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Sticky cost behavior in selling, general, and administrative costs in Indonesian manufacturing companies

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Abstract

Cost response to decreasing activity is often smaller compared to rising costs when there is an increase in activity volume. The phenomenon of the cost response is often referred to as sticky cost behavior. This study aimed to determine whether there was sticky cost behavior in selling, general, and administrative (SG&A) costs of manufacturing companies listed on the Indonesia Stock Exchange (IDX). The observation period was in 2015-2017. The sample used was 258 manufacturing companies selected by using a purposive sampling technique. The type of data used was panel data using quantitative methods in the form of stationary with panel data regression tests with the Generalized Least Square (GLS) model. We found that there was no sticky cost behavior in the SG&A costs of manufacturing companies in Indonesia. This study implies that decision making on a scale of activity in a company is difficult to predict.

Abstrak

Respons biaya terhadap penurunan aktivitas seringkali lebih kecil dibandingkan dengan kenaikan biaya ketika ada peningkatan volume aktivitas. Fenomena respons biaya sering disebut sebagai perilaku sticky cost. Penelitian ini bertujuan untuk mengetahui apakah ada perilaku sticky cost dalam biaya penjualan, umum, dan administrasi perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia (BEI). Periode pengamatan adalah 2015-2017. Sampel yang digunakan adalah 258 perusahaan manufaktur yang dipilih dengan menggunakan teknik purposive sampling. Jenis data yang digunakan adalah data panel menggunakan metode kuantitatif dalam bentuk stasioner dengan uji regresi data panel dengan model Generalized Least Square (GLS). Kami menemukan bahwa tidak ada perilaku sticky cost dalam biaya penjualan, umum, dan administrasi perusahaan manufaktur di Indonesia. Studi ini menyiratkan bahwa pengambilan keputusan pada skala kegiatan di perusahaan sulit untuk diprediksi.

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1. Introduction

Cost behavior shows the relationship between costs and activities. Views on the behavior of costs reflect the cost of reacting along with the changing level of activity carried out. Based on its relation to the level of change in activity, costs can be classified into fixed and variable costs. Fixed costs are costs that do not change when there is a change in output quantity, while variable costs are costs that change when there is a change in the output quantity. Nevertheless, the concept of fixed cost behavior and variable costs are not accepted by all authorities in cost and management accounting (Anderson, Banker, & Janakiraman, 2003). Prior study shows that costs increase more when there is an increase rather than when there is a decrease in the activity volume (Balakrishnan, Labro, & Soderstrom, 2014). This phenomenon is often referred to as sticky behavior that is identified when the response of costs to a decrease in activity is smaller than the increase in costs when the volume of activity increases.

In the traditional cost behavior model, can be associated with various levels of activity. Managerial interventions can be seen from policy changes relating to bound resources. When demand increases beyond normal capacity, companies tend to add resources. With the increase in these resources, costs will exceed the capacity. Costs are considered sticky when the increase in costs is greater than the decrease in the change in the activity of an equivalent amount (Ratnawati & Nugrahanti, 2015). Sticky cost behavior indicates that the costs directly related to the company's main activities are stickier than the costs of the supporting unit. This is in line with Anderson et al. (2000) which revealed that the selling, general, and administrative (SG&A) costs produced different responses to the increase and decrease in activity. This is referred to as sticky costs, which means that these costs are difficult to adjust.

According from the Investment Coordinating Board, it was informed that the development of the

manufacturing industry in Indonesia was able to shift the role of commodity-based to be manufacture based. Therefore, it can be concluded that the manufacturing industry is considered more productive and can provide a board chain effect so that it can increase the value-added of raw materials and increase labor. SG&A costs have a large proportion of business operations. This is evidenced by the average cost of SG&A divided by total assets which reach 27 percent, compared to the average cost of research and development divided by total assets which only reaches 3 percent (Banker, Huang, & Natarajan, 2011).

