The temporal impact of cost stickiness on firm value: An empirical study on companies listed in the Egyptian stock exchange

by

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Abstract

This study aims to investigate the impact of cost stickiness on firm value and whether this impact differs between the short-term and the long-term and across different cost categories. The study uses a sample of 99 firms from 2014- 2019 with 577 firm-year observations (87 observations for SG&A, 251 for COGS, and 239 for operating cost). Tobin's Q is used to measure firm value, while the cost stickiness is measured using the measurement of Weiss (2010). The findings indicate an impact of cost stickiness on firm value. This impact differs over the period (long-term versus short-term) and across different cost categories depending on whether the cost categories are related to the production process. SG&A cost stickiness has a negative impact in the short-term and has no significant impact in the long-term, while COGS stickiness has a positive impact in both the short and the long-term. Also, the operating cost stickiness has no significant impact in the short and long-term.

Keywords: cost stickiness, firm value, asymmetric cost behavior.

1. Introduction:

In the traditional model of cost behavior, costs are classified into either fixed cost, which is constant concerning the change in the level of activity, or variable cost, which changes in proportion with the change of the activity level (symmetric behavior). Recent studies reveal that costs do not change systematically in response to the change in activity, and there is a phenomenon called "cost stickiness" or "sticky cost." Costs are sticky when the cost rises more when activity increases by a certain rate than it falls when the activity decreases by the same rate (Anderson et al., 2003).

Traditionally, the change in costs depends only on the change in the activity, regardless of the management decisions, while in the cost stickiness model, there is an important influence of management decisions, which plays a vital role in the resource adjustment process (Anderson et al., 2003; Banker et al.,2011; Abdelaziz, 2014).

Cost stickiness occurs when management deliberately retains some slack resources while decreasing activity time. Rational managers have to compare the adjustment costs against the retention costs.

The adjustment costs mean costs incurred to cut the unutilized resources in the current period and the costs incurred in the future to restore capacity when activity increases. The retention costs refer to costs incurred when retaining unutilized resources during decreasing activity. Managers can make a rational decision depending on the trade-off between adjustment and retention costs. However, there are some cases in which the manager acts in his/her interest regardless of the interest of the firm, which

is known as (agency problems), from which cost stickiness may arise (Anderson et al., 2003; Banker et al., 2011; Abdelaziz, 2014).

Many of the existing research studies what factors affect cost stickiness. However, according to these factors, the economic implications of cost stickiness on the firm differ (Yang et al., 2020).

One of the economic implications of cost stickiness to the firm is the impact on firm value. Firm value is important as the firm's main objective is to maximize shareholders' wealth through increasing firm value (Salvatore, 2005, as cited in Hermuningsih, 2014). Shareholders' wealth can be increased by providing them dividends or capital gains (Gharaibeh and Abdul Qader, 2017).

Firm value is related to investors' perception of the firm's success in managing its resources, and stock prices can reflect this. Higher stock prices mean higher firm value, which increases investors' belief and trust in the firm's performance not only in the short-term but also in the long-term (Hermuningsih, 2014; Putri and Rahyuda, 2020).

Three main drivers explain cost stickiness: "adjustment costs," "agency costs, "and "management expectations" (Banker et al., 2011; Jiang and Hu, 2011; Banker and Byzalov, 2014). The impact of cost stickiness on firm value differs according to the manager's motives behind his/her decisions regarding cost adjustments.

First, according to the adjustment cost and management's expectations, in periods of decreasing activity, the rational manager should assess whether this decline is temporary and trade-off the adjustment costs and the retention costs, therefore when he/she expects that the activity will be restored and finds that the adjustment cost is higher than the retention

cost, he/she will decide to keep the excess resources causing the costs to be sticky (Anderson et al., 2003). In this case, keeping excess resources may decrease the firm value in the short-term, but it has future benefits of saving the adjustment cost when the activity rebounds, and this may increase firm value in the long-term (Yang et al., 2020), so in this case, the resulting cost stickiness is considered to be rational and should be encouraged.

In addition to that, cost stickiness may arise as a result of an overconfident manager's expectations. Qin et al. (2015) argued that a higher cost stickiness is associated with the overconfident manager. However, If the reduction in activity turns out to be permanent, then the resulting cost stickiness reduces firm value in the short-term without having any benefits in the future, so, in this case, cost stickiness is bad and is considered a signal of irrational managerial behavior. Chen et al. (2018) found that an overconfident manager tends to maintain excess resources without considering their contribution to the firm's future value, which negatively affects the firm value in the future.

From an agency problems perspective, one significant issue is the phenomenon of managerial empire-building. This behavior reflects the tendency of managers to expand the firm beyond its optimal size or to retain underutilized resources, thereby enhancing their status, power, compensation, and prestige (Chen et al., 2012). Consequently, when business activity diminishes, a condition known as cost stickiness arises, which negatively impacts the firm's value in the short-term without yielding any long-term benefits (Yang et al., 2020). In this context, the observed cost stickiness is irrational and necessitates intervention.

