Cost Behavior: A Comprehensive Analysis on the Cost Stickiness Theory in the ASEAN

JULIAN ANTONIO
De La Salle University – Manila 2017

Abstract- ***There is an underlying assumption provided by common accounting literature is that SG&A costs move symmetrically with regards to changes in activity, however that may not always be the case. Empirical studies suggest that costs do not move proportionately with changes in sales, wherein the increase of costs is not proportion to the decrease in costs for every absolute change in sales revenue. This asymmetric cost behavior is known as cost stickiness. A comprehensive study was performed which investigated the presence of cost stickiness and the various factors that affect it within publicly listed firms in the ASEAN-6. We find that ASEAN firms exhibit sticky cost behavior wherein SG&A costs on average increase by 0.2718% and decrease by only 0.1929% for every 1% absolute change in revenue. Second, we find that costs are stickiest when revenue changes by 15% to 20%. Third, we find that employee intensity has a significant effect on the stickiness level of firms in the service industry. Lastly, the researcherfinds that firms from the different countries in the ASEAN exhibit varying magnitudes of stickiness.***

I. INTRODUCTION

Understanding the behavior of costs is an important element of management accounting. The relationship between costs and revenues are commonly being debated on as literature cannot provide a universal explanation between the two [18]. Some instances claim that costs move symmetrically to the changes in revenue, although recent empirical studies find that costs do not remain static and are asymmetric in nature. We classify these asymmetric movements in costs as Cost Stickiness.

Pioneering researchers on the cost stickiness theory state that costs become sticky as a result of the deliberate attempt of cost adjustment by the managers being unable to maintain the speed of sales increases or declines, it is found that operating costs increase by 0.55% for every 1.00% increase in revenue and decrease by only 0.35% for every 1.00% decrease in revenue [2]. That means that there is a higher magnitude of changes in costs for increases in revenue in comparison to the changes in SG&A for every decrease in revenue.

In a general level, costs represent resources that are provided to carry out different activities within a firm. As activities are carried out to provide a product or service, resources are committed based on demand expectations that, in turn, generate costs regardless of actual demand. Management is then pressured to make decisions based on activity levels which may affect the cost levels of the firm either symmetrically or asymmetrically. Recently, empirical accounting research documents evidence of asymmetric cost behavior (i.e., cost stickiness). That is, costs appear to rise more with an activity increase than they fall with an activity decrease [2,14] and therefore sticky cost information is vital for management to make proper cost decisions.

- Theoretical Background

Cost stickiness is a significant business phenomenon which is driven by internal factors, which directly involve the internal operations of an entity, and external factors, which are those variables that cannot be controlled and are inherent to the firm.

Internal Factors

Large changes in activity tend to influence managers to increase resources in anticipation for higher activity levels in the proceeding period. Subramaniam & Weidenmier [16]hypothesize that cost stickiness is a result of managers' responses to large changes in activity level. Unlike small activity changes, large activity changes tend to force managers to alter the cost structure of the firm

shifting the total cost line. This is a result of an optimistic view on the business conditions by the management as they anticipate sales to increase even further. They may increase costs in order to match the possible oncoming demand. Moreover, managers are more likely to change costs for activity increases rather than decreases because small drops in sales activity are deemed temporary by management as they anticipate that sales activity would just revert back.

Deliberate Decision Theory. When managers experience a decline in sales in the current period and expect this decline to be temporary, forecasting a sales rebound on the subsequent year, cutting resources proportionately would eventually result to a higher cost due to the expenses that would be incurred in reacquiring these resources to fully maximize the potential increase in sales for the subsequent period. This theory hypothesizes that management deliberately retain resources during a decline in activity to quickly take full advantage of the sales recovery in the future [20]. This theory applies to management that takes into account long term strategic planning. Even though retention of excessive resources in the current period of activity decline result to lower profits and further strengthens the theory of sticky costs, this would benefit the company in the long run due to its resource availability to exploit future increase in sales.

Cost Adjustment Delay Theory. Changes in sales, in comparison to previous year sales, may reflect long term or short term market shift. When experiencing a current period decline in sales, management may delay the reduction of costs with regards to the decrease in sales until further information are obtained whether this decline would entail a long term or short term shift in demand. This delay in reduction of costs lead to its sticky behavior due to its retention of unutilized resources within a period of decline in activity. This theory suggests that costs become sticky as a result of the inability of the costs to decline with regards to the rate of decrease in sales.