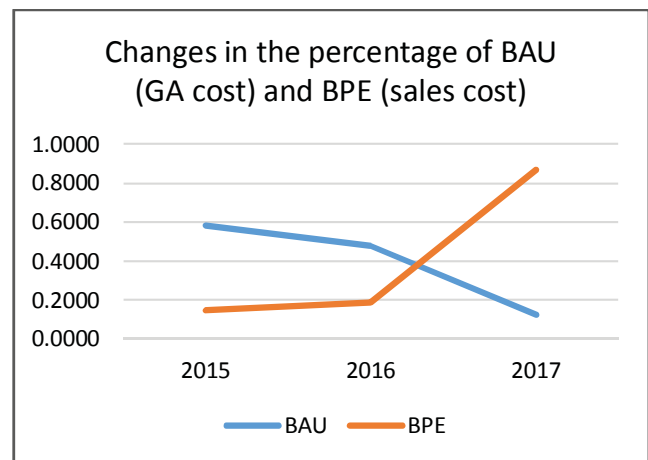


Figure 1. Changes in the percentage of selling, general, and administrative costs

Based on data from Figure 1, it can be seen that administration and general costs decreased from 2015 to 2017. The opposite happened to the cost of sales which increased during this period. Based on the components of in SG&A costs are fixed costs, the costs will not be obtained from sales. Interesting facts related to Figure 1 are SGA costs which are not in accordance with the increase or decrease in the volume of company activity. An indication of fixed costs in SG&A costs will be seen when switching costs to changes in net sales, and discriminating with periods of increased sales and periods of increased sales.

SG&A costs consist of employee salary, asset maintenance, and office building depreciation costs. Cost stickiness is related to management optimism in making decisions related to costs. The economic concept of sticky costs reflects the level of cost of adjusting the resources faced by managers in decision making. This is related to the commitment made by management to keep maintaining unused resources when there is a decrease in sales volume (Ballas, Naoum, & Vlismas, 2015). Decisions made by the management are associated with agency theory (Chen, Lu, & Sougiannis, 2012). In agency theory, there is a discrepancy between the shareholders and management where the management is considered a disincentive to cost savings.

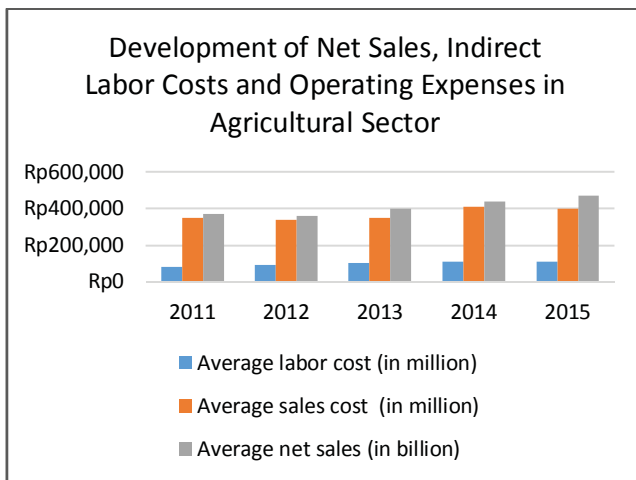


Figure 2. Development of net sales, indirect labor cost, and operating expenses in agricultural sector

Figure 2 taken from the financial statements agricultural sector companies from 2011 until 2015. The graph indicates that the behavior of labor cost and operating expenses are not symmetrical with sales net in agricultural sector companies. Companies that have an indication of sticky behavior cost can cause a decrease of company's profit. Sectors agriculture is in the first place have an indication of sticky cost behavior on SG&A costs in period 2009-2012 (Pradipta, 2013).

