to meet current market demand. On the other hand, the example of adjustment costs are dismissed workers and selling certain firm assets when the demand drops or buying new assets and training courses when demand recovers. Some managers hesitate to make decisions as they are afraid they may bear higher cost because of the accuracy of the situation (Novák and Popesko, 2014).

In sum, this research follows Calleja et al (2006), and modifies it to reveal the impact of sticky cost. We use two approaches of the performance measure: accounting book performance and market based performance. Ratio of return on asset (ROA) is proxy for accounting book performance, and Tobin's Q is proxy for market based performance. But

we have extended it to a new empirical context and modified the model in terms of some measures of definition. We also follow previous established studies by controlling the firmcharacteristics. Our research objective is to investigate the effect of sticky cost on firm performance by controlling its firm characteristics in our model. We expect to draw a contention about the agency theory and efficient internal hypothesis.

The paper is organised as follows. Section 2 addresses the theoretical framework and hypothesis development. Section 3 describes the data and methodology. Section 4 shows the results and discussion. Section 5 concludes.

THEORETICAL FRAMEWORK & HYPOTHESIS DEVELOPMENT

Theoretical Framework

The relationship between cost and performance is straightforward. However, cost behaviour through sticky cost is hard to predict. We use the agency theory and internal market hypothesis to explain the sticky cost effect on performance. The Agency theory addresses the interest in achieving goals between the agent (manager) and the principal (shareholder) (Jensen and Meckling, 1976). This occurs because of separation of ownership and control. The principals have to hire agents to manage the business and to keep track of the agent's performance in order to make sure that they have the same interest as the owner. The interest of agents may differ from the interest of the principals due to economic conditions. In a good economic condition, Managers and stockholders would want to increase cost stickiness in order to have higher returns. Therefore, cost stickiness will increase in order to meet demand. This will lead to higher profitability of a firm due to higher sales revenue. However, when demand shows a declining pattern, some managers hesitate to cut because this decision will affect firm performance as the firm needs to bear higher costs for unutilized resources. Moreover, some managers assume that the decline in demand is not permanent and they prefer to do adjustments after the demand appears to be permanent. Managers fear to do cost adjustments due to the fear of compensation, loss of status, prestige and power leading to agency costs.

In the agency perspective, cost stickiness is the result of managerial consideration about cost management (Cooper and Kaplan, 1998). The presumption is that cost stickiness arises because managers enter into costly contracts and do not have any interest to break or renegotiate it as it will not harm any of the manager's interest. In the event of subsequent decline in demand, managers might decide to retain the resource even though it is underutilised. While the firm might report a drop in revenue, cost will not fall proportionally.Managers also feel reluctant to drop the fixed cost because it directly harms their welfare. Rebudgeting the general and administration expense means reducing their salary, and this is very hard to impose.

Therefore, this research builds a model from the assumption of the agency theory, where sticky costs actually may induce firm performance, and promote the alignment hypothesis in the agency theory. The alignment hypothesis states that the agent (manager) will do their best including cost adjustments such as sticky costs due to the fear of compensation or loss of status. Therefore, it may benefit the principal (shareholder). This research argues that firm performance is not only due to the economics of scale (firm characteristics) such as size, age, leverage, and growth, but it is also related to the sticky cost strategy from mangers. Figure 1 draws the research framework to explain the association tested in this research
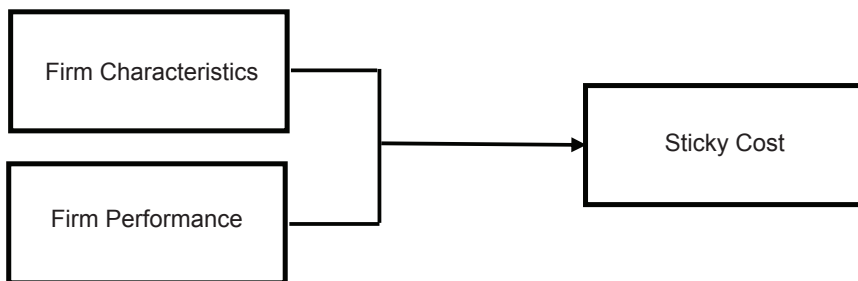

Figure 1: Research Framework

Sticky Cost and Performance

According to Noreen (1991), the degree of change in costs depends on the change in the activity level. However, there are insufficiency of studies on the impact of cost behaviour on firm performance because most of the researches focus on the impact of firmsize, firmleverage, firm growth and firmage on firm performance.

