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# Cost Stickiness:

## Behavior and Factors

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***Abstract*—The objective of the study is to analyse the sticky cost behaviour and the factors that affect the cost stickiness on manufacturing companies listed in Indonesia Stock Exchange. The behavior of sticky cost in this study is found by analyzing selling, general and administrative costs which are categorized into several industry groups to observe the annual degree of sticky cost of each group of industry. In addition, the factors that affect the cost stickiness are capital intensity ratio, employee intensity ratio, incentive management as measured by free cash flow, and the control variable, firm size. The method used in this study is multiple linear regression analysis using the equation as measured by Anderson, Banker and Janakiraman. The sample is determined by purposive sampling method with the number of samples of 97 companies during the period 2014-2018. The results of this study are that sticky cost behavior occurs in all manufacturing companies in Indonesia. The largest and smallest degrees of sticky cost occur in animal feed and other sectors, which is as proof that the company of such sectors has inconsistent management in supervising and controlling selling, general and administrative costs. Furthermore, the results of the factors affecting the cost stickiness show that: 1) capital intensity ratio does not influence the degree of cost stickiness, 2) employee intensity ratio affects the degree of cost stickiness, 3) free cash flow does not affect the degree of cost stickiness, and 4) firm size of control variable affects the degree of cost stickiness.**

***Keywords: selling, general and administrative cost, capital intensity ratio, employee intensity ratio, free cash flow, sticky cost***

## I. INTRODUCTION

In decision making, a manager should have knowledge of the cost behaviour. If the manager understands the concept of the cost, they will be able to optimize costs and increase efficiency in managing company's resources. According to Dunia and Abdullah, based on the cost behaviour with respect to changes in the level of activity or volume, the costs can be categorized into three types, namely variable costs, fixed costs and semi-variable costs [1]. In order to facilitate the management in planning or operating budgets and controlling costs sufficiently, semi-variable costs must be broken down accordingly into variable and fixed elements, combined with variable costs or fixed costs afterwards, therefore there are only two types of costs namely variable costs and fixed costs. Based on these assumptions it implies that a 1% increase in the level of activity results in a 1% increase in costs, and a1% decrease in the level of activity results in a 1% decrease in costs [2]. However, Anderson et al. states that the cost does not change proportionally to changes in activity, but increases higher when activity rises compared to the decrease when activity falls, and such behaviour is known as cost stickiness [3]. Disproportionate change in costs is a cost behaviour which amount of the changes depends on the changes in activity. The changes in costs of increased activity and decreased activity is disproportionately caused by imbalance response to the costs towards the changes in activity. This imbalance response is referred as sticky cost behaviour. A cost is said to be sticky when cost increases greater than the decline in activity changes by an amount equivalent [4].

### *A. Traditional Cost Behavior*

Traditional cost behavioural theory divides the costs into two categories: fixed costs and variable costs [5]. Fixed costs are assumed to be independent to changes in activity, while the variable costs are assumed to change proportionally to the changes in activity. Cost behaviour will react or change as changes take place in the level of business activity [6]. Pichetkun and Panmanee say that information on costs is critical because this information can help managers to predict accurate future costs in order to be able to create cost planning and decision-making [7].

### *B. Sticky Cost*

Asymmetric behaviour of costs leads to cost stickiness. Cost stickiness is a cost behaviour that is incurred if the increase in costs due to the increase in activity is greater than the decrease in costs due to a decrease in activity during declining sales conditions [3]. The concept of cost stickiness, is an asymmetric behaviour of costs that depends on the changes in sales decisions, especially when sales decline [8]. The same thing about the sticky costs is also defined by Serdaneh as an asymmetrical behaviour of costs where the rigid cost incurred in effect of the changes of activity [9]. Ratnawati and Nugrahanti define that sticky cost will be indicated in disproportionate cost changes when sales activity increase and decrease [4]. Ghaemi and Nematollahi define sticky cost as the cost that swiftly increases when the sales revenues increase than when the sales revenues decrease; for instance, when the sales revenue increases by 10%, the cost would increase by 9%,however when the sales revenue decreases by 10%,the cost would only decrease by 8% [10].

*C. Selling, General and Administrative Costs*

Selling cost is the cost incurred to sell products or services. Meanwhile, general and administrative costs are the costs incurred to direct, control, and operate companies [11].

*D. Capital Intensity Ratio*

Capital intensity ratio is the ratio of fixed assets, such as factory equipment, machinery, and various properties of the sales [12]. Capital intensity ratio reflects how much of fixed assets used in the company relatively to sales generated [13]. The greater this ratio, the higher the assets required to generate sales, thus greater asset maintenance financing is needed [14].

*E. Employee Intensity Ratio*

Employee intensity is the ratio of the number of employees to net sales. It is measured by the calculation results of employees/sales, which led to a statement that the greater amount of labour are used, the greater the labour costs incurred by the company [7]. Employee intensity ratio describes the number of employees of a company relatively to sales generated. The more employees are hired, the more labour costs incurred so that it gives more effect to the company's adjustment costs and cost stickiness behaviour [15].

*F. Incentive Management*

Variable of incentive management is associated with how much ability and potential of the management to utilize company resources for private purposes [16]. When incentive management is associated with efforts to maximize personal interests, this will lead to empire building incentive. This phenomenon occurs when the costs incurred in the company are utilized by management to maximize their profits and not to increase the productivity of companies [8].