Another issue in agency problems is associated with the compensation paid to the management. Using long-term compensation (stock options and stock grants) that are based on long-term performance leads to an increased cost stickiness as a result (Brüggen and Zehnder, 2014; Vermeulen, 2017) by turning the manager from just an agent to an owner if it is exercised, so he will act in favor of the firm when achieving his interests, but unfortunately according to Kwon (2018) the manager may opportunistically cause cost stickiness deliberately to decrease the share price temporarily before the date of issuing the stock options in order to decrease their exercise price.

So, the resulting cost stickiness under different drivers decreases the firm's value in the short-term due to bearing the excess resources despite decreasing activity, but its impact in the long-term differs according to the manager's behavior, whether he/she is opportunistic, irrational, or rational. In this context, the long-term impact of cost stickiness on firm value can be used as a signal of the manager's behavior.

Based on the above, the study question is that: what is the short-term and long-term impact of cost stickiness of different cost categories on the firm value of Egyptian firms?

2. Study objective:

The study's objective is to examine the impact of cost stickiness of different cost categories on the value of Egyptian stock firms in the short-term and the long-term.

3. Study importance and contribution:

The importance of this study is derived from the following:

1. The present study contributes to the existing cost stickiness accounting studies by studying the economic implications of cost stickiness on the firm value in Egypt.
2. There is limited empirical evidence regarding the relationship between cost stickiness across various cost categories and firm value globally, particularly in Egypt.
3. The study results regarding the long-term impact may clarify the full picture of the extent of cost stickiness's rationality and introduce indications about managerial behavior and firm performance.
4. The findings of this study are expected to enhance investors' evaluation of the firm and their understanding of cost stickiness and its implications. Additionally, they will recognize that cost stickiness presents advantages and disadvantages that differ between the short-term and the long-term.

4. Literature review and hypotheses development

4.1. Literature review:

4.1.1. The temporal impact of cost stickiness on firm value:

Yang et al. (2020) examined the short-term and long-term impact of cost stickiness, measured by the model constructed by Weiss (2010), on firm value, measured by Tobin's Q, in Chinese listed companies. They used the regression model on a sample of 11,320 observations extracted from 14 years from 2003 to 2016 and found that cost stickiness reduces firm value in the short-term but increases firm value in the long-term.

4.1.2. The short-term impact of the cost stickiness on firm value:

Lopatta et al. (2020) aimed mainly to determine the impact of excess SG&A cost asymmetry attributed to the CEO's personal behavior on

shareholders' value measured by Tobin's Q. Depending on a sample of 11,202 firm-year observations over the period from 1992 to 2016. The study resulted in a negative impact of the excess SG&A cost stickiness attributed to the CEO's personal decisions on shareholders' value, indicating that there is a part of the overall cost stickiness is bad due to opportunistic managerial behavior.

Mahmoud (2021) tested the impact of asymmetric cost behavior measured by the measurement of Weiss (2010) on the firm value measured by Tobin's Q calculated by dividing the market value of total assets by the book value of total assets, on a sample of 72 companies listed on the Egyptian stock exchange (138 firm-year observations extracted from 67 firms for cost stickiness and 139 firm-year observations extracted from 63 firms for cost anti-stickiness) for the period from 2013 to 2017. This study resulted in a positive and significant impact of cost stickiness on firm value and a negative and significant impact of cost anti-stickiness on firm value.

Costa and Habib (2023) were conducted mainly to investigate the impact of cost stickiness measured by the measurement of Weiss (2010) on the firm value measured by Tobin's Q. Using a sample of 85,521 firm-year observations from US-listed firms for the period from 1982 to 2016. The study empirically confirmed that operating cost stickiness (and also its components, SG&A and COGS separately) has an adverse impact on firm value and this impact is more manifested in firms with high information asymmetry.

4.1.3. The long-term impact of cost stickiness on firm value:

Mortazavi et al. (2020) designed to examine the impact of cost stickiness (SG&A costs and COGS) measured by the model of Weiss (2010) on future operating indicators (operating profit margin and return on assets) on a sample of 124 companies listed in Tehran Stock Exchange throughout 2002 to 2018. The study also tested the impact of cost stickiness on current and future stock returns. The study found that SG&A cost stickiness is entirely "bad." On the contrary, the results showed that COGS stickiness is, to some extent, "good." The results also indicated that investors perceive SG&A cost stickiness and COGS stickiness as indicators of self-interested managers.