Researches describing the sticky cost phenomenon have been widely studied in several countries in various industrial sectors. He, Teruya, & Shimizu (2010) showed the existence of cost stickiness behavior in SG&A costs in manufacturing companies in Japan. Porporato & Werbin (2010) found indications of cost stickiness behavior in Canada, Argentina, and Brazil in the banking sector. This is also in line with Argilés & García-Blandón (2009) who found the behavior of cost stickiness in the plantation sector in Spain by looking at the company category based on their small and large size. In Indonesia, Vonna & Daud (2016) found sticky costs on manufacturing and non-production costs of manufacturing companies. Apriliawati & Nugrahanti (2015) revealed that there was a sticky cost on SG&A costs in manufacturing companies. In line with Solo (2005), he found a sticky cost behavior in SG&A costs of net sales in manufacturing companies.

Meanwhile, Nugroho & Enderwati (2014) found that there was no indication of sticky cost behavior in manufacturing companies in Indonesia, these manufacturing companies indicate that the higher the intensity of company assets will make the higher stickiness costs. Chen & Lee (2019) found that estimates of cost rigidity are negatively significant in the absence of managerial incentive. Furthermore, Nelmda & Siregar (2016) showed that there was an anti-sticky behavior in SG&A costs. In addition, Hidayatullah, Utami, & Herliansyah (2011) found that the cost of goods sold was not sticky. This study uses manufacturing companies listed on the Indonesia Stock Exchange (IDX) as the research objects with an observation period starting from 2015 to 2017. The objects were carefully chosen because based on the data from the Central Bureau of Statistics, companies engaged in the manufacturing sector continued to experience growth.

The manufacturing industry was one of the sectors supporting the Indonesian economy. In addition, the economic growth was used as a control variable so that the SG&A costs as the dependent

variable were not influenced by other variables. This study focuses on the SG&A costs because it was the largest component of the cost items related to the operations and production activities of manufacturing companies.

This study aims to analyze whether there is a fixed cost behavior in SG&A costs. This study is expected to provide empirical evidence for the indication of the behavior of fixed costs in manufacturing companies. This study is also useful as a reference for developing the literature on cost behavior for academics, especially on fixed cost behavior.

2. Hypotheses Development

The cost accounting concept explains that costs and activities have a symmetrical relationship. This indicates that the increase in costs is in line with the increase in activity volume. Banker & Byzalov (2013) found that there were costs which tended to increase more under the increase compared to the decline in activity. The imbalance of response costs as a result of activity changes is known as sticky cost.

Indications of the sticky cost behavior will be seen in disproportionate changes in costs when sales volume increases or decreases (Vonna & Daud, 2016). When the number of income increases proportionally, the total costs will also increase along with the increasing activity. Similarly, when the amount of income decreases proportionally, it will be followed by the decreases. However, there will be a significant increase in costs when the sales increases compared to when the sales decreases. This happens because, during decline inactivity, the company cannot directly reduce costs in the short term. In line with Anderson et al. (2003) they stated that sticky cost behavior increases were a result of decisions taken by a manager which tends to delay efforts to reduce resources until there is a certainty about future that the demand would be decreasing.

In the traditional cost model, there are two types of costs, fixed costs and variable costs. The

difference between two types of costs is fixed costs will not affect the level of production and sales activities. Where as variable costs will follow proportionally the level of company activity. But there is a fee known as sticky cost. Managers assume that the decline in sales conditions for company activities is only temporary. On the other hand, they believe that the conditions will return to normal, so they decide to delay in terms of reducing costs when there is a decrease in the activities (Subramaniam & Watson, 2016). Furthermore, the sticky cost is associated with the agency, where the managers tend not to make cost adjustments. These cost adjustments will further provide greater accrual benefits for the principal and not for the agent. This is in line with what was stated by (Chen et al., 2012).

The concept of sticky cost behavior is related to the optimism of management. Economic uncertainty in the future is one of the things that need to be considered by the management in decision making. In responding to this, the manager as someone who manages the company to increase the value of the company's responsible for resource commitment decisions. The company management interventions will ultimately affect the cost structure of the company.

