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How Adjustment Cost Relate with Stickiness Cost?

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ABSTRACT

This study aims to analyze stickiness cost and how the adjustment cost affects stickiness cost. Costs are not always proportionately rising or declining. When the cost increases when the activity rate is raised, the cost reduction is greater than when the activity level is increasing. Such condition are known as stickiness costs. Adjustment cost can be measure using asset, stock and equity intensity. Equity intensity is used as a proxy for measuring the adjustment cost. The population of this research is consumer goods company listed on the Indonesia Stock Exchange in 2014-2015, there are 24 companies that became the sample of this study. This research used multiple linear regression to analyze the data. The results showed stickiness cost in consumer goods companies. Further equity intensity is an indicator that can indicate a condition or characteristics of an organization or company that can be used to predict stickiness cost. These results also suggested that the degree of cost stickiness is subject to the managers ' deliberate decision on resource change. The impact of adjustment costs on the degree of cost stickiness in the existing literature partially supported the findings.

KEYWORDS: Adjustment Cost; Equity Intensity; Stickiness Cost

INTRODUCTION

Cost behavior is one of the things that needs to be observed by company managers. The cost accounting literature explained two basic types of cost behavior patterns, namely fixed costs and variable costs. In general, it is assumed that costs remain constantly unchanged and are not affected by the level of change in activity volume. While the cost of the variable magnitude changes proportionally to the level of change in activity volume. However, there are allegations that there is a behavior of costs where changes in costs occur disproportionately to changes in activity volume. Changes in disproportionate costs are behavioral costs where the magnitude of changes in costs depends on changes in activity (Noreen & Soderstrom (1994); Novák et al., (2017)). Changes in costs when activities increase and when activities decline disproportionately due to imbalance in cost response.

Anderson, Banker, & Janakiraman (2003) introduced the concept of *stickiness cost* behavior. This is from the results of his research on non-production costs of 7,629 companies in the past 20 years. According to Yusukata & Kajiwara (2009) when company activities diminished whilst the managers did not reducing the resources, the stickiness cost will rise. Furthermore, Yusukata & Kajiwara (2009) also state that stickiness costs occur because cost adjustments cannot compensate for the speed of sales decline. The period of data is 2001-2010. This research found that general, selling and administration cost are sticky.

Many previous researches in stickiness cost issue in some countries. Zanjirdar, Madahi, & Khaleghi Kasbi (2014) researched sticky conduct over the period 2002-2011 on 70 chosen Tehran Stock Exchange companies. The findings show that sales and general administration expenses (SGA) as well as selling products expenses have strong sticky habits. Research on s in Tehran. In China, Sun, Ho, Gu, & Chen, (2019) studied about how stickiness cost give effect on Research and Development investment in a companies. Moreover study about stickiness cost behavior was also carried out by (Farzaneh *et al.*, 2013) in Iran. While Eltivia, Widiastuti, & Wahyuni (2017), found that *stickiness costs* have occurred in manufacturing companies that listed in the Indonesian Stock Exchange. Moreover, research in BRICS countries was done by Zonatto, Magro, Sant'ana, & Padiha, (2018).

Previous research also find the determinant of stickiness cost (Pichetkun and Panmanee, 2012). Some researches find the earnings management gave effect on stickiness cost (Rezaei and Barandagh, 2016; Martani, Eltivia and Setiawan, 2018). Bosch & Blandon (2011) found that size of the companies give effect on stickiness cost. Moreover Chen, Lu, & Sougiannis (2012) find out how agency cost and corporate governance give effect on stickiness cost of the companies.

Since cost behavior is one of the aspects that business managers need to consider, stickiness cost phenomenon should be observed. This research also find the determinant of stickiness cost, and the variable observed from Pitchekun and Panmanee (2012), but the stickiness cost measurement use model based on Anderson et al., (2003). The response of changes in sales, general and administrative (SGA) costs when changes in net sales occur can be seen in this model. If sales decrease compared to the previous period, the dummy value will be 1, and become 0 if it increases compared to the previous period.

