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Exploring the relationship between adjustment cost and stickiness cost

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Abstract

The purpose of this study was to analyse the stickiness cost, and how adjustment cost gave impact on stickiness cost. Asset intensity was proxy of adjustment cost in this research. The population of this research is manufacturing companies listed in Indonesia Stock Exchange in 2016. There are 124 companies obtained by using purposive sampling method. The analysis tool used is multiple linear regression. The results showed that stickiness cost occurred on manufacturing companies listed in Indonesia Stock Exchange. Furthermore, the results indicate the level of asset intensity in accordance with the level of stickiness cost changes. So it can be concluded that adjustment cost affects stickiness cost.

Keywords: Adjustment cost, stickiness cost, asset intensity.

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1. Introduction

Cost control is one of the important focusses of managers on the financial aspect. Many considerations are used by managers to make decisions about the cost control. In order to perform cost control properly, managers need to know-how the cost behaviour. Traditionally, costs are classified into fixed and variable costs. Traditional cost accounting states an increase or decrease in costs will follow an increase or decrease in activity. When sales activity increases, the cost will increase. Conversely, when activity decreases, the cost will go down as well. However, some previous studies show that there has been a stickiness cost in the company's activities.

Adjustment cost theory was introduced by Lucas (1967). This theory states that when the shock occurs, the company cannot necessarily change the production factor without the cost of adjustment. Furthermore, that changes in the level of production factors used by the company require a high cost. Previous researchers use adjustment cost theory to observe changes in investment or capital (Cooper & Haltiwanger, 2006; Groth & Khan, 2010), worker changes (Leitao, 2011) and inventory level changes (Danizger, 2008). If managers feel the need to increase or decrease the resources used, they need to pay the adjustment cost. This causes managers to hesitate to reduce resources when sales decline.

Eltivia (2015) and Eltivia, Widiastuti and Wahyuni (2017) conducting research on companies listed on the stock exchanges of Indonesia, indicating a stickiness cost in these companies. Previous research on stickiness cost measures the intensity of total assets as a proxy of adjustment costs (Anderson, Chen & Young, 2005; Medeiros & Costa, 2004; Yang, Lee & Park, 2005). Based on the literature review and previous research, the research hypothesis is formulated as follows:

H1: There is a stickiness cost on non-production costs for manufacturing companies listed on the Indonesia Stock Exchange in 2016.

H2: Asset intensity effect on stickiness cost level.

2. Research method

The population of this study is manufacturing companies listed on the Indonesia Stock Exchange (IDX) 2016. The sample of this study is determined by purposive sampling. The criteria of purposive sampling are:

1. Listed on the Indonesia Stock Exchange during 2016.
2. Non-production cost data (sales, administration and general costs), net sales and related variable measurement available in the published financial statements.
3. During the year 2016 the company does not suffer losses.

There are 143 manufacturing companies listed in IDX on 2016, and the total of sample is 124 companies (Table 1).

Data analysis in this research will use multiple linear regression.

Table 1. Sample selection using purposive sampling

Criteria	Number
Manufacturing companies listed on IDX up to December 31, 2016	143
Manufacturing companies that IPO on IDX after January 1, 2016	3
Manufacturing companies that publish incomplete financial statements by 2016	5
Manufacturing companies that suffer losses	11
The number of research samples	124

Based on the hypothesis the research framework is shown in Figure 1.

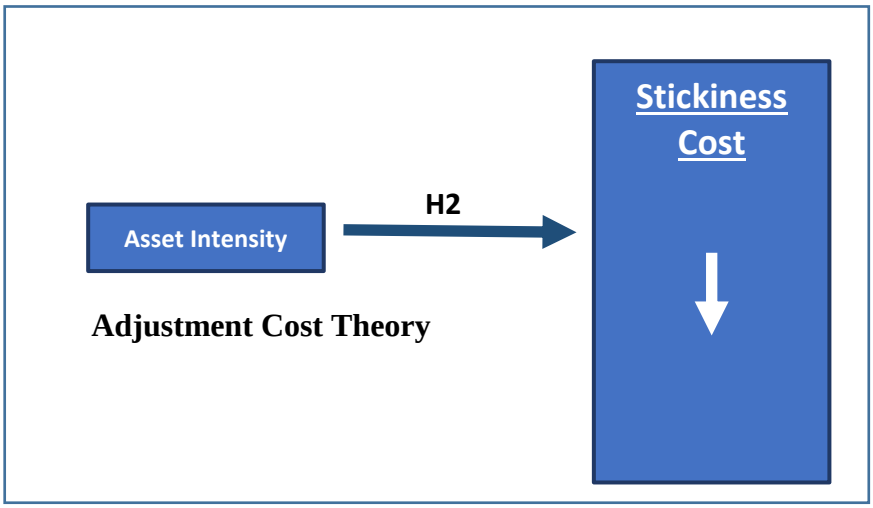

Figure 1. Research framework

Variables used in this study for the dependent variable are stickiness cost, while the independent variables are asset intensity. Measurement of variables is as described in Table 2 refers to research conducted by Pitchekun (2012).

Table 2. Variable measurement

Variable	Measurement
Independent	
Asset intensity	Total asset/total sales
Dependent	
Stickiness cost	The difference between cost changes for 1% increase in sales and cost changes for 1% decrease in sales.