The sticky cost behavior will be increasingly seen when the managers believe that the sales activities will increase in the following period. Therefore, there is a tendency for a manager to maintain the existing resources in the company. This aims to meet the market demand so that the cost stickiness will be high. Furthermore, the managers will not make adjustments to reduce resources. This is due to the manager's view that the company might not be able to meet the high demand in the following period. In addition, the cost of replacement adjustment is higher than the cost of maintaining the existing resources (Anderson et al., 2003).

The cost stickiness can also be caused by a conflict of interest. Chen et al. (2012) found that there was an agency conflict between agents and princi-

pals that could trigger sticky costs. In the agency theory, management claims that cost adjustment made when the activity decreases will provide greater accrual benefits to the agent. In addition, decisions related to costs may result in greater costs at the beginning. Therefore, management often avoids decisions related to cost adjustments (Datta et al., 2010).

Sticky cost behavior occurs because there is an imbalance in resource adjustments which results in cost adjustments when sales decline is slower than when the sales increase (Kim & Wang, 2014). That means that in a certain period of times decrease in sales cannot be immediately followed by a decrease in equivalent costs.

Research on sticky cost behavior was first carried out by Anderson et al. (2003) who found that there was an increase in costs of 0.55 percent per increase in 1 percent of sales, but there was only a decrease of 0.35 percent of every 1 percent decrease in sales. When the sales increase, the cost of maintaining assets will increase along with the capacity to use them. Meanwhile, when the sales decrease, there will always be costs of maintaining assets because the asset is still maintained in the case the sales will increase in the future. This causes the emergence of sticky cost behavior on SG&A costs.

Cost reduction in response to reduced activity depends on the management's ability to reduce unused capacity costs in the company. There are many costs related to company activities, both directly and indirectly. According to Subramaniam & Watson (2016), when company activity increases it will result in an increase in costs directly. Whereas, when a company experiences a decline in activity, the company cannot directly reduce the employee assets and other costs in the short term. That shows that there are unused human resources when the activity volume decreases and the inherent costs remain the same.

The cost stickiness on the SG&A costs will occur when there is a conflict of interest from the

management in terms of cost adjustments. The management must be able to see when a cost must be adjusted or allowed to stay the same, aiming to make these costs not to be such inefficiencies. When the sales volume decreases, the managers will decide to maintain the resources that are not used instead of making cost adjustments. This statement is supported by Setiawati, Rasmini, & Mimba (2017) who said that the manager decided to delay making adjustments to costs until he was assured that the sales volume had decreased permanently. This indicates that adjusting costs is the key to decision making made by the management.

This research is based on the research of Anderson et al. (2003); Balakrishnan et al. (2014), which states that SG&A costs are inherent in income. This study examines sticky cost behavior on SG&A costs of net sales when there are an increase and a decrease in net sales. Therefore, the hypothesis that can be proposed is as follows:

H₁: there are indications of sticky cost on SG&A cost in companies in Indonesia

3. Method, Data, and Analysis

This study was done in a quantitative manner using secondary data obtained from the official website of the Indonesia Stock Exchange (IDX) (www.idx.co.id). The data used in this study was panel data, which is a combination of time series data and cross-sectional data. Therefore, a sample of 143 manufacturing sector companies listed on the Stock Exchange for the period of 2015-2017 was obtained. A purposive sampling technique was used to obtain samples with the following criteria; (1) should be a manufacturing company listed on the IDX and had published complete annual financial reports for the period of 2015-2017; (2) used Rupiah as its currency; (3) did not experience losses; and (4) had complete data related to the variables used. In this study, researchers eliminated companies that suffered losses in the observation period. The assumption of sample reduction is that the costs in-

curred by the company will be greater than net sales. Thus, a final sample of 258 samples was obtained, covering 86 companies with three observation periods in 2015-2017.