Empire Building. Managers are responsible for the resource adjustments to be made in a firm with regards to changes in activity levels or sales. Several studies would claim that these adjustments are driven by different reasons which could be economic in nature i.e. demand uncertainty or the behavioral traits of the managers i.e. benchmark-beating behavior [10] and the need for empire-building [12]. Agency problems generally occur when there is a mismatch between the interests of the management and a company's shareholders. One specific example of an agency problem that may occur is empire-building. Empire building is said to occur when managers, who do not have legitimate equity interest in the business, choose to make operational decisions that are inherently self-serving which come at the expense of a company's shareholders [5]. Possible indicators of empire building may be overstaffing and an unnecessary accumulation of various assets within the control or influence of certain employees. In truth, it may sometimes be difficult to identify when such circumstances are actually present as managers may use various defenses in their favor; an example of such defenses would be rationalizing that such arrangements are kept in order to facilitate and support the development and growth of the company, or that there is allegedly insufficient data to support the decline in activity is permanent thus making it unnecessary to cut certain costs immediately. The unnecessary cost generating activities that arise because of empire-building contributes to the cost stickiness phenomenon.

- *External Factors*

Industry Type. Different industries have different resource requirements for each industry type. An example would be that those companies engaged in the manufacturing industry will tend to have larger investments in raw materials and labor as compared to those in the merchandising industry. Interestingly, the strongest evidence of sticky behavior is found in samples consisting of firms from multiple industries [2] while samples from one industry exhibit limited sticky cost behavior [14]. Because industries operate in different production environments, this causes their resource requirements to change based on what is relevant to their line of business. Accounting variables now tend to be industry specific rather than work in a general level [8]. Accordingly, it is thus theorized that costs exhibit different levels of stickiness per industry because each industry has its own production and operational environment with

associated technology, product markets and regulatory environments and therefore we expect firms in different industries to not only have different relevant ranges and levels of resources, but also inter-industry differences in cost stickiness.

Economy wide variables. People coming from different backgrounds would definitely have a different culture compared to each other. This means that cost behavior is not just limited to the resource requirements per industry but also socio-economic factors. It is theorized that the degree of cost stickiness in each country varies due to the various external factors and internal factors that impact the operations of a business [5].Cost stickiness is a result of the deliberate attempt to adjust the resources being used by the firm in accordance with the changing demands of the consumer. The theory of Banker et al [4] is that the costs attributed to the firing of employees as an attempt to adjust labor resources are great and results to the sticky cost behavior. With their study, they have validated their claims in which countries with strict employment protection laws significantly affect the firm's decisions to adjust their labor resources. This study further emphasizes the point that managerial decisions are not completely unbiased and objective but are merely relative to economy-wide variables.

Research Objectives

This paper aims to resolve the conflicting results on sticky cost behavior in prior literature. The following are the objectives of this study:

1) To determine the different factors that affect cost stickiness in ASEAN firms
2) To determine the magnitude of activity level that has the most significant effect on sticky costs
3) To analyze and interpret the differentiation between industries and compare their individual responses to sticky behavior
4) To analyze and interpret the differentiation between countries and compare their individual results to sticky behavior
5) To be able to provide reliable information on the nature of cost stickiness in the ASEAN for managers and interested users of financial reports.

II. LITERATURE REVIEW

- *Cost Stickiness*

Anderson et al [2] introduced the concept of sticky costs as a management flaw in adjusting committed resources in response to changes in activity. The study found that SG&A costs increase by 0.55% for every 1% increase in revenue while it only decreases by 0.35% for every 1% decrease in revenue. This phenomenon is then defined as the cost stickiness theory. Various literature explains it to be an asymmetric movement in costs due to deliberate decisions of management to adjust resources based on activity levels.Anderson argues that based on the traditional model of cost behavior, variable costs change proportionately with changes in the activity driver. This implies that the change is solely dependent on the change in level of activity, not the direction of the change. Cooper and Kaplan [7] however claim that some costs rise more with increases in activity volume than they fall during decreases. This is labeled as "sticky costs".

- *Management Interference*

In a study conducted by Yasukata and Kajiwara[20] they identified two possible theories that may explain the sticky behavior of costs. These are the Cost Adjustment Delay Theory and the Deliberate Decision Theory. Prior research shows sufficient amount of empirical evidence supporting the Cost Adjustment Delay Theory and its significance on cost behavior. The researcher focused on studying the factors that the Deliberate Decision Theory contribute to the sticky behavior of costs.When management experiences current period sales decline, managers would retain resources rather than proportionately decreasing it with regards to decreases in sales to fully take advantage of subsequent years increases in sales. The Deliberate Decision Theory was measured using the sales forecast for the subsequent periods which are required to be presented by Japanese firms in their financial statements. Managerial overconfidence is a great factor in determining future sales thus these forecast purely reflect management decisions.