Model:

$$\log \left[\frac{NonProd_{i,t}}{NonProd_{i,t-1}} \right] = \beta_0 + \beta_1 \log \left[\frac{Sales_{i,t}}{Sales_{i,t-1}} \right] + \beta_2 * Dummy_{i,t} * \log \left[\frac{Sales_{i,t}}{Sales_{i,t-1}} \right]$$

If nonproduction costs are *sticky*, the variation in nonproduction costs with net sales increases must be higher than when net sales descend. The measurement of the percentage increase in nonproduction costs due to an increase in net sales by 1 percent shown by coefficient β_1 , and the sum of coefficients $\beta_1 + \beta_2$ measures the percentage increase in nonproduction costs due to a decrease in net sales by 1 percent. This model assumes that $\beta_1 > 0$ is $\beta_2 < 0$, or if $\beta_1 + \beta_2 < \beta_1$, thus indicating that the increase in nonproduction costs when net sales rise higher than the decrease in nonproduction costs when net sales fall. This means nonproduction costs are *sticky*.

Research Hypothesis

The reduction in sales (*sales reduction*) is one of the variables that affects the degree of *stickiness of the cost*. The decline in sales occurs when sales decline for two consecutive periods. Farzaneh *et al.* (2011) examined the degree of *stickiness of the cost* of PA & U costs in the period before the decline in sales occurred. The test was carried out to determine the degree of *stickiness of the cost* during the previous period of a decline in sales. Farzaneh *et al.*, (2011) suspect that the degree of *stickiness of the cost* of SGA costs is lower when there is a decline in sales in the previous period.

Managers will make adjustments to costs by reducing the amount of resources when the previous period has decreased sales so that the estimated *stickiness* level of *costs* becomes lower Anderson, Banker, Huang, & Janakiraman (2007). Anderson *et al.* (2007) state that if a decrease in sales occurs for consecutive periods, the manager will assess whether the decline in sales occurs permanently or only temporarily. In the second year after a decline in sales, managers will consider reducing resources.

This research hypothesis based on literature review and previous research, formulated as follows:

H₁: *Stickiness costs occurred on non-production costs for consumer goods companies listed on the Indonesia Stock Exchange in 2014-2015*

Adjustment costs are implicit in that they result in loss of output and are therefore not measured and reported on the statement of income and expenditure generated by the company's accounts. When administrators need to increase or decrease dedicated capital, they may incur change costs. Managers may therefore hesitate to cut resources when sales decline.

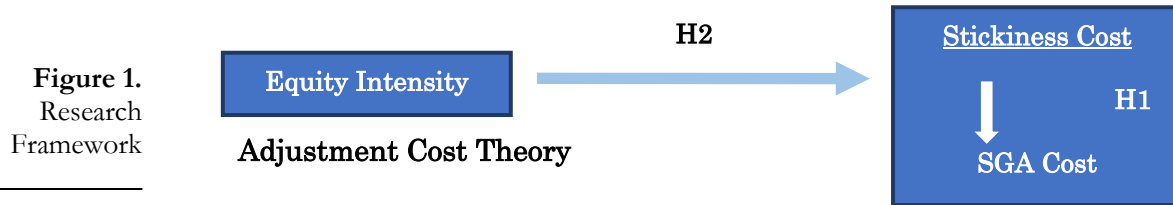
Adjustment cost theory introduced by Lucas (2002). This theory states that when a *shock* occurs, the company cannot immediately change the factors of production without incurring costs of adjustment. Furthermore, it was mentioned, that changes in the level of production factors used by companies require expensive costs. Many researchers use *adjustment cost theory* to observe the changes in investment or capital changes (Groth and Khan, 2006), changes in workers (Leitao, 2011) and changes in inventory levels (Danziger, 2008). Furthermore, previous research shows that organizational capital influences stickiness costs (Venieris, Naoum, & Vlismas (2015); Banker & Byzalov (2013). If managers feel the need to increase or decrease the resources used, they need to incur adjustments. This causes managers to hesitate to reduce resources when sales decline.