The independent variables used in this study were net sales and decrease the dummy of net sales. Sticky cost behavior occurs when the percentage of SG&A costs when the net sales increases are higher than the percentage decrease in SG&A costs when the equivalent net sales decreases. To identify the existence of sticky costs, this study used a dummy variable to discriminate when the net sales increases in reassess or decrease. The dummy variable is 1 if the net sales decrease between period t and t-1, and 0 if the net sales increase between period t and t-1.

On the other hand, the dependent variable used in this study was SG&A costs. They were used as proxy costs, because the components affected the sales volume as the activity volume (Anderson et al. 2003). In addition, economic growth was added as a control variable. Banker & Chen (2012) stated that sticky costs were not only influenced by company-specific variables but also by pressure from the economic environment that would shape the management's perception of cost adjustments.

This research used a panel data regression test. The model used to find indications of sticky cost behavior was adapted from the model developed by Anderson et al. (2003). This model was used to see the sticky cost behavior on SG&A costs of changes in net sales revenue. The E-views application was used to examine the test.

The first step done was to carry out of stationary tests on each variable to get stationary data (no unit-roots), where the data had a variance that was not too large and there was a tendency to approach the average value.

In the panel data regression test required a model specification test to determine which model will be used. There are three types of models that can be used in panel data regression common, fixed and random effect model as shown in the following

equation (Winarno, 2009):

$$BPE_{it} = \beta_0 + \beta_1 PPB_{it} + \beta_2 DUM_{it} + \beta_3 PEK_t + \beta_4 UPE_t + \varepsilon_{it} \quad (1)$$

$$BAU_{it} = \beta_0 + \beta_1 PPB_{it} + \beta_2 DUM_{it} + \beta_3 PEK_t + \beta_4 UPE_t + \varepsilon_{it} \quad (2)$$

Where: BPE_{it} = Sales cost of company i of year t; BAU_{it} = Administrative and general costs of company i of year t; PPB_{it} = Net sales of company i of year t; DUM_{it} = Decrease dummy of net sales of company i of year t; PEK_t = Economic growth of year t; UPE_t = Size of company of year t; β_0, β_{0i} = Unobserved time-invariant individual effect; ε_{it} = Error term of company i of year t

Costs are considered sticky if the increase in SG&A costs of net sales increases greater than when the sales decreases. The coefficient β_1 measures the percentage of the increase in sales, administrative and general costs caused by an increase in net sales by 1 percent. While the sum of the coefficients $\beta_1 + \beta_2$ measures the percentage of the decrease in sales, administrative and general costs due to a decrease in net sales costs by 1 percent.

The hypothesis in this study is based on the assumption of $\beta_1 > 0$, $\beta_2 < 0$, or if $\beta_1 + \beta_2 < \beta_1$, which indicates that the increase in SG&A costs when net sales increases higher than when the net sales decreases. Therefore, it means that the SG&A costs are sticky.

4. Results

Table 1 presents a descriptive statistical analysis that aims to provide an overview of the variables used.

Table 1 presents that there are 258 samples. The SG&A costs as dependent variables have a mean value of 0.7548 and 0.4018, whereas the minimum values are -0.9996 and -0.9894 and the maximum values are 93.2370 and 56.6841, while the standard deviation values are 6.7873 and 3.5992. This indicates that the smaller the value of the company's accruals, the bigger the rate of increase in SG&A costs of the company.

Meanwhile, the net sales have a mean value of 0.0823 with minimum and maximum values of -0.8566 and 5.9818 with a standard deviation of 0.6297. The mean value shows that the greater the net sales, the greater the rate of increase in SG&A costs of the company compared to the decrease. Furthermore, the decrease dummy of the net sales has a minimum and maximum value of 0.0000 and 1.0000 respectively with a mean and standard deviation of 0.37209 and 0.4843. The mean value indicates that the smaller the net sales, the smaller the level of decline in SG&A costs of the company. The value of each standard deviation was used to see how far the difference in each data was with the average value.