Contrary to the common information with regards to costs, management generally does play a substantial role that affects the symmetry or asymmetry of cost

behaviors. For instance, management decisions to increase or decrease firm resources will create an additional cost known as adjustment costs. Adjustments costs are defined to be those that are incurred when certain excess or unutilized resources are discarded upon a decline in activity and those that are incurred to replace the aforementioned upon a subsequent rise in activity which would include severance pays, costs in training new hires, and loss of employee morale due to changes in the workforce according to Anderson et al [2] and Hamermesh and Pfann [9]. It should be the prerogative of management to either maintain their current resources in anticipation for the reflux in demand (assuming there is a decline in sales) or to layoff some resources to compensate the changes in activity level. As managers, their discretion is crucial as it is their decisions will influence the operations of the organization. However, there is a tradeoff in the additional adjustment costs versus the costs savings of the firm when management choose to reduce the firm's resources.

- *Cost Behavior in different industries*

Bugeja, Lu, & Shan [5] provide an interesting perspective on another possible determinant of cost stickiness, which is industry type. In their study they decided to categorize their population into six industries which are: resources, construction, manufacturing, retail, services, and unclassified. Their study found that those involved in the manufacturing, services, and unclassified industries had more propensity to exhibit cost stickiness, while those involved in the retail, resources, and construction industry exhibited less propensity towards cost stickiness [5]. The inherent requirements that some business must adhere to, which in turn results to incurring certain mandatory costs, can be attributed to the nature of the industry they belong to. For example, a company in the manufacturing industry decided to invest in additional equipment to be used in production in anticipation of increased demand for their products in the succeeding year, decline in sales on the second succeeding year will not lead to a proportionate decline in expense as the environmental and safety measures, and upkeep costs and on the equipment purchased cannot simply be lessened or abandoned. This phenomenon may be attributed to the fact that each industry is characterized by various needs in terms of technology and equipment, regulatory requirements, administrative and production controls, which, at the end the day, is captured in the financials of the company.

- *Cross Country Factors*

According to Bugeja et al [5], cost stickiness varies in different countries due to the different factors that contribute to its managerial influences, such cultural and environmental differences. Also elements such as economic structure, market competition, governance environment and firm characteristics greatly contribute to the influence of cost behaviors. A study by Banker et al [4] found out that cross county employment protection policies are also an aspect that contributes to the variation of cost stickiness in different countries. The study concluded that countries with more stringent employee protection policies exhibit a higher level of sticky cost behavior. This would suggest that costs associated with regards to employees would be more difficult to decrease or adjust due to the protection policies. Also, findings suggest that costs attributed to the firing of employees as an attempt to adjust labor resources are great and would still result to the sticky cost behavior. This is also known as resource commitment decisions of managers that is present in adjustment costs.

In Asian countries, Yang et al [19] inspected cost behavior of Korean general hospitals, and found that total costs, labor cost and administrative costs exhibit sticky behavior. The results provided strong support that the more the company have asset intensity or employee intensity, the costs tend to be stickier in nature due to the difficulty in decreasing the costs that are being incurred. Kuo [11] found that SG&A costs of the Taiwanese computer electronic industry are sticky; costs increased 0.47% per 1% increase in sales revenue but decreased only 0.32% per 1% decrease in sales revenue. Additionally, a study on cost behavior of Japanese companies revealed that SG& A costs and cost of goods sold are sticky. SG&A costs and COS increase 0.60% and 0.96% per 1% increase in sales revenue respectively. However, SG&A costs and cost of goods sold decrease only 0.42% and 0.90% per 1% decrease in sales revenue respectively [20].

III. METHODOLOGY

Population

The study used financial data for publicly listed firms from: The Philippines, Indonesia, Malaysia, Singapore, Thailand, and Vietnam from the year 2007 to 2015 taken from the Osiris database. The data extracted per company come from their respective annual financial statements specifically SG&A costs, net sales, total assets, fixed assets, and number of employees.

To ensure the integrity of the data, the researcher screened and excluded those variables with missing data, companies that are financial in nature, companies incorporated after the year 2006, companies delisted after the year 2006, and observations falling in the upper or lower 10% distribution [6]. Additionally, each firm must have at least three usable observations to be included. This criterion eliminates firms that are relatively new or had been incorporated after the start of the dataset period. This selection process is consistent with Anderson et al's [2] study.