A study by Eltamboly et al. (2024) aimed to discover whether cost stickiness (measured by the measurement of Weiss (2010)) has a predictive power in predicting the future firm value (measured by the market capitalization of the firm) and whether this impact is affected by the management expectations perspective. The study depended upon 504 observations from 84 non-financial firms (the most actively traded) listed in the EGX-100 from 2013- 2018. The study results concluded that the cost stickiness of (total costs, SG&A, and COGS) has a positive impact on future firm value and confirmed the direction that the management expectations perspective influences this relationship.

The previous studies show a contradiction in the results among different cost categories used in these studies, either in the short-term or in the long-term. This contradiction may be due to the management's motivations behind keeping the excess resources for each cost category. This contradiction can be illustrated in table (1) as follows:

Table (1): Summary of the results contradiction.

	Cost category	Short-term	Long-term
Yang et al. (2020)	Operating cost	(-)	(+)
Lopatta et al. (2020)	SG&A	(-)	
Mahmoud (2021)	Total cost	(+)	
Costa and Habib (2023)	Operating cost SG&A COGS	(-) (-) (-)	
Mortazavi et al. (2020)	SG&A COGS		(-) (+)
Eltamboly et al. (2024)	Total cost SG&A COGS		(+) (+) (+)

4.2. Hypotheses development:

According to the three main determinants of cost stickiness (adjustment costs, management expectations, and agency problems), cost stickiness is anticipated to negatively impact firm value in the short-term. The firm incurs costs of the excess resources despite decreasing activity, which reduces firm value regardless of the motivation behind this decision.

Yang et al. (2020) found a negative impact of operating cost stickiness on firm value in the short-term. In addition, Lopatta et al. (2020) provided that the SG&A cost stickiness is attributed to the manager's behavior reducing shareholders' value. Further, Mortazavi et al. (2020) indicated that investors negatively perceive SG&A and COGS stickiness. Also, Costa and Habib (2023) confirmed the negative influence of SG&A, COGS, and operating cost stickiness on firm value. Then, the first hypothesis can be formulated as follows:

H_1: There is a negative impact of cost stickiness[1] on firm value in the short-term.

Anderson et al. (2003) posited the rationality of cost stickiness occurrence due to the rational manager's desire to save the high adjustment costs, which ultimately contributes positively to the firm value in the future when activity increases. Yang et al. (2020) provided empirical evidence that operating cost stickiness positively affects firm value. Similarly, Mortazavi et al. (2020) found that COGS stickiness contributes to value creation.

Conversely, concerning management expectations, the manager may be overconfident. Chen et al. (2018) found that an overconfident manager maintains SG&A costs regardless of their expected future value-creating, which negatively contributes to future firm value, also regarding the manager's opportunistic behavior and agency problems. In this context, given a reduction in activity, the manager will be more willing to maintain the available level of resources to achieve personal benefits and avoid psychological adjustment costs which will harm the firm value in the future if the reduction in activity is long-lasting. Mortazavi et al. (2020) confirmed that SG&A cost stickiness is value-destroying in the long-term.

From the previous discussion, there is no identified direction for the long-term impact of cost stickiness of different cost categories on firm value due to the different motivations behind the occurrence of cost stickiness and their different influence on future firm value. Thus, the second hypothesis can be formulated as follows:

[1] Cost stickiness of SG&A, COGS, and operating cost

H_2: There is an impact of cost stickiness[2] on firm value in the long-term.

5. Method

5.1. Sample selection:

The study population consists of all Egyptian-listed companies, but the financial and bank sectors will be excluded from the sample due to their nature and differences in the standardized financial reports. A sample of 99 firms with 577 firm-year observations[3] (87 observations for SG&A, 251 for COGS, and 239 for operating cost) is selected from the population. The sample is distributed over 14 sectors. Due to financial, political, and economic crises before 2014 and after 2019, all firms selected from the population must be registered on the Egyptian Stock Exchange from 2014 to 2019.

The distribution of the final sample according to sectors is presented in Table (2).

Table (2): Sectorial distribution of the final sample.

		Years and number of companies					
No.	Sector	2014	2015	2016	2017	2018	2019
1	Food and beverage	21	21	21	21	21	21
2	Real estate	14	14	14	14	14	14
3	Communications	1	1	1	1	1	1
4	Construction and materials	16	16	16	16	16	16
5	Health care and pharmaceuticals	7	7	7	7	7	7
6	Media	1	1	1	1	1	1
7	Core resources	7	7	7	7	7	7

[2] Cost stickiness of SG&A, COGS, and operating cost

[3] About 908 observations (408 for SG&A, 244 for COGS, and 256 for Operating cost) were omitted due to the conditions required by Wiess's (2010) measurement, which will be presented in the limitation section.