This study uses the model created by Anderson, Banker and Janakiraman (2003) (Model ABJ) to test the research hypothesis. Here is a model used to test each hypothesis:

Hypothesis 1:

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

PA&$U_{i,t}$ = Cost of sales, general and administration company *i* in year *t*

PA&$U_{i,t-1}$ = Cost of sales, general and administration company *i* in year *t* − 1

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

Sales $_{i,t-1}$ = Sales of company *i* in year *t* − 1

Dummy $_{i,t}$ = The Dummy variable is worth 1 if the net sale decreases between period *t* and *t* − 1, and 0 otherwise on firm *i* year *t*

$\varepsilon_{i,t}$ = Residual

Hypothesis 2:

$$\text{Log}\left(\frac{\text{BiayaPA\&}U_{i,t}}{\text{BiayaPA\&}U_{i,t-1}}\right)=\beta_0+\beta_1\log\left(\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}}\right)+\beta_2\text{Dummy}_{i,t}*\log\left(\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}}\right)$$
$$+\beta_3\text{Dummy}_{i,t}*\log\left(\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}}\right)*\text{Asset}+\varepsilon_{i,t}$$

PA&$U_{i,t}$ = Cost of sales, general and administration company *i* in year *t*

PA&$U_{i,t-1}$ = Cost of sales, general and administration company *i* in year *t* − 1

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

Sales $_{i,t-1}$ = Sales of company *i* in year *t* − 1

Dummy $_{i,t}$ = The Dummy variable is worth 1 if the net sale decreases between period *t* and *t* − 1, and 0 otherwise on firm *i* year *t*

Asset = Asset Intensity

$\varepsilon_{i,t}$ = Residual

3. Results and discussion

The regression coefficient based on Table 3, $\beta_1 > 0$; while the regression coefficient $\beta_2 < 0$. The sum of the coefficients $\beta_1 + \beta_2$ is to measure the percentage increase in non-production costs due to a decrease in net sales by 1%, resulting in a value of 0.711 obtained from 0.936 + (−0.218). This means that if net sales drop by 1% then non-production costs will decrease by 0.718%. Meanwhile, if net sales increase by 1% then nonproduction costs will rise by 0.936%. Variations in non-production costs when net sales increased more than when net sales decreased. Thus, these findings support the hypothesis 1 that the increase in non-production costs when sales revenues increase is higher than the decrease in non-production costs at the time of net sales decline or stickiness cost. This signals that sticky cost behaviour on non-production costs needs to be considered in looking at the outlook and profit forecasts before making any investment decisions, due to the slowness of resource adjustments as volume decreases. In addition, sticky costs occur because managers decide to keep using unused resources rather than adjusting when volume decreases.

Here is the result of hypothesis testing 1, as shown in Table 3.

Table 3. Hypothesis 1 test result

		Unstandardised coefficients	
	Model	***B***	**Standard error**
1	Constant	−0.023	0.034
	Log Sales	0.936	0.254
	Dummy log sales	−0.218	0.121

[a]Dependent variable: LogSGA.

Table 4. Hypothesis 2 test result

		Unstandardised coefficients	
	Model	***B***	**Standard error**
1	Constant	−0.013	0.024
	Log sales	0.875	0.420
	Dummy log sales	−0.024	5.214
	Dum log sales as	−0.423	0.317

[a]Dependent variable: LogSGA

Based on Table 4 the coefficient β_1 shows the percentage increase in non-production costs due to the increase in net sales by 1%. The sum of the coefficients of $\beta_1 + \beta_2 + \beta_3$ indicates the percentage decrease in nonproduction costs of 0.428 percent when a net sales decrease by 1%. Meanwhile, if net sales increase by 1% then non-production costs will increase by 0.875%. Variations in non-production costs when net sales increased more than when net sales decreased. Thus, these findings support the hypothesis 2 that the increase in non-production costs when sales revenue rose higher than the decrease in non-production costs at the time of net sales declined or stickiness cost. The negative sign of the coefficient of β_2 indicates no stickiness cost and the negative sign of the β_3 coefficient signifies the greater the firm's intensity asset, the higher the degree of stickiness cost. The assumption of $\beta_1 > 0$ and β_2, $\beta_3 < 0$ becomes the basis of acceptance of the hypothesis 2. So based on the assumption, the second hypothesis is accepted.

Based on the results of this study, hypotheses 1 and 2 are accepted. Hypothesis 1 shows that stickiness costs have occurred in manufacturing companies listed on the Indonesia Stock Exchange. The existence of stickiness cost behaviour shows that non-production costs need to be considered in looking at the prospects and profit forecasts before making an investment decision. This is because resource adjustments slow as the volume decreases. In addition, a sticky cost occurs because the manager decides to keep using unused resources rather than adjusting when the volume decreases. Furthermore, the degree of stickiness cost increases as the asset intensity increases. Intensity asset shows how much asset level influences the company's operational activities in this study is shown by total sales. Asset intensity in this research influence the degree of stickiness cost that occurs. Thus, asset intensity generally affects managers' decisions in making resource adjustments.

4. Conclusion

Stickiness costs incurred in manufacturing companies in Indonesia indicate that non-production costs need to be considered in looking at the outlook and profit prediction before making investment decisions, due to the slow adjustment of resources when volume decreases. In addition, a stickiness cost occurs because the manager decides to keep using unused resources rather than adjusting when the volume decreases.

Asset intensity can be used as proxy adjustment cost, based on this research can be used to measure stickiness cost degree. Intensity of asset is a proxy to measure how much total assets play a role in the company's operational activities. When a company can generate additional income, the company needs to be wise to manage the additional income efficiently. Increased intensity asset ratio, indicating an agency fee.

The degree of increase of asset intensity has conformity with stickiness cost indicates that adjustment cost theory can be used as the concept underlying stickiness cost occurrence. When companies experience a decrease in activity, managers do not directly adjust to their resources. This decision is caused because the manager prefers to do expenditure to maintain the resources, compared with making adjustments.

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