Model Specification

The log model of Anderson et al [2] is an empirical model that enables the measurement of those changes of salaries, general & administrative costs (SG&A) in contrast with the changes in Sales Revenue and discriminates between periods when, revenues increase and revenues decrease is presented. The interaction variable "D", takes the value of +1 if there is a decrease in revenue and take the value of 0 if otherwise. (Eq. 1) This model provides the basis for our test of cost stickiness of SG&A costs. In order to improve the comparability of the variables across firms operating in different industries and to alleviate potential heteroskedasticity, the researcher introduced ratio forms and log specification, as presented by the model.

Hypothesis 1 suggests that sticky cost behavior is the of asymmetric movement of SG&A costs with regards to changes in sales. According to Anderson et al. (2003), sticky cost behavior is tested by comparing the variation of SG&A costs with sales revenue in periods when revenue increase with the variation of SG&A costs in periods when revenues decrease. Anderson et al's model (Eq. 1) was used as the basis for testing the stickiness of costs. This was used to determine whether or not stickiness is exhibited as a whole in the ASEAN. The ratio form and log specification improves the comparability of variables and reduces potential heteroskedasticity.

$$\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) = B_0 + B_1 * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) + B_2 * D_{i,t} * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) + \varepsilon_{i,t}$$

(Eq. 1)

Hypothesis 2 suggests that sticky cost behavior is observed only with large changes in the absolute magnitude in sales activity. To test this hypothesis, we divided the activity changes into six levels in order to identify the level of change in activity that generates sticky behavior. We first determine how costs responds to absolute changes in revenue and then test for a different response to revenue decreases. Accordingly, we expand Equation 1, the log model used by Anderson et al [2], for SG&A costs and sales revenue. Equation 2, the expanded model that the researcher used to test the stickiness of costs against the various levels of sales was derived from Subramaniam et al's model [16].

$$\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) = B_0 + \sum_{s=1}^{6} B * R_{s,i,t} * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) + \sum_{s=1}^{6} B_{s+6} * D_{s,i,t} * D_{i,t} * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) + \varepsilon_{i,t}$$

(Eq. 2)

Where:

R1it = 1 if percent change in sales revenue is [-0.05, 0.05]

R2it = 1 if percent change in sales revenue is [-0.10, -0.05) or (0.05, 0.10]

R3it = 1 if percent change in sales revenue is [-0.15, -0.10) or (0.10, 0.15]

R4it = 1 if percent change in sales revenue is [-0.20, -0.15) or (0.15, 0.20]

R5it = 1 if percent change in sales revenue is [-0.25, -0.20) or (0.20, 0.25]

R6it = 1 if percent change in sales revenue is [over 0.25, -0.25) or (0.25, over 0.25]
D1it = 1 if percent change in sales revenue is [-0.05, 0)
D2it = 1 if percent change in sales revenue is [-0.10, -0.05)
D3it = 1 if percent change in sales revenue is [-0.15, -0.10)
D4it = 1 if percent change in sales revenue is [-0.20, -0.15)
D5it = 1 if percent change in sales revenue is [-0.25, -0.20)
D6it = 1 if percent change in sales revenue is [over -0.25, -0.25)

This model may be explained in the following way. Changes in net sales are divided into five levels of increasing amounts of change in revenue. The coefficient R1 measures the percentage increase in revenue when the absolute change for the year is between zero and five percent. On the other hand, the negative coefficient equivalent with a corresponding term D1 indicates that the dependent variable exhibits stickiness in the given range.

Hypothesis 3 suggests that different industries exhibit different degrees of stickiness. The researcherintend to examine the different degrees of stickiness in the manufacturing, merchandising, and service firms in the ASEAN. We have selected fixed asset intensity and employee intensity as performed by Subramaniam and Watson [17] in their methodology, as the determinant of sticky behavior of costs in the industry. It is hypothesized that fixed asset intensity may be driving the sticky behavior of costs in manufacturing firms and employee intensity being the driver for service firms.

$$\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) = B_0 + Y_1 * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) + Y_2 * D_{i,t} * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) + Y_3 * D_{i,t} * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) * FAI + Y_4 * D_{i,t} * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) * EPI + +\varepsilon_{i,t}$$

(Eq. 3)

where FAI represents fixed asset intensity which is the log ratio of fixed assets over sales revenue and EPI represents employee intensity which is the log ratio of the number of employees over sales revenue. These are controlling variables which help determine the factors that drive sticky behavior in the different industries.