Eltivia's research (2017) on manufacturing companies shows the *stickiness cost* of these companies. Previous research investigated determinants of stickiness cost (Pichetkun & Panmanee (2012); Cannon, 2012)). Pitchekun examine the relationship of *adjustment cost* to *stickiness cost* using equity intensity as proxy of adjustment cost (Pitchekun, 2012). The results of these studies indicate that *equity intensity* affects the *stickiness cost*.

This research hypothesis based on literature review and previous research, formulated as follows:

H₂: *Equity intensity affects the stickiness cost level*

Based on the literature review and the development of hypotheses, we can describe the research framework as shown in Figure 1.



METHOD

This research is a quantitative research that aims to analyze the relationship between *adjustment cost* and *stickiness cost*. The population of this research is *consumer goods* companies listed on the Indonesia Stock Exchange in 2014 to 2015. The sample of this study was determined by *purposive sampling*. The sample *good consumer* companies are:

1. Registered on the Indonesia Stock Exchange during 2014-2015.
2. Non-production cost data (sales costs, administration and general), net sales, and related measurement variables are available in published financial statements.
3. During 2014-2015 the company did not experience losses

Thus the research data to be analyzed are 48 in the period 2014 to 2015. The variable used in this study for the dependent variable is *stickiness cost*, while the independent variable is *equity intensity*. Measurement of variables is as described in table 2 referring to the research conducted by Pitchekun (2012).

	Information	total
Table 1. Sample Selection Using Purposive Sampling	<i>Consumer goods</i> companies listed on the IDX until December 31, 2015	37
	IPO manufacturing companies on the IDX after January 1, 2014	(2)
	Manufacturing companies that published financial statements incomplete in 2015	(4)
	Loss manufacturing company	(7)
	Number of research samples	24

	Variable	Measurement
Table 2. Variable Measurement	<u>Independent:</u> <i>Equity Intensity</i>	<i>Equity / Total Sales</i>
	<u>Dependent:</u> <i>Stickiness Cost</i>	The difference between changes in costs for a 1% increase in sales and changes in costs for a 1% decrease in sales

Data analysis in this study use multiple linear regression. Furthermore, the data will be processed using SPSS *software*. This study will use a model made by Anderson, Banker Janakiraman (Model ABJ) to test the research hypothesis. Following is the model used to test each hypothesis:

- Hypothesis 1:

$$\text{Log} \left(\frac{\text{SGA}_{i,t}}{\text{SGA}_{i,t-1}} \right) = \beta_0 + \beta_1 \log \left(\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right) + \beta_2 \text{Dummy}_{i,t} * \log \left(\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right) + \epsilon_{i,t}$$

Where:

$\text{SGA}_{i,t}$ = Sales, administration and general costs of company i in year t

$\text{SGA}_{i,t-1}$ = Sales, administration and general costs of company i in year t-1

$\text{Sales}_{i,t}$ = Sales of company i in year t

$\text{Sales}_{i,t-1}$ = Sales of company i in year t-1

$\text{Dummy}_{i,t}$ = Dummy variable is worth 1 if net sales fall between periods t and t-1, and 0 if the opposite is true for company i years t

Classic assumption test is needed to test the feasibility of the regression model used in this study. Furthermore, a classic assumption test is needed to find out whether the regression model used is free from classic assumption deviations. The classic assumption test carried out in this study is the test for normality, multicollinearity, heteroscedasticity, autocorrelation and linearity