Huang, Jiang, Tu and Zhou (2014) investigate the relationship between cost behaviour and stock return. Huang et al. (2014) argue that the future deterioration of the firm's profitability is strongly related to the cost growth of the firm. The higher the cost growth, the lower is the firm's profitability. Their results show that the COGS and SG&A have a significant impact to stock return. Those firms with a high growth in sticky cost of COGS and SG&A will underperform in future.

Prior research such as Warganegara and Tamara (2014) confirm it by concluding that the relationship between cost stickiness and firm profitability is negative. The measure for cost control quality of firm management is the ratio of changes in Sales, General and Administration Expense (SG&A). The higher the ratio, the lower is firm profitability. This is because firms have to spend more resources when doing sales activities.

According to the internal market hypothesis, firms with a lot of resources can exploit the market by price discrimination or discount strategy to synergize the operations efficiently and to open up new market shares. The firm-specific advantages can efficiently "internalize" their excess of resources into their affiliation or use it to play with price discrimination. Mary and Okelue (2012) among other scholars have documented that cost stickiness play an important part in inducing firm performance. They examine the effect of sticky cost of Selling, General, and Administration (SG&A) on firm performance and found a positive and significant relationship. The excess resources for marketing fee and salary induces the firm to be worked efficiently as part of guilty pleasure. Researchers have found that increase in cost is in line with volume of activity and vice-versa (Cooper and Kaplan, 1998). According to Noreen (1991), the degree of change in costs depends on the change in the activity level. Therefore, this research hypothesizes:

H₁: There is significant relationship between sticky cost and firm performance

Firm Characteristics and Firm Performance

Note that firm characteristics are the control variables for the estimation model of the research. Prior research shows that firm performance is closely

related to the characteristics (economy of scale) of a firm. Therefore, it is important to control our performance estimation model with firm characteristics like firm's age, size, growth and leverage.

For the link between firm's age and performance, Loderer and Waelchli (2010) use robust panel regressions to examine how corporate aging affects performance. The result shows that the performance increases with age. The linear effect is statistically significant at the 1% level. In words, performance deteriorates, as a firm grows older.

Meanwhile, for the relationship between size and performance, Fauver, Houston and Naranjo's (2002) study shows a significant and positive relationship between firm size and firm value in the US and UK. The proxy of firm size is the log of relative assets. This means that bigger firm size in the US and UK have larger firm value. Denis, Denis and Yost (2002) study the relationship between firm value to global diversification and industrial diversification. They found out that excess value and firm size is positively related. They used the firm's market value of total capital to control for firm size. The result shows that firms that are globally diversified tend to be substantially bigger than single-segment domestic firms. The size of the discount for global diversification is reduced but it remains significant at the 0.01 level. Additionally, Ghafoorifard, Sheykh, Shakibee and Joshaghan (2014) show that there is a significant relationship between firm size and firm performance. Their result exhibits that firm size and firm performance is positive and significant at the 5% confidence level.

In terms of firm leverage Dawar (2014) investigates the relationship between leverage and firm performance. The result shows that there is a significant negative relationship between debt that consists of long-term debts and short-term debts and firm performance. The coefficient of debt is negative and statistically significant at the five percent level. This means that an increase in debt will decrease the performance of a firm. There is also Brush, Bromiley and Hendrickx (2000) who find that leverage has a negative and significant effect on firm performance. It argues that high debt burdens will not aid in firmdevelopment. Moreover, Zeitun and Saleh (2015) study the effects of financial leverage on firm performance in Gulf Cooperation Council (GCC) countries. The findings show that the higher the financial leverage in firms will lead to a decrease in the firm's performance.

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Lastly, prior research has found the empirical association between firm growth and performance. According to Fauver et al. (2002), the relationship between growth and firm value is positive and statistically significant. Growth is a measure using the proxy of growth possibilities. The result indicates that as there are many growth possibilities, the firm's market-to-sales ratios are high. Zeitun and Tian (2007) investigate the relationship between capital structure and corporate performance. Growth opportunities are measure by growth of sales (growth). The result shows that growth has a positive and significant effect on firm performance. Lower cost of capital and high performance ratio of ROA is caused by high growth rates. Building from those empirical findings, this research hypothesizes:

H_2: There is negative relationship between firm age and firm performance
H_3: There is positive relationship between firm size and firm performance.
H_4: There is negative relationship between firm leverage and firm performance.
H_5: There is positive relationship between firm growth and firm performance.