8	Gas and petroleum	1	1	1	1	1	1
9	Industrial services, products, and automotive	9	9	9	9	9	9
10	Tourism and entertainment	5	5	5	5	5	5
11	Distributors and Retailing	3	3	3	3	3	3
12	Utilities	1	1	1	1	1	1
13	Chemicals	5	5	5	5	5	5
14	Home and personal products	8	8	8	8	8	8
Total number of sample companies		99	99	99	99	99	99
Number of companies listed on the Egyptian stock exchange		214	221	222	222	220	218
Number of companies related to banks and financial institutions sector		38	43	46	47	49	51
Number of registered non-financial companies		176	178	176	175	171	167
Percentage of the total sample to the total number of registered non-financial companies		56.25%	55.62%	56.25%	56.57%	57.89%	59.28%

5.2. Study model:

According to Yang et al. (2020), this study will examine the hypotheses using a multiple linear regression model as follows:

$$\textbf{Tobin's } Q_{i;\,T} = \alpha + \beta_1 STICKY_{i;\,t} + \Sigma\, \beta_n \textbf{ Control variables}_{i;\,t} + \varepsilon \qquad (1)$$

Tobin's Q: Firm value.

STICKY: Cost stickiness.

β: Regression coefficient.

Control variables: Firm size (SIZE), Profitability (ROA), Leverage (LEV), Sales growth (GROWTH), and Dividend policy (DPR).

n: 2; 5.

t: Is the current year.

T: t, t+1.

5.3. Variables measurement:

The measurements of the study variables are presented in Table (3).

Table (3): Operational definition of study variables

Variables	Symbol	Operational definition
Independent variable		
Cost stickiness	Sticky	Measurement model of Weiss (2010). $STICKY_{i,\ t}$= log $(\Delta COST/\Delta SALE)_{i;\ t^+}$ -log $(\Delta COST/\Delta SALE)_{i;t^-}$
Dependent variable		
Firm value	Tobin's Q	(Market value of total shares +book value of debt) / Book value of total assets
Control variables		
Leverage	LEV	Total debts/ total assets
Profitability	ROA	Net profit/ total assets
Firm size	SIZE	Ln (total assets)
Sales growth	GROWTH	(Sales in the current period – sales in the previous period) / Sales in the previous period
Dividend policy	DPR	DPS/EPS

6. Empirical findings:

6.1. Models' validity:

The ordinary least square (OLS) method tests the study hypotheses and estimates the regression parameters. This method requires maintaining some assumptions to ensure that the standard errors are not biased and, therefore, the statistical inferences are more accurate. The problems that affect these assumptions are normality, autocorrelation, heteroskedasticity, and multicollinearity.

Clustering standard errors is utilized to address issues related to

autocorrelation and heteroskedasticity (Petersen, 2006; Holzhacker et al., 2015).To address non-normality, all variables except SG&A cost stickiness are winsorized at the 1% level to mitigate outlier effects.

The variance inflation factor (VIF) is used to discover the existence of multicollinearity. If the VIF is lower than 10, there is no multicollinearity problem. The VIF for all explanatory variables in equation (1) does not exceed 10, so the study models have no multicollinearity problem.

6.2. Empirical results:

6.2.1. Descriptive Statistics:

The descriptive statistics for short-term and long-term analysis are presented in Table (4).

Table(4) descriptive statistics.

Variable	Observations	Mean	Standard deviation	Quantiles				
				Min	0.25	Median	0.75	Max
Short-term:								
Tobins' Q	495	1.328	0.834	0.467	0.86	1.08	1.46	5.67
SGA	87	0.08	0.924	-1.859	-0.57	0.08	0.65	3.929
COGS	251	0.022	0.519	-1.488	-0.20	0.02	0.26	1.57
OPERATINGCOST	239	0.044	0.49	-1.515	-0.16	0.01	0.24	1.872
SIZE	495	20.283	1.451	17.298	19.36	20.20	21.22	24.096
ROA	495	0.045	0.107	-0.393	0.00	0.04	0.10	0.295
LEV	495	0.492	0.317	0.03	0.27	0.46	0.64	1.814
DPR	495	0.378	0.832	0	0	0	0.54	7.143
GROWTH	494	0.197	0.551	-0.966	-0.05	0.11	0.33	3.066
Long-term:								
Tobins' Q	495	1.311	0.882	0.469	0.85	1.05	1.38	6.177

The mean (median) for firm value (in the short-term) is 1.328 (1.08). The standard deviation is 0.834, representing a large variation in the observations from the mean. Also, the mean (median) for firm value (in the long-term) is 1.311 (1.05). The standard deviation is 0.882, representing a

large variation in the observations from the mean.

The SG&A cost stickiness has a mean (median) of 0.08, indicating that SG&A costs are normally distributed. A high standard deviation of 0.924 reflects a huge disparity in the data. The minimum value of SG&A cost stickiness is -1.859, while the maximum value is 3.929. Overall, the data is sticky, on average, as both the mean and the median are positive (0.08).