RESULTS AND DISCUSSION

The following are the results of testing hypothesis 1, as shown in the table 3. Based on table 3, the regression coefficient of $\beta_1 > 0$; while the regression coefficient $\beta_2 < 0$. To measure the percentage increase of non-production costs due to a decrease in net sales of 1 percent, by the sum of coefficients ($\beta_1 + \beta_2$) and resulting in a value of 0.718 obtained from $0.936 + (-0.218)$. This means that if net sales fall by 1 percent, non-production costs will decrease by 0.718 percent. Whereas if net sales increase by 1 percent, nonproduction costs will increase by 0.936 percent. Variation in non-production costs when net sales increase is greater than when net sales decline. Thus this finding supports hypothesis 1 that the increase in non-production costs when sales revenue increases higher than the decrease in non-production costs when net sales fall or *stickiness costs* occur. This gives a signal that *sticky cost* behavior at non-production costs needs to be considered when looking at prospects and profit predictions before making an investment decision, due to the slow adjustment of resources when volume decreases. Besides *sticky* costs occur because managers decide to keep using unused resources rather than making adjustments when volume decreases.

Model		Unstandardized Coefficients
		B
1	(Constant)	-.023
	LogSales	.936
	DummyLogSales	-.218

Table 3.
Hypothesis 1
Testing

Hypothesis 2 Testing was served in Table 4 below:

		Unstandardized	
		Coefficients	
Model		B	
Table 4. Hypothesis 2 Testing	1	(Constant)	-.089
		LogSales	.726
		DummyLogSales	-.913
		DumLogSalEqu	-.645

Based on table 4, the efficiency β_1 shows the percentage increase in nonproduction costs due to an increase in net sales of 1%. The sum of the coefficients of $\beta_1 + \beta_2 + \beta_3$ indicates the percentage decrease in nonproduction costs is -0.832 percent when there is a decrease in net sales of 1%. Whereas if net sales increase by 1 percent, nonproduction costs will increase by 0.726 percent. Variation in non-production costs when net sales increase is greater than when net sales decline. Thus this finding supports hypothesis 2 that the increase in non-production costs when sales revenue increases higher than the decrease in non-production costs when net sales fall or *stickiness costs* occur. The negative sign of the coefficient β_2 signifies *stickiness cost* and the negative sign of the coefficient β_3 indicates the company's higher *equity intensity*, the higher the degree of *stickiness cost*. The assumption of $\beta_1 > 0$ and $\beta_2, \beta_3 < 0$ is the basis for acceptance of hypothesis 2. So based on these assumptions, the second hypothesis is accepted.

The effects of adjustment costs on the degree of cost stickiness supported by the findings of this research. This results reflect the principle of adjustment cost theory, that managers would refuse to make decisions to reduce resources when sales decline. These results suggested that managers' strategic resource management decisions were subject to the degree of cost stickiness.

CONCLUSION

Based on the results of the analysis and discussion in this study there are several conclusions that can be drawn. *Stickiness costs* that occur manufacturing companies in Indonesia show that non-production costs need to be considered in looking at earnings prospects and predictions before making investment decisions, due to the slow adjustment of resources when volume decreases. In addition, *stickiness costs* occurred because managers decide to keep using unused resources rather than making adjustments when volume decreases.

Based on this study of how companies can manage the equity can be used to predict the degree of *stickiness cost* that occurs in a company. The more equity intensity will give impact on the higher degree of stickiness cost. When the equity intensity of the company higher, the managers tend to refuse make a decision to reduce the resources when volume decline. Because the higher equity intensity means that the equity still can be pushed to produce more sales or assets. In this situation the manager more concern about how to increase sales or productive asset rather than to do adjustment resources. Furthermore, the shifting of resources can give more cost than benefit.

This study has limitations, only use the ABJ model to measure *stickiness cost* and the degree of *stickiness cost* that occurs. Furthermore, the theory used to determine the cause of the difference in the degree of *stickiness cost* is only a theory of *adjustment cost*. Political cost theory and agency cost theory can be used to determine the degree of stickiness cost in the further research.

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