RESEARCH METHODOLOGY

Data

This study mainly focuses on cost behaviour in Malaysian listed companies. We used the WorldScope database to collect a pooled set of annual financial data from the years 2010 to 2014. Our initial sample covered the entire 805 publicly listed firms in the main board of Bursa Malaysia. We excluded firms in the utilities and financial industries from our sample. The reason is due to the different legal aspects and the nature of the business model analysis of these two industries compared to other industries (Lee et al, 2012). We also removed firms that have missing data throughout the five-year period. At the end, our sample consisted of 315 firms with a total pooled observations of 1575 firm years over a period of 5 years with complete data.

Methodology - Baseline Model

Firstly, we developed the baseline model as the grounded estimation model. This model follows prior studies in performance measurement, which shows that there are four important aspects in estimating performance, which are: firm size (i.e. Yazandar, 2013), firmage (i.e. Vithessonthi and Tongurai, 2014), firmgrowth (i.e Ung et al, 2016), and firmleverage (i.e. Hunjra et al, 2014). Therefore, the function of the equation model is formulated as follows:

Firm Performance = f (Age, Size, Leverage, Growth)

We pooled the data and estimated the regression using this following model:

$$Firm\ Performance_{i,t} = \beta_0 + \beta_1\ Age_{i,t} + \beta_2\ Size_{i,t} + \beta_3\ Lev_{i,t} + \beta_4\ Growth_{i,t} + \varepsilon_{i,t}$$

Firm Performance was estimated two times: (i) estimate the regression using ROA as the proxy of firm performance; and (ii) estimate the regression using Tobin's Q as another proxy. The ratio of total net income before interest and taxes to total assets was used in measuring ROA. Meanwhile, Tobin's Q is a measure of firm assets in relation to a firm's market value. Tobin's Q ratio that is above 1 indicates that the firm is worth more than the cost of its assets whereas the Tobin's Q ratio that is between 0 and 1 indicates that the firm needs more costs to replace the firm's assets than the firm is worth.

Meanwhile, age is the number of years since establishment. In their study, Arosa, Iturralde and Maseda (2013), age is measured as the natural logarithm of the number of years since the firm was established. The logarithm of total asset was used to measure the size of the firm. The leverage was measured with the book value of debt over the total assets. Lastly, the ratio of capital expenditure-to-sales (CES) was used as the measurement of level of growth.

Methodology - Cost Stickiness Model

There are many previous studies that evaluated cost stickiness using the sticky cost regression model of Anderson, Banker and Janakiraman (2003). The new measure of cost stickiness at the firm level is proposed by Weiss (2010). The sticky cost can be measured by the following model:

$$Sticky_{i,t} = Log\left(\frac{\Delta Cost}{\Delta Sale_{i,t}}\right) - Log\left(\frac{\Delta Cost}{\Delta Sale_{i,t`}}\right)$$

where t is the most recent of the last four quarters with a decrease in sales and t` is the most recent of the last four quarters with an increase in sales, ($\Delta Sale_{it} = Sale_{it} - Sale_{it}$-1), $\Delta Cost_{it} = (Sale_{it} - Earnings_{it}) - (Sales_{it}$-1 $- Earnings_{it}$-1) meanwhile Earnings is income before extraordinary items.

The dimension of cost stickiness was added into the baseline model to construct the full model of this research. This research follows Weiss (2010) who suggeste dthe new measure of cost stickiness at firm level. Hence, cost behaviour is added into the equation to study the implication of cost behaviour on the firm performance. The function of the second equation model was formulated as follows:

Firm Performance$_{i,t}$ = β_0+ β_1 Sticky$_{i,t}$ + β_2 Age$_{i,t}$ +β_3 Size$_{i,t}$ +β_4 Lev$_{i,t}$ + β_5 Growth$_{i,t}$ + $\varepsilon_{i,t}$

RESULTS AND DISCUSSION

Descriptive Statistics

Table 1 shows the descriptive statistics of the variables, and it consists of the minimum, maximum, mean and standard deviation for the continuous variables of the sample data set. According to Table 1, some of the numerical scores of the variables in this study have large variations compared to its mean value. Firm's sticky cost and leverage have relatively higher dispersion in its score based on its standard deviation. However, the variables Tobin's Q, ROA, firm age, firm size and firm growth display smaller dispersion with considerably small standard deviations.