Same for COGS stickiness, the mean (median) equals 0.022 (0.020) meaning that the data are approximately normally distributed. The standard deviation is 0.519, representing a huge data variation around the mean. COGS stickiness varies from -1.488 to 1.57. Overall, the data (more than 50%) have cost stickiness as the mean and the median have a positive sign (0.02); therefore, COGS is sticky on average.

Also, operating costs are, on average, sticky as they have a positive mean/ median of (0.044) / (0.01), respectively. There is a huge disparity in the data, as the standard deviation is 0.49. The range of data is from -1.515 to 1.872.

The mean (median) for firm size (SIZE) is 20.283 (20.20). The standard deviation is 1.451. The profitability (ROA) has a mean of 0.045 and a median of 0.04. The standard deviation is 0.107. The leverage (LEV) has a mean of 0.492, a median of 0.46, and a 0.317 standard deviation. A large spread in the data distribution of dividend policy (DPR) as the standard deviation is 0.832, the mean is 0.378, and the median is 0. The growth opportunity has a mean of 0.197, which is larger than the median of 0.11. The standard deviation is 0.551.

6.2.2 Pairwise correlations:

The correlation among the regression variables is stated below in Table (5).

Table (5): Pairwise correlation.

Variables	TOBINS' Q (short-term)	TOBINS' Q (long-term)	SGT	COGS	OPERATING COST	SIZE	ROA	LEV	DPR	GROWTH
TOBINS' Q	1	1								
SGA	-0.198*	-0.245**	1							
COGS	0.080	0.118*	0.131	1						
OPERATING COST	0.033	0.094	0.280**	0.908***	1					
SIZE	0.041	0.037	0.113	0.001	0.04	1				
ROA	0.052	-0.0013	0.006	-0.078	-0.05	0.224***	1			
LEV	0.343***	0.3914***	-0.045	-0.041	-0.084	0.080*	-0.419***	1		
DPR	0.030	0.0401	-0.036	0.002	-0.023	0.156***	0.187***	-0.135***	1	
GROWTH	0.083*	0.345	- 0.017	-0.058	- 0.043	0.021	0.112**	0.062	-0.053	1
*Correlation is significant at 0.1(2-tailed)										
**Correlation is significant at 0.05(2-tailed)										
***correlation is significant at .01(2-tailed)										

There is a negative and significant relationship between firm value (Tobin's Q) and SG&A cost stickiness in both the short-term and long-term, while there is a positive and significant relationship between firm value and COGS stickiness in the long-term only and a positive and insignificant relationship between firm value and COGS stickiness in the short-term. However, operating cost stickiness has a positive and insignificant relationship with firm value in the short-term and the long-term.

Firm value has a positive and significant correlation with leverage in the short-term and the long-term, while firm value has a positive correlation with growth opportunity, but this correlation is significant in the short-term and insignificant in the long-term. Also, firm value has a positive and insignificant relationship with firm size and dividend policy while there is a positive and insignificant relationship with return on assets in the short-term, but this relation becomes negative in the long-term.

The independent variable (cost stickiness) either for SG&A, COGS, or OPERATING COST has no significant relationship with other explanatory variables (control variables), while there is a positive and significant relationship between OPERATING COST and both SG&A and COGS.

Firm size has a positive and significant relationship with ROA, LEV, and DPR. In addition, there is a negative and significant relationship between LEV and DPR. Furthermore, there is a positive and significant correlation between ROA, DPR, and GROWTH, while LEV has a negative and significant relationship with ROA.

Despite the significant correlation between some explanatory variables, the highest correlation is -0.419 between LEV and ROA, which does not exceed 0.90, indicating that there is no multicollinearity among the study's explanatory variables, according to Gujarati (2003).

6.2.3. Hypotheses tests:

6.2.3.1. short-term impact:

The first hypothesis is to test whether cost stickiness for different cost categories negatively impacts firm value in the short-term.

H_1: There is a negative impact of cost stickiness on firm value in the short-term.

The basic model of the study to test this hypothesis is as follows:

Tobin's $Q_{i;\ t}$ = α+ $\beta_1 STICKY_{i;\ t}$ + $\Sigma\ \beta_n$ Control variables+ ε (1_a)

The model is implemented separately for 3 cost categories, which are selling, general, and administration costs (SGA), cost of goods sold

(COGS), and operating costs (OPERATING COST). The results are presented in tables (6), (7), and (8) as follows:

Table (6): The short-term impact of SGA cost stickiness on firm value.

TOBINS' Q	Coefficient	Standard error	t	P>t
SGT	-0.2255666	0.1310042	-1.72	0.090
SIZE	-0.9957722	0.301624	-3.30	0.002
ROA	-0.3473942	2.290328	-0.15	0.880
LEV	0.587679	0.5467821	1.07	0.287
DPR	-0.1497279	0.1346206	-1.11	0.270
GROWTH	0.1276525	0.1584854	0.81	0.424
Cons.	21.33684	6.025824	3.54	0.001
Mean VIF	**1.15**			
N	**87**			
F (6,63)	**3.96**			
Prob > f	**0.0020**			
R-sq	**0.0539**			

Comparing the probability of F with the significance level of 5% indicates that the model is significant as the probability of F statistics (0.0020) is lower than the significance level of 5%.