In addition, economic growth has minimum and maximum values of -1.3196 and -1.2949. The mean and standard deviations are -1.3046 and 0.0107. The mean value shows that the greater the net sales influenced by the economic growth, the greater the level of increase in SG&A costs of the company. All research variables have a standard deviation value that is greater than the average

value. Therefore, it can be concluded that there was a high gap between the minimum and the maximum value.

The size of company has minimum and maximum values of 25.2155 and 33.4865. The mean and standard deviations are 28.4823 and 1.5802. The mean value shows that the greater the net sales influenced by the size of company.

In this research, the first stage in estimating the data was by conducting a stationary test using the unit root test. It can be concluded that the data on the SG&A costs, net sales, and decrease dummy of the net sales, economic growth and size of company has been stationary.

Next step that must be done in using the panel data model was the selection of the best model. Model specification test results are shown in Table 2.

After determining the best model using the Hausman test, the next step was to estimate the random effect model. The estimation results are summarized in the following Table 3.

Table 1. Descriptive statistic

	N	Minimum	Maximum	Mean	Std. Deviation
<i>BPE</i>	258	-0.9996	93.2370	0.7548	6.7873
<i>BAU</i>	258	-0.9894	56.6841	0.4018	3.5992
<i>PPB</i>	258	-0.8566	5.9818	0.0823	0.6297
<i>DUM</i>	258	0.0000	1.0000	0.3720	0.4843
<i>PEK</i>	258	-1.3196	-1.2949	-1.3046	0.0107
<i>UPE</i>	258	25.2155	33.4865	28.4823	1.5802

Table 2. Test specification model

Variable	Test	Prob.	Best Estimation Model
<i>BPE</i>	Pagan LM Test	1.0000	Pooled Effect
<i>BPE</i>	Fixed Effect Test	0.8043	Pooled Effect
<i>BAU</i>	Pagan LM Test	0.4690	Random Effect
<i>BAU</i>	Hausman Test	0.5479	Random Effect

BPE_{it} = Sales cost of company *i* of year *t*; BAU_{it} = Administrative and general costs of company *i* of year *t*

Sticky cost behavior in selling, general, and administrative costs in Indonesian manufacturing companies

Lusiana, Ika Kristianti

The R-squared value of 0.434 indicates that the three independent variables can explain 43.4 percent of the variations that occur in the variable cost of sales. While the remaining 56.6 percent can be explained by other variables outside the model.

The result show that the net sales coefficient value is 7.392. It is positive and not significant to the significance level of $\alpha=5$ percent which indicates that the net sales have not effect on the sales costs. While the coefficient the decrease dummy of the net sales is 2.407. It is positive and not significant, showing that the decline in net sales does not simultaneously affect the sales costs. The coefficient value of the economic growth that is equal to -53.811 shows a negative value and is not significant, which means that it is does not effect the sales costs. The coefficient value of the size of company is 0.106. It is positive and not significant, which mean that it does not effect the sales costs.

The result of the random effect model tests on administrative and general costs are summarized in the following table:

The result show that the net sales coefficient value is 0.075. It is positive and not significant to the significance level of $\alpha=5$ percent which indicates that the net sales have not effect on the sales costs. While the coefficient the decrease dummy of the net sales is 0.495. It is positive and not significant, showing that the decline in net sales does not simultaneously affect the sales costs. The coefficient value of the economic growth that is equal to 24.278 shows a positive value and is not significant, which means that it is does not effect the sales costs. The coefficient value of the size of company is -0.003. It is negative and significant, which mean that it does not effect the sales costs.