Overall, the descriptive statistics show the variables have good variance. None of the variables have a standard deviation of 1.5 higher than its mean. For instance, Tobin's Q and ROA have standard deviations of 0.0592 and 0.2343, respectively, and comparedto the mean of Tobin's Q and ROA, which are 0.0909 and 0.4037 respectively. This implies a good sample distribution. Meanwhile, the mean value of sticky cost is 0.8199 implying Malaysian listed firms have high cost stickiness. Firm characteristics have a similar conclusion. The standard deviation does not pass 1.5 of its mean implying a normal distribution of the sample. Note that the firm age shown in this table is the result of a natural logarithm. This explains why the minimum value is lower than 1, and the highest value is only 3.3043. The minimum value of 0 in firm growth indicates all of our sample have a steady growth which is in line with the characteristics of Malaysia as a developing country.

Tabel 1: Descriptive Statistics

	Mean	Standard Deviation	Minimum Value	Maximum Value
Tobin's Q	0.0909	0.0592	0.0013	1.3265
ROA	0.4037	0.2343	-5.5433	6.4949
Sticky	-0.8199	0.35974	-2.2115	4.4609
Firm Age	1.4335	0.2968	0.3010	3.3043
Firm Size	5.6081	0.5837	3.8686	8.0453
Firm Leverage	0.5210	0.1452	-1.9520	3.0598
Firm Growth	0.0477	0.0456	0.0000	0.5295

Baseline Model

Firstly, we estimated the firm performance with its control variables. The model is performed using panel regression with the fixed effects model while controlling the Heteroskedasticity and autocorrelation problem. Due to a large number of cross sectional and small number of units, we further clustered the asymptotic properties following the Holtz-Eakin, Newey, and Rosen (1988). This dynamic panel regression allows to avoid endogeniety due to the cross sectional effect that is not captured in our Breusch-Pagan LM Test. Note that the baseline model includes control variables such as firm age, firm size, firm leverage and firm growth but do not include the main independent variable which is the sticky cost.

Tabel 2: Baseline Model

	Tobin's Q	ROA
AGE	0.0339**	0.0165**
	(0.0082)	(0.0072)
SIZE	0.0174***	0.0384**
	(0.0020)	(0.0165)
LEVERAGE	-0.0018	-0.0048
	(0.0010)	(0.0036)
GROWTH	0.2665***	0.1717***
	(0.0443)	(0.0494)
CONSTANT	0.0849***	0.1671*
	(0.0173)	(0.0960)
N	1575	1575
R2	0.1412	0.1108
Adj R2	0.1404	0.1091

The figures stated are the coefficient values, except numbers in parentheses, which are standard error. *, **, and *** denotes statistical significance at the 10%, 5%, and 1% level, respectively.

Firstly, Table 2 shows thatthe R Squared in the model is relatively good. Adjusted R Squares are 0.1404 and 0.1091 for the Tobin's Q model and ROA model, respectively. Second, the results in Tobin's Q and in ROA share the same conclusion. It shows that all control variables have a significant contribution to performance, except firm's leverage.

In the baseline model result, firm age has a significant effect on firmperformance, and the effect is positive. The coefficients are 0.0339 and 0.0165 for the Tobin's Q and ROA model respectively. This means firm's with a longer year of establisment might have a better performance. This result aligns with Hunjra et al (2014) that firm age is significantly related to firm performance. Meanwhile, ...

The coefficient value for firm size is 0.0174 at the 1% significant level. It means that there is positive relationship between firm size and firm performance. A one-unit increase in firm size will increase 0.0174 unit of firm performance. It aligns with the study of Kumar (2004) who found that firm size and performance has a significant positive relationship. The proposed hypothesis is accepted. On the other hand, the coefficient value

for firm growth is 0.2665 at the 1% significant level. It indicates that there is positive relationship between firm growth and firm performance. One unit of firm growth increase, will increase 0.2665 unit of firm performance. This result aligns with Zeitun and Saleh (2015) that a relationship between growth opportunities and company performance (ROA) has a positive and significant impact.

Cost Stickiness and Performance

We estimated firm performance by adding the main variable: sticky cost. The model is run under panel regression with slightly different estimation procedures compared to the baseline model. In this model, we further clustered the industrial effect as the Wald's test shows the disturbances of its poolability due to industry.

Tabel 3: Sticky Cost and Performance

	Tobin's Q	ROA
STICKY	0.0023**	0.0117***
	(0.0061)	(0.0044)
AGE	0.0345**	0.0062
	(0.0162)	(0.0027)
SIZE	0.0175**	0.0386**
	(0.0085)	(0.0165)
LEVERAGE	-0.0019	-0.0048
	(0.0012)	(0.0038)
GROWTH	0.2535***	0.1623**
	(0.0826)	(0.0803)
CONSTANT	0.0844**	0.1667*
	(0.0413)	(0.0961)
N	1575	1575
R2	0.148	0.1315
Adj R2	0.1458	0.1392

Table 3 presents the coefficient value, with standard error in parentheses. We run the model under fixed effect panel regression after running the Breusch Pagan LM Test, Hausman Fixed Test, and Chow Test.