The R^2 value is 5.39%, which indicates that 5.39% of the variation in the firm value is explained by the variations in the model's independent variables.

The estimated coefficient $\boldsymbol{\beta_1}$ is -0.226 with a probability of 0.090 (< 0.10), indicating a negative and significant impact of SG&A cost stickiness on firm value in the short-term; therefore, $\mathbf{H_1}$ is accepted for SG&A cost category.

Table (7): The short-term impact of COGS stickiness on a firm value.

TOBINS' Q	Coefficient	Standard error	t	P>t
COGS	0.1113696	0.0504235	2.21	0.030
SIZE	-0.4087148	0.1947581	-2.10	0.039
ROA	2.197535	0.6421789	3.42	0.001
LEV	1.043017	0.2156591	4.84	0.000
DPR	-0.1001346	0.0563633	-1.78	0.079
GROWTH	0.0383993	0.0994632	0.39	0.700
Cons.	9.041843	3.898872	2.32	0.023
Mean VIF	**1.13**			
N	**251**			
F (6,92)	**5.22**			
Prob > f	**0.0001**			
R-sq	**0.0131**			

Comparing the probability F statistics with the significance level of 5% indicates that the model is significant as the probability F statistics (0.0001) is lower than the significance level 5%.

The R^2 value is 1.31%, which indicates that the regression model explains 1.31% of the variation in the dependent variable.

The estimated coefficient $\boldsymbol{\beta_1}$ is 0.111 with a probability of 0.030 (< 0.05), indicating a positive and significant impact of COGS stickiness on firm value in the short-term therefore, $\mathbf{H_1}$ is rejected for COGS category.

Table (8): The short-term impact of OPERATING COST stickiness on firm value.

TOBINS' Q	Coefficient	Standard error	t	P>t
OPERATING COST	0.0051569	0.0693872	0.07	0.941
SIZE	-0.2246328	0.0975921	-2.30	0.024
ROA	1.845414	0.605979	3.05	0.003
LEV	0.6971248	0.2216873	3.14	0.002
DPR	-0.1287624	0.0736608	-1.75	0.084
GROWTH	0.0707766	0.0963802	0.73	0.465
Cons.	5.484519	1.94263	2.82	0.006
Mean VIF	**1.13**			
N	**239**			
F (6,90)	**5.53**			
Prob > f	**0.0001**			
R-sq	**0.0087**			

The model is considered significant since the probability F statistics (0.0001) is lower than the significance level of 5%.

The R^2 value is 0.87%, which indicates that only 0.87% of the variation in the dependent variable is explained by the variations in the regression model's independent variables.

The estimated coefficient $\boldsymbol{\beta_1}$ is 0.005 with a probability of 0.941(> 0.10), indicating no significant impact of OPERATING COST stickiness on firm value in the short-term; therefore, $\mathbf{H_1}$ is rejected for the operating cost category.

6.2.3.2. long-term impact:

The second hypothesis is to test whether cost stickiness for different cost categories impacts firm value in the long-term.

H_2: There is an impact of cost stickiness on firm value in the short-term.

The basic model of the study to test this hypothesis is as follows:

Tobin's $Q_{i;\ t+1}$ = α+ $\beta_1 STICKY_{i;\ t}$ + $\Sigma\ \beta_n$ Control variables+ ε (1_b)

The model is implemented separately for 3 cost categories, which are (SGA), (COGS), and (OPERATING COST). The results are presented in tables (9), (10), and (11) as follows:

Table (9): The long-term impact of SGA cost stickiness on firm value.

TOBINS' Q	Coefficient	Standard error	t	P>t
SGA	-0.2495236	0.2397926	-1.04	0.303
SIZE	-0.2343307	0.5229262	-0.45	0.656
ROA	0.1549011	1.44239	0.11	0.915
LEV	0.5049238	0.7985127	0.63	0.530
DPR	-0.1993379	0.1239013	-1.61	0.113
GROWTH	0.0390256	0.0779057	0.50	0.618
Cons.	5.918959	10.69327	0.55	0.582
Mean VIF	**1.16**			
N	**72**			
F (6,55)	**5.12**			
Prob > f	**0.0003**			
R-sq	**0.0049**			

The model is significant because the probability F statistic (0.0003) is lower than the significance level of 5%.

The R^2 value is 0.49%, which indicates that 0.49% of the variation in the dependent variable is explained by the variations in the regression model's independent variables.

