Cost stickness and earnings predictability: Evidence from Egypt

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ABSTRACT:

This study aims to investigate the relationship between the cost stickness and the earnings predictability. By exploring the stickness on the cost of goods sold and the selling and general and administrative cost, then exploring the effect of causes represented in asset intensity and economic growth on the level of cost stickness. Finally, investigating the relationship between cost stickness and the earnings predictability in the Egyptian environment.

Using a sample of 162 firm year observations to the period 2015-2017 on the Egyptian stock exchange, I found the stickness on the cost of goods sold and I cannot found it in the selling and general and administrative cost, Besides I found effective role for the causes represented in asset intensity and economic growth in increasing the stickness of cost of goods sold whereas it haven't any role on the selling and general and administrative cost.

Finally, I found negative relationship between cost stickness and earnings predictability in the egyptian environment.

Key Words: Cost stickness, earnings predictability, Asset intensity, Economic growth.

1- Introduction

Cost stickness has a great attention in the last recent year, because it provides a new perspective of cost behavior other than the traditional cost behavior, where the cost will be sticky if increasing activity will lead to increase the cost with a percentage greater than its decrease if the activity decrease with the same percentage of its increase (Anderson, et al., 2003). This stickness behavior may lead more decline in earnings when activity fall than its increase when the activity increase with the same percentage of its falling.

Although the great importance of cost stickness in the modern accounting environment, it is not received enough attention about its effect on the outcomes of financial reporting (Banker & Chen, 2006; Homburg & Nasev, 2008; Kim & Kinsey, 2010; Weiss, 2010; Baumgarten, 2012; Sorros, 2013; Banker, et al. 2016). In this regard, earnings predictability is one of the most important outcomes of financial statements because it is related to the investors' ability to predict future earnings change (Hussainey, 2008). Prior research in this field argue that

cost behavior is one of the most determinants of future earnings predictability because it can draw the potential level of uncertainty related to the production environment (e.g. Banker & Chen , 2006; Weiss, 2010; Chen, 2013; Bosch, et al., 2017).

In addition, numerous studies (e.g. Banker & Chen , 2006; Weiss, 2010; Chen, 2013; Bosch, et al., 2017) agree that analysts unaware about the effect of cost stickness on their forecasts, despite that Banker & Chen (2006) concluded that inserting cost stickness variables to the forecasting models of earnings will lead to higher level of accuracy to their forecasts, where neglecting it will lead to bias on these models models hence lower accuracy of their forecasts.

On the other side, the level of capacity usage is the main cause of asymmetric expectations for the mangers, where decreasing demand in the case of high level of capacity usage may lead managers to expect that decreasing in demand may be temporary but it is really permanent, hence the analysts may conclude low accurate forecasts (Balakrishnan, et al., 2004). Based on this expectation gap related to mangers it becomes high level of uncertainty which means that analysts cannot be able to predict efficiently by earnings, so the relationship between cost stickness and earnings predictability need more research (Banker & Chen, 2006). Moreover, firms with the high level of coverage distinguished by higher accuracy of analysts' forecasts and lower

level of cost stickness, because these firms will be easier for predicting (Weiss, 2010).

Besides, If the investor were aware about cost stickness and its effect on the analysts accuracy, it will reflect on its response about earnings announcements. Consequently, cost stickness can reduce the usefulness of earnings information disclosed in the financial statements, hence decreasing the level of earnings predictability (Weiss, 2010).

In sum, the majority of prior research agree that cost stickness can adversely effect on the earnings predictability, especially in the case of fluctuating economies in the developing countries and Egypt is one of these economies, so I can summarize the problem study in trying to answer this question: what is the effect of cost stickness on the earnings predictability?

2- Literature Review:

Cost stickness is the most controversial phenomenon in accounting because of its capability to change the traditional cost behavior, which lead to a great ambiguity on the both levels internal management for the firm and the external users of financial statements (see, Subrammaniam & Weidenmier, 2003; He, et al., 2010; Yasukata & Kajiwara, 2011; Ghaemi & Nematollahi, 2