We run the fixed effect model by controlling the standard error via white test. The industrial effect is clustered under two-clustering panel. *, **, *** Denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3 shows R Square of 14.50% and 13.92%o for the variations in Tobin's Q and ROA, respectively. The control variables result in Table 3, is consistent with our baseline model results in Table 2, where it shows all control variables have significant effects on firm performance, except for leverage. The results conclude that age, size, and growth contribute positively to firm performance indicating the larger those variables, the better the performance.

Meanwhile, Table 3 shows that sticky cost has a significant effect on Tobin's Q with the coefficient value of 0.0023. This is a relatively small contribution compared to the result of the sticky cost on ROA. Sticky cost on ROA is significantly related with the coefficient value of 0.0177. This means that sticky cost has more effects on accounting based performance (ROA) compared to market based performance (Tobin's Q). This result is consistent with Mary and Okelue (2012) that ratio of Sales, General and Administration expense (SG&A) and firm value have a significant relationship.

DISCUSSION

The results presented in Table 3 are in line with the hypothesis of this study which is that the sticky cost is significantly related with firm performance. The results obtained indicate that there is positive significant relationship between sticky cost and firm performance. This result is also in line with past research findings such as Brush et al. (2000). Their research findings show that an increase in sales growth will increase firm performance. Besides that, Mary and Okelue (2012) also found that that the ratio of SG&A and the firm value have a significant relationship.

Our findings support the agency theory of Jensen and Meckling (1976). It shows that the agent (manager) did the sticky cost for the best interest of the principal (owner) because it may induce firm performance. Managers retain more COGS materials in a bad economic condition, rather

than renegotiate with suppliers for a lower price of new COGS purchase. Managers hesitate to reduce production when the economy is down, because managers find that this bad situation does not last long and they prefer to make adjustments only if the situation is consistent. The reason is managers may need to bear higher costs for unutilized resources, costs for keeping the raw materials and compensation. Hence, sticky cost behavior leads to lower costs, and as the consequence, induces firm performance.

Besides that, the significant relationship of sticky cost on firm performance may also be explained by the institution theory. Kessler (2013) mentions that the institutional theory as a postulation about of knowing organizational operation as the product of social rather than economic pressures. Some of the scholars claim that legitimacy must gained by the organization and therefore, the organizations adjust themselves to the environment. Some of the managers focus on future projects instead of anchoring to past information due to certain factors such as change in technology used, economics and politics.

CONCLUSION

This study addressed the phenomenon of the sticky cost effect engaged by Malaysian companies. Our study is mainly motivated by the lack of attention given to this research area despite the urgency of its contribution to the industry. This paper by all means lays the foundations for any further research in this topic on emerging markets with more focus on country-specific characteristic dimensions.

We addressed our research objective by concluding that there is significant relationship between sticky cost and firm performance. The result is consistent with Mary and Okelue (2012) who found that the cost of sale is positively related with firm profitability. This paper enriches the existing studies on managerial costing nexus. We adopted the cost stickiness model developed by Anderson et al (2003), Calleja (2006), and Weiss (2010) and tested it against two different performance measures. Our results imply that certain conceptualized frameworks and empirical evidence found in the advanced countries may not necessary apply to emerging countries within the context of this research area. We revealed that the internal market

hypothesis is the best explanation for the relationship of cost stickiness and performance. Another contributing aspect of our study is that we used the panel data approach that allows for assessing changes in cost stickiness and performance level over time albeit no significant changes in that level over time, and thus giving more reliable estitimates. Moreover, we control the industrial effect to achieve the best estimator by avoiding the different impact levels given from different industrial characteristics.

However, all our findings need to be validated by further research in certain aspects. The focus of this study has been to examine the association between cost stickiness and performance. Based on some of the common characteristics for emerging markets, particularly South East Asian countries, a few extensions can be further built upon this analysis. Firstly, more in-depth insights can be gained through an examination of the role of ownership expropriation. The different cost stickiness impacts among family firms, government linked companies, and multinantional companies might give interesting insights. Secondly, some corporate governance attributes such as audit board, board structure, or board compensation can be interesting extensions of study for this analysis.

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