Lastly, hypothesis 4 to 9 suggest that there are different levels of stickiness per country in the ASEAN. The researcherhave developed a model that determines the stickiness of costs in the ASEAN. This model is a direct expansion of Anderson et al's (2003) log model which separates each country to determine which exhibits the highest degree of stickiness.

$$\log\left(\frac{SG\&A_{i,t}}{SG\&A_{i,t-1}}\right) = F_{i,t} * (B_0 + B_1 * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) + B_2 * D_{i,t} * \log\left(\frac{Rev_{i,t}}{Rev_{i,t-1}}\right) + \varepsilon_{i,t})$$

(Eq. 4)

Equation 4 can be explained in the following way. The first interaction variable denoted by F determines whether or not the data belongs to a particular country or not. F will take the value of 1 if Philippines and the value of 0 if not Philippines. This is repeated for all countries.

Econometric Model Used

Panel Data Regression was used in analyzing the influences between single variables and the influences between multiple variables of the study spanning over several time periods. Panel data allows us to control for variables that change over time but not across entities.

a) Naïve Model. This model assumes that all parameters are time and space invariant. This model is also known as the classic linear regression model. This assumes that the dependent variable is predictable, not chaotic or random.
b) Fixed Effects Model (FE). This model explores the relationship between predictor and outcome variables within an entity. This the case of this study, the predictor variable will be the change in

sales, whereas the outcome variable would be the change in SG&A, the dependent variable. When using the fixed effects model, it is assumed that the effects of time-invariant characteristics are removed and the net effect of the predictors are thus assessed accurately.

c) Random Effects Model (RE). This model, compared to the fixed effects model, assumes that the variation between data is random and uncorrelated with the predictor or independent variables. However, in using the RE, time invariant variables may be included. RE effects assume that the error terms are not correlated with the predictors which give way for time-invariant variables to be explanatory variables.

Tests of robustness such as the Breush Pagan Lagrangian Multiplier test and Hausman test where performed then after to decide which model would be preferred.

IV. RESULTS, FINDINGS, AND DISCUSSION

Descriptive Statistics

Table 1
Descriptive statistics of ASEAN

Country	Firm	Obs	Missing	Year 2006 Obs	10% dist.	Rem Obs
PH	225	2,250	7	225	96	1,922
IND	591	5,910	44	591	286	4,989
MAL	130	1,300	239	130	53	878
SING	401	4,010	21	401	168	3,420
THAI	409	4,090	5	409	635	3,041
VIET	246	2,460	12	246	431	1,771
TOTAL	2002	20,020	328	2,002	1,669	16,021

Table 1 satisfies the following selection criteria: no missing sales revenue observations for the current and preceding year, no missing SG&A cost observations, no year wherein SG&A costs exceed sales revenue. The researcher excluded data and observations from the year 2006 as it serves as the T0 or the initial time period in obtaining data for changes in sales and SG&A. We eliminated extreme observations from the estimation by excluding variables in the top or bottom 10% of its distribution as adapted from Chen and Dixon [6]. The remaining observations is 16,021 (1,986 firms) from 20,020 (2,002 firms) with an average of 8.1 observations per firm.

Table 2
Summary Statistics

Variable	Mean	Std. Dev	Median
Sales Revenue	410,435	2,165,946	59,750
SG&A	25,053	104,309	3,755.55
SG&A/Sales	22.23%	16.52%	7.46%
No. of Employee	4,345	13,308	334
Fixed Assets	606,221	1,984,374	50,470.46
Employee Intensity	0.03	0.15	0.01
Fixed Asset Intensity	3.51	67.43	0.55

All reported numbers are in thousands of Philippines Pesos (Php)

The primary variables used in our analysis are sales revenue, SG&A costs, fixed asset intensity, and employee intensity. The mean value of Sales revenue is 410,435 (standard deviation = 2,165,946, median = 59,750). The mean value of SG&A costs is 25,053 (standard deviation = 104,309, median = 3,755.55). The mean value of our SG&A costs as a percentage of sales revenue is 22.23% (standard deviation = 16.52%, median = 7.46%).

Testing and Results

ASEAN-6

The results in Panel A of Table 3 support the cost stickiness hypothesis (H1) indicating that the increase in SG&A costs are greater for every increase in revenue than decreases in SG&A costs for every decrease in revenue. The coefficient B1 is 0.2718 (p = 0.000) and B2 is -0.0789 (p = 0.000). This suggests that firms in the ASEAN exhibit sticky cost behavior where costs increase by 0.27% and decrease by only 0.19% for every 1% absolute change in sales revenue. The results provide evidence that sticky behavior exists among ASEAN firms and that managers are unable to mitigate their discretionary costs.

Levels of changes in sales revenue

To further understand the movement of costs, we break down changes in sales revenue into 6 different levels. This enables us to identify which level of change in sales has the most significant effect on the sticky behavior of costs. Panel B of Table 1 provides us information on the results of the testing of the varying levels of changes in sales. The coefficients B1 and B2 resulted as insignificant indicating that there is no difference in change in SG&A for both increases and decreases in revenue. We find that costs are not sticky when revenue changes by 0-5%. Additionally, we find that when the change in revenue is greater that 5%, sticky behavior exists. Interestingly, we find that costs are stickiest when revenue changes within 15-20%. The coefficient B1 is 0.5952 (p = 0.056) and B2 is -0.3112 (p = 0.000). This suggests that costs increase by 0.60% and only decrease by 0.28% for every 1% absolute change in revenue. These results inferwhen revenue changes from 15-20%, managers are unable to mitigate their discretionary costs due to exceeding the boundaries of its relevant range of activity [16]. We may also infer that for activity level changes above the 15% level, managers are forced to commit more resources to match the increase in activity.

Cross Industry Analysis

To identify what drives sticky behavior of costs per industry that researchers employed the use of controlling variables specifically

Table 3
Cost Stickiness

Panel A. Cost Stickiness in the ASEAN						
Variables	ASEAN Firms					
B1	0.2718***					
B2	-0.0789***					
B1 + B2	0.1929					
Interpretation	Sticky					
N	16,021					
Panel B. Cost Stickiness per level of change in Sales Revenue						
Variables	0 – 5	5.01 – 10	10.01 - 15	15.01 - 20	20.01 - 25	25.01 – over
B1	0.0186	0.2154*	0.7083***	0.5952*	0.9137**	0.3450***
B2	-0.0099	-0.1406***	-0.1138***	-0.3112***	-0.2075***	-0.2826***
B1 + B2	0.0087	0.0748	0.5945	0.2840	0.7062	0.0624
Interpretation	Not – Sticky	Sticky	Sticky	STICKIEST	Sticky	Sticky
N	2,663	2,620	2,250	1,877	1,378	5,233
Panel C. Cost stickiness across industries						
Variables	Service		Merchandising		Manufacturing	
B1	0.2767***		0.3839***		0.2295***	
B2	-0.0395***		-0.0810(*)		-0.0638***	
B1 + B2	0.2372		0.3029		-0.1657	
logFAI	0.0031		-0.0223		0.0001	
logEPI	0.6367**		-0.1684		0.2569	
N	1,589		312		3,609	
Panel D. Cost stickiness across countries						
Variables	Philippines	Indonesia	Malaysia	Singapore	Thailand	Vietnam
B1	0.3521***	0.2150***	0.2837***	0.3456***	0.2452***	0.2719***

B2	-0.0145	-0.0581**	-0.0917***	-0.0582***	-0.0815***	-0.1208***
B1 + B2	0.3376	0.1569	0.1920	0.2874	0.1637	0.1511
Interpretation	Not Sticky	Sticky	Sticky	Sticky	Sticky	Stickiest
N	878	1,922	4,989	3,420	3,041	1,771

B1 represents the change in SG&A costs for every 1% increase in revenue whereas B1 + B2 represents the change in SG&A costs for every 1% decrease in revenue. B2 is simply the magnitude difference between the change in SG&A for every absolute change in sales revenue. Significance are denoted as follows: (*) 80% Confidence Interval, * 90% Confidence Interval, ** 95% Confidence Interval, *** 99% Confidence Interval.

fixed asset intensity and employee intensity. The researcher finds that the service industry exhibits sticky behavior where SG&A costs increase by 0.28% (p = 0.000) for every 1% increase in sales revenue and decrease by 0.24% (p = 0.000) for every 1% decrease in revenue. The employee intensity (p= 0.041) seems to be the main driver for the stickiness of costs in the service industry which is not surprising as the service industry is very labor intensive. We may infer that the firms under service related industries may experience difficulty in reducing its labor force when needed due to the fact that employees are necessary to generate sales. The merchandising industry does not exhibit sticky costs (only up to an 84.9% significance). We can infer from this that managers in the merchandising industry are able to properly manage labor resources and that it is less fixed-asset intensive. The manufacturing industry exhibits sticky cost behavior where SG&A increases by 0.23% (p = 0.000) for every 1% increase in revenue and decrease by 0.17% (p = 0.000) for every 1% decrease in revenue. Both fixed asset intensity and employee intensity do not seem to be the main driver of the sticky behavior of costs as they did not provide significant evidence in the estimation. Among the three industries, the manufacturing industry exhibits the highest degree of stickiness (B2 = -0.0638%, p = 0.000) which is in line with Subramaniam and Weidenmier[16] and Bugeja et al's [5] findings on their inter-industry studies. This supports the argument that the magnitude of cost stickiness varies among the different industries and are driven by different factors

- *Cross Country Analysis*

We then examined the behavior of costs on the individual countries in the ASEAN. This sought to provide further understanding of the asymmetric cost behavior, among the member firms of the ASEAN. The aim was to determine the factors and causes of the different movements in SG&A, which is not clearly established in prior literature. Panel D of Table 3 provides the results per individual country.

- *Philippines*

The coefficient B2 (p = 0.667) resulted insignificant for the Philippines which suggests that Philippine firms do not exhibit sticky behavior. This provides us the notion that managers in the Philippines are able to properly manage their discretionary costs. An inference would be that the managers in the Philippines remained conservative during and after the 2007 Global Financial Crisis. This severely affected the labor forces in the country and may have given some firms the opportunity to lay of some resources [3]. Another possible factor would be that the several companies in Philippines practice a contractual agreement scheme, wherein employees are only employed for six to twelve months before getting replaced, this gives managers ease in adjusting labor resources as contractual employees are merely temporary and do not require regularization [13].

- *Indonesia*

We find evidence that Indonesian firms exhibit sticky behavior as our results show that the coefficients B1 is 0.2150 (p = 0.000) and B2 is -0.0581 (p = 0.014) indicating that SG&A costs increase by 0.22% and

only decrease by 0.17% for every 1% absolute change in sales revenue. Indonesia's economic performance has been shaped by government policy which is driven by the country's promotion of natural resources and its young and growing labor force [22]. We may infer that the Indonesian government prioritizes the welfare of its labor force and thus limits the capabilities of managers to adjust accordingly.

- *Malaysia*

We find evidence that Malaysian firms exhibit sticky behavior as our results show that the coefficients B1 is 0.2837 (p = 0.000) and B2 is -0.0917 (p = 0.000) indicating that SG&A costs increase by 0.28% and only decrease by 0.19% for every 1% absolute change in sales revenue. An inference that we can make on why Malaysian firms exhibit sticky behavior is due to market optimism driven by continuous GDP growth. When managers are optimistic about the economy, they tend to commit to more resources in anticipation for higher levels of sales activity. A very interesting fact would be that Malaysian businesses remained optimistic despite a decline in their purchasing managers index (PMI). This further provides evidence that optimistic tend to mitigate certain negative changes in demand because of anticipation for a lost demand recovery.

- *Singapore*

We find evidence that Singaporean firms exhibit sticky behavior as our results show that the coefficients B1 is 0.3456 (p = 0.000) and B2 is -0.0582 (p = 0.001) indicating that SG&A costs increase by 0.35% and only decrease by 0.29% for every 1% absolute change in sales revenue. A possible inference that we can make is that Singapore is in the midst of a great economic development wherein investments are pouring into the different Singaporean firms [1]. This may then hinder management to deliberately adjust resources accordingly due to the fact that investments are usually long term and committed. This is in line with literature which states that committed resources is one of the main drivers of sticky cost behavior.

- *Thailand*

We find evidence that Thai firms exhibit sticky behavior as our results show that the coefficients B1 is 0.2452 (p = 0.000) and B2 is -0.0815 (p = 0.000) indicating that SG&A costs increase by 0.24% and only decrease by 0.16% for every 1% absolute change in sales revenue. Currently, Thailand is experiencing rapid industrialization which could be the reason for the sticky behavior of costs as the different firms invest heavily on new infrastructure and thus may result into committing more costs. It is also considered a newly industrialized country which means that there is high growth of manufacturing concerns and factories which increase the labor forces in a given country. Additionally, these results are supported by the Labor Protection Act BE 2541 (1998) which requires Thai companies to pay employees a severance pay when employment is terminated. This strongly hinders firms from cost savings when terminating employees because it would yield the same net cost effect.

- *Vietnam*

The researcher found that Vietnamese firms exhibit the highest level of stickiness. The results show that the coefficients B1 is 0.2719 (p = 0.000) and B2 is -0.1207 (p = 0.000) indicating that SG&A costs increase by 0.27% and only decrease by 0.15% for every 1% absolute change in sales revenue.One of the factors that greatly contributed to the high level of stickiness in Vietnamese firms is their comprehensive employee social protection program. According to MOLISA, 2010, the average expenditure of social employee protection schemes was 1.7 and 1.8 percent of GDP in 2008 and 2009 respectively. This means that the Vietnamese government focused on the labor protection of employees and enforced strict implementation of their labor code. This makes it difficult for Vietnamese firms to layoff employees as a discretionary measure during declines in activity levels. Also it aimed to achieve social insurance components and a commitment to adopt universal health insurance coverage by 2014 [15] that led to the increase costs related to employees.

CONCLUSION

The study explored this phenomenon in the geographical setting of the ASEAN. Findings in the

ASEAN resulted in sticky cost behavior, where costs increased by 0.2718% for every 1% increase in sales and decreased by 0.1929% for every 1% decrease in sales. This suggests that asymmetric cost behavior is pervasive across firms in the selected population, the population as whole manifested results that prove the existence of cost stickiness behavior in the ASEAN region.

By studying the different levels of changes in sales revenue, the researcherwas able to discover that varying levels of changes in sales have different effects on the behavior of SG&A costs. The results indicate that absolute change in sales of 0-5% did not exhibit sticky behavior, whereas absolute changes in revenue of 15-20% exhibited the highest levels of sticky costs, where SG&A costs increased by 0.5952% and decreased by 0.2840% for every 1% absolute change in sales revenue. This finding is consistent with various studies previously conducted stating that changes above 15% require managers to expand capacity of the firm to cater to more demand [17].

The researcher explored each major industry classification and controlled the effects of Fixed Asset intensity and Employee intensity to identify which is the main driver of sticky cost behavior. We found that the stickiness of costs in the service industry is driven by employee intensity which means that firms under this industry are unlikely to cutoff resources related to labor easily. Manufacturing firms exhibited sticky cost behavior, however the fixed asset intensity and employee intensity were not factors as they tested insignificant. The manufacturing industry exhibited the highest level of sticky cost behavior which is consistent with previous findings.

The researcher tested the countries individually to examine the different responses of SG&A costs to the changes in sales revenue per country. The country that exhibited the highest level of cost stickiness behavior is Vietnam; where costs increase by 0.27% for every 1% increase in sales and decrease by only 0.15% for every 1% decrease in sales. One of the factors that possibly contributes to the high level of stickiness in Vietnamese firms is their strict comprehensive employee social protection program.

Out of the six countries that were tested individually, only Philippine firms exhibited non-sticky cost behavior. Where the coefficients rendered were statistically insignificant with a p-value of 0.667. This may suggest that factors such as cultural backgrounds affect managerial decision-making that may cause the seemingly symmetric cost behavior displayed by the Philippines. The contributing factor that may be the cause for the Philippines to exhibit non-sticky cost behavior is that there is a large number of contractual firms in the country.

Interestingly the results per individual country have provided five out of six countries exhibit sticky cost behavior with varying magnitudes, which is the ideal result as different countries have different factors affecting the way management handles its resources. This further supports and reconciles previous literature by showing that stickiness exists because of various factors.

RECOMMENDATIONS

Business owners and Managers. The results and findings in the study conducted has several implications that would greatly improve and increase efficiency of managerial decisions. Obtaining a sufficient understanding of cost behavior is critical to managers so that they could accurately predict future costs. Through the analysis provided by the study, managers can utilize this information provided and infer that sticky costs can be recognized and controlled.

Users of Financial Reports.Users that rely heavily on published financial statements for firm analysis with regards to its performance may apply the analysis of cost stickiness. Since the presence of cost stickiness is not provided for in the statements of financial position, Users would gain an upper hand when they have knowledge on whether costs are being appropriately managed by the company. This would also reveal and reflect the management style of and behavior of managers that greatly affects the behavior of costs that is not normally disclosed in financial reports. Users may then make informed decisions that may yield to higher returns on investments.

Researchers.It is recommended that in the future researcher use other variables that affect management decisions such as, going concern, company strategy, leadership style, and environmental changes, should be considered and further explored. Additionally, a confirmation of this study should be conducted using non-listed companies; to further rove the asymmetric behavior of costs and eventually be applied as a standard measurement for all firms. This study provides a step further in gaining a standardized measurement model for the cost stickiness theory.

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