The estimated coefficient $\boldsymbol{\beta_1}$ is -0.25 with a probability of 0.303 (< 0.10), indicating no significant impact of SG&A cost stickiness on firm value in the long-term; therefore, $\mathbf{H_2}$ is rejected for the SG&A cost category.

Table (10): The long-term impact of COGS stickiness on a firm value.

TOBINS' Q	Coefficient	Standard error	t	P>t
COGS	0.1286214	0.0604167	2.13	0.036
SIZE	-0.2908113	0.1946849	-1.49	0.139
ROA	1.905121	0.6409785	2.97	0.004
LEV	0.8982831	0.2218479	4.05	0.000
DPR	-0.1361586	0.0619211	-2.20	0.030
GROWTH	-0.0013106	0.0703202	-0.02	0.985
Cons.	6.727652	3.936	1.71	0.091
Mean VIF	**1.13**			
N	**205**			
F (6,89)	**4.46**			
Prob > f	**0.0005**			
R-sq	**0.0189**			

The probability F statistic (0.0005) is lower than the significance level of 5%, which indicates that the model is significant.

The R^2 value is 1.89%, which indicates that the regression model explains 1.89% of the variation in the dependent variable.

The estimated coefficient $\boldsymbol{\beta_1}$ is 0.129 with a probability of 0.036 (< 0.05), indicating a positive and significant impact of COGS stickiness on firm value in the long-term therefore, $\mathbf{H_2}$ is rejected for COGS category.

Table (11): The long-term impact of OPERATING COST stickiness on firm value.

TOBINS' Q	**Coefficient**	**Standard error**	**t**	**P>t**
OPERATING COST	0.0378901	0.0846883	0.45	0.656
SIZE	-0.139982	0.1178089	-1.19	0.238
ROA	1.962992	0.5630012	3.49	0.001
LEV	0.6730629	0.2765094	2.43	0.017
DPR	-0.1542446	0.0816841	-1.89	0.062
GROWTH	-0.0276583	0.0525454	-0.53	0.600
Cons.	3.7672	2.385224	1.58	0.118
Mean VIF	**1.13**			
N	**195**			
F (6,86)	**4.46**			
Prob > f	**0.0006**			
R-sq	**0.0275**			

The model is considered significant since the probability F statistics (0.0006) is lower than the significance level 5%.

The R^2 value is 2.75%, which indicates that 2.75% of the variation in the dependent variable is explained by the variations in the regression model's independent variables.

The estimated coefficient $\boldsymbol{\beta_1}$ is 0.038 with a probability of 0.656 (> 0.10), indicating that OPERATING COST stickiness has no significant long-term impact on firm value; therefore, $\mathbf{H_2}$ is rejected for the operating cost category.

7. Discussion of results:

All the empirical findings of testing study hypotheses are summarized in Table (12) as follows:

Table (12): Summary of the empirical findings of testing study hypotheses.

	SG&A		COGS		Operating cost	
	The impact	Decision	The impact	Decision	The impact	Decision
Short-term	-(ve)	Accept $_{H1}$	+(ve)	Reject $_{H1}$	Not sig.	Reject $_{H1}$
Long-term	Not sig.	Reject $_{H2}$	+(ve)	Accept $_{H2}$	Not sig.	Reject $_{H2}$

As shown from the regression results, the coefficient of SG&A cost stickiness is negative and significant in the short-term while being negative but insignificant in the long-term indicating that investors negatively perceive the stickiness of SG&A costs in the short-term and consider it as a negative signal about the existence of the managerial opportunistic behavior as according to (Williamson,1965 as cited in Brüggen and Zehnder, 2014) the SG&A costs are the most cost category that the empire building behavior predominantly apparent in it. Also, the nature of SG&A costs is not directly related to the production process as, according to Chen et al. (2012), SG&A costs contain most of the nonproduction overhead costs. Therefore, there is no need to keep unutilized resources related to this cost category, and it must be immediately adjusted to cope with the change in activity, so retaining excess SG&A costs in periods of decreasing activity reduces profitability and negatively affects the investors' perception then reduces the firm value. This is consistent with the results of (Lopatta et al.,2020; Costa and Habib, 2023).

In contrast, the stickiness of COGS has a positive and significant impact on firm value in the short-term and the long-term. This may be due

to the investors' positive perception of the COGS stickiness since the COGS is by its nature related to the production process and keeping excess resources temporarily in the period of decreasing activity is justified as it is a must if management expect that the activity will be restored in order to be ready for capturing the potential restoring activity and save the adjustment costs which in turn is positively reflected in the profitability of the firm in the long-term therefore, it may be said that the investors are aware of the importance of the COGS stickiness in the short-term and positively perceived it as being a good signal of the future managerial expectations about activity and therefore, they considered it as a good cost management which ultimately increases the firm value in the short-term. This is consistent with the result of (Mahmoud, 2021) that the cost stickiness results from economic and social motives.