## II. METHODS

*A. Data Analysis Method*

Quantitative data analysis was applied in this study along with multiple linear regression method. Analysis was performed by processing the data through Eviews program version 10.0 as panel data was used in this study. Panel data is a combination between cross section data and time series [17]. The data of selling, general and administrative costs were used to determine whether the symptoms of sticky cost is present. Furthermore, the coefficient of the sticky cost variable was used as the dependent variable, while Capital Intensity Ratio, Employee Intensity Ratio, and Incentive Management were used as independent variables. In this study, researchers added control variables, the firm size. The calculations for each variable are as follows:

$$STICKINESS = log\ (SG\&Ait\ /\ SG\&Ait\text{-}1) \quad (1)$$

$$SALESCHG = log\ (Salesit\ /\ Salesit\text{-}1) \quad (2)$$

$$Sticky\ Cost = Coefficient\ \beta 1 > \beta 1 + \beta 2 \quad (3)$$

$$Capital\ Intensity\ Ratio = log\ (Total\ Fixed\ Assetsit/Total\ Salesit) \quad (4)$$

$$Employee\ Intensity\ Ratio = log\ (Salary\ Costit/Total\ Salesit) \quad (5)$$

$$FCF = (Cash\ Flow\ from\ Operating\ Activities - Dividend)\ it\ /\ Total\ Assetsit \quad (6)$$

$$Firm\ Size = Ln\ (Total\ Asset) \quad (7)$$

$$STICKINESS = log\ (SG\&Ait\ /\ SG\&Ait\text{-}1) \quad (8)$$

## III. RESULTS AND DISCUSSION

TABLE I. RESULT OF STUDY

| **Sticky Cost Degrees it = β0 + β1 ASSET it + β2 EMPLOYEE it + β3 Free Cash Flow it + β4 Firm Size it** | | | | |
|---|---|---|---|---|
| **Degrees _SC** | **Prediction** | **Coefficient** | **Prob** | **t-stat** |
| ***CI*** | + | **-0.031384** | **0.7829** | |
| ***EI*** | + | **1.536229** | **0.0742** | * |
| ***FCF*** | + | **-0.002786** | **0.957** | |
| ***Firm Size*** | +/- | **-9.564783** | **0.0015** | ** |
| ***Constanta*** | | 10.75699 | 0.0022 | |
| N = 485 | | *Fixed Effect Model* | | |
| Adjusted R Square = 0.217655 | | | | |
| PF (stat) = 0.287739 | | | | |
| Notes: * significance level α = 10%, ** significance level α=5%. | | | | |
| Capital_Intensity i in year t is measured by the logarithm of total fixed assets divided by total sales. | | | | |
| Employee_Intensity i in year t is measured by the logarithm of salary cost divided by total sales. | | | | |
| Free_CashFlow i in year t is measured by (CFO - dividend) divided by total assets. | | | | |
| Firm Size i in year t is measured by the natural logarithm of total assets. | | | | |

Source: Data processed, 2019.

Based on the results on the table above, it is found the following results:

- Capital intensity ratio has a probability of 0.7829. This value is greater than the significance level of 0.05, it means that capital intensity ratio does not affect the degree of cost stickiness. However, it has a negative coefficient which means when the capital intensity ratio increases, it will cause the decrease in the degree of cost stickiness.
- Employee intensity ratio has a probability of 0.0742. This value is smaller than the significance level of 0.10, it means that the employee intensity ratio affects the degree of cost stickiness. It has a positive coefficient which means when the employee intensity ratio increases, it will cause the increase in the degree of cost stickiness.

- Incentive management, with free cash flow as its proxy, has a probability of 0.957. This value is greater than the significance level of 0.05, it means that free cash flow does not affect the degree of cost stickiness. It has a negative coefficient which means when the free cash flow increases, it will cause the decrease in the degree of cost stickiness.
- Firm size has a probability of 0.0015. This value is smaller than the significance level of 0.05, it means that firm size affects the degree of cost stickiness. It has a negative coefficient which means when the firm size increases, it will cause the decrease in the degree of cost stickiness.
- Capital intensity ratio, employee intensity ratio, free cash flow and firm size has no effect on the degree of cost stickiness.

Coefficient of Determination is 0.217655 or 21.76%, it means that all independent variables are able to explain the dependent variable variation by 21.76%, while the remaining 78.24% is explained by other factors that are not included in this research model.

## IV. CONCLUSION

Based on the statistical test results, it can be concluded by the following results:

- Capital intensity ratio does not affect the cost stickiness. Capital intensity coefficient is negative, which means when the capital intensity ratio increases then the cost stickiness will decrease. This also means that the increase in capital intensity ratio is higher than the decrease in SG&A costs.
- Employee intensity ratio has positive effect on the cost stickiness. Employee intensity ratio coefficient is positive, which means when the employee intensity ratio increases then the cost stickiness will also increase. This also means that the increase in employee intensity ratio will be followed by the increase in SG&A costs.
- Free cash flow does not affect the cost stickiness. The coefficient of free cash flow is negative, which means when the free cash flow increases then the cost stickiness will decrease. This also means that the increase in free cash flow is higher than the decrease in SG&A costs.

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