5. Discussion

The panel data regression test results for the observation period starting from 2015 to 2017 indicate that there was no sticky cost behavior in the manufacturing industry in Indonesia. This could be seen from the increase in the company's net sales which was the same from the decrease in SG&A

Table 3. Result of fixed effect model test on sales cost

Variable	Coefficient	t-Statistic	Prob.
C	-73.981	-1.56	0.122
PPB	7.392	1.77	0.081
DUM	2.407	1.83	0.071
PEK	-53.811	-1.51	0.135
UPE	0.106	-1.56	0.104
R-squared	0.434		
Prob.(F-statistic)	0.302		

Table 4. Result of random effect model on-administrative and general cost

Variable	Coefficient	t-Statistic	Prob.
C	31.981	1.06	0.290
PPB	0.075	0.17	0.866
DUM	0.495	0.86	0.388
PEK	24.278	1.09	0.276
UPE	-0.003	-0.07	0.947
Prob (F-statistic)	0.370		

costs. The test results from descriptive statistics (Table 1) provide information about the compilation of manufacture companies increase the net sales, so the cost will also increase. And vice versa, when the net sales compilation decrease, the cost will also decrease.

The next thing that could influence the stickiness level of sales, administrative and general costs are different characteristic form each country (Calleja et al., 2006). It was also found that only the sales cost variable which was influenced by the net sales and the decrease dummy variable. It revealed that the costs directly related to the company's main activities were stickier than the costs of the supporting unit. Based on the data, the decrease dummy variable had a greater coefficient. This showed that when there was a decrease in net sales, the decrease in the sales costs would be greater.

The results of this study are in line with Nugroho & Enderwati (2013) who found that there was no indication of sticky cost behavior in the manufacturing companies in Indonesia. Furthermore, Nelmidia & Siregar (2016) also found an anti-sticky behavior in SG&A costs. Purnamasari & Umiyati (2019) concludes that the increase in SGA cost when increase in income is smaller than the decrease in SGA when decrease in income.

SG&A costs are the main components in Indonesia. In financial statements, a large number of costs are contained in both costs (Armanto, Tiono, & Suthiono, 2014). With the nature of SG&A costs that dominate corporate expenses, can cause changes in cost stickiness. Differences in management within a company can cause no cost rigidity in this study. The structure of each cost in each different industry can create fixed cost rigidity compared to variable costs (Armanto et al., 2014).

When economic growth occurs, managers have the right to change the resources that will be used to produce production. Managers usually can increase sales, increase managers will not reduce resources. Because the compilation is experiencing

an economic slowdown and the company is not overly expecting sales, the manager will adjust the company's resources. From this study, it can be seen that in a conflict between principal and agents, the management tended to reduce the cost rigidity in the short term. In other words, the cost level would also return to its natural level. Therefore, the costs in accordance with the level of activity carried out. In addition, the management also had an incentive to adjust costs by not assuming that any cost adjustments made had large accrual benefits not only for the agents.

The model estimation results show that economic growth also has no influence on SG&A costs. Fluctuating economic growth in the future as a result of the economy was not considered by the managerial parties in making adjustments to costs, especially the SG&A costs of the company.

6. Conclusion

This research was conducted to prove whether the increase selling, general, and administrative (SG&A) costs when there was an increase in net sales was higher than the decrease in costs when the net sales decreased. The results showed that there was no sticky cost behavior in the manufacturing industry. When there was a decrease in sales, there would be a decrease in the SG&A costs which were greater than the increase in sales, administration and general costs when there was an increase in sales. The economic growth in research could not be considered as a control variable, although the manufacturing industry was closely related to economic growth and also the size of company.

The limitation of this study is that the researches did not analyze the cost component in detail in the financial statements. Therefore, this study recommends analyzing the specific cost component such as salaries or labor that are directly related to the production process or to review costs at various levels of activity periodically. It should also be considered for the nature of each cost (fixed costs,

variable costs, and semi-variable costs). This is used to understand the true pattern of cost behavior and it is because sales costs are more responsive along with changes in the company's net income. In addition, future research is also expected to be able to use other industrial objects with high economic activity so that cost changes can be easily identified.

This study implies that decision making related to costs cannot be easily predicted based on the level of company activity. There is a need to look at the factors that can affect the increase or decrease in costs, such as state ownership, labor cost, socio-political factors, and managers' behavior. This is done for efficiency related to costs.

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