Then, when the activity is restored in the long-term, the firm value increases from year t to year t+1 (from the short term to the long-term) as the firm already has available resources to capture the increased activity, which saves the adjustment costs and increases profitability in the long-term. This is manifested obviously in increasing the coefficient β_1 from being (0.111) in the short-term to being (0.129) in the long-term for COGS stickiness, which indicates that the stickiness of COGS results from a rational decision and is economically justified. This is consistent with the results of (Mortazavi, 2020) that the COGS stickiness is a value added.

In short, it is shown that the investors are already aware of cost stickiness and its impact on firm value in the long-term and they consider that impact while evaluating the firms in the short-term. Also, it can be shown that their evaluation of cost stickiness differs among different cost

categories depending on to what extent this cost category is related to the production process and hence, whether the cost stickiness is justified. Therefore, they are negatively perceived the stickiness of SG&A costs as a signal of an opportunistic managerial behavior, whereas they are positively perceived the stickiness of COGS as a signal of a rational managerial behavior, while they are not concerned about the stickiness of the operating cost.

8. Conclusion:

The study investigates the temporal (both the short-term and long-term) impact of cost stickiness of three cost categories (SG&A, COGS, and operating costs)on firm value. Using a sample of 99 firms listed in the Egyptian stock exchange with a total of 577 firm-year observations (87 observations for SG&A, 251 for COGS, and 239 for operating cost) from 2014 to 2019.

The results of the study reveal that the impact of cost stickiness on firm value varies among different cost categories since, in the short-term, there is a negative impact of SG&A cost stickiness and a positive impact of COGS stickiness while there is no significant impact of operating cost stickiness on firm value. In the long-term, COGS stickiness has a positive impact, but there is no significant impact of either SG&A cost stickiness or operating cost stickiness.

A plausible explanation for these findings is that this impact may be influenced by the investor's perception of the cost stickiness of each cost category, whether it is related to the production process (therefore, its stickiness is justified and considered a signal of rational managerial decisions) or it's not related to the production process (therefore, its

stickiness is not a necessity and is considered a signal of an opportunistic behavior) or they can not determine its relationship with the production process (so, it is not incorporating in their assessment of the firm).

9. Limitations:

The study's most important limitation is the small sample size, which results from the large number of omitted observations due to Weiss's measurement requirements.[4]. Also, Egyptian firms do not calculate and disclose SG&A and COGS expenses similarly. Therefore, there is a potential for these costs to be subject to some unintentional and unknown bias in the analysis (Abulezz & Sherief, 2020).

10. Future research:

The results of the current study have highlighted potential directions for future research:

First, this study could be replicated using a different methodology, such as a survey (questionnaire) targeting investors. This approach would help determine to what extent investors perceive the existence of cost stickiness, how they interpret it, and whether their perceptions differ across various cost categories. Second, future research could examine the impact of the stickiness of other cost categories on firm value. Third, further research could extend the study period, include more firms, or apply alternative measurements for cost stickiness. Fourth, additional studies could investigate the impact of other variables on the relationship between cost stickiness and firm value.

[4] The wires 2010 measurement requires that the four quarters of the year contain increases and decreases in costs and sales, and the change in costs and sales must be in the same direction. In addition, all values of the cost or sales must be greater than or equal zero (Yang et al., 2020).

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الملخص

تهدف هذه الدراسة إلى دراسة تأثير ثبات التكلفة على قيمة الشركة، وما إذا كان هذا التأثير يختلف بمرور الزمن بين الأجلين القصير والطويل، وكذلك عبر فئات التكلفة المختلفة. أُجريت الدراسة باستخدام عينة من 99 شركة خلال الفترة 2014-2019، متضمنا 577 ملاحظة على مدار العام للشركة (87 ملاحظة للنفقات العامة والإدارية والبيعية، و251 لتكلفة البضائع المباعة، و239 لتكلفة التشغيل). استُخدم Tobin's Q لقياس قيمة الشركة، بينما قُيست لزوجة التكلفة وفقًا لمقياس وايس (2010). تشير النتائج إلى أن هناك تأثيرًا للزوجة التكلفة على قيمة الشركة، ويختلف هذا التأثير بمرور الوقت وعبر فئات التكلفة المختلفة اعتمادًا على ما إذا كانت فئات التكلفة مرتبطة بعملية الإنتاج، حيث أن لزوجة المصروفات العامة والادارية والبيعية له تأثير سلبي على المدى القصير ولا يوجد تأثير معنوي على المدى الطويل في حين أن لزوجة تكلفة البضائع المباعة له تأثير إيجابي على المدى القصير والطويل أيضًا، فإن لزوجة تكلفة التشغيل ليس له تأثير معنوي على المدى القصير والطويل.

الكلمات المفتاحية: لزوجة التكاليف، قيمة الشركة، السلوك الغير متماثل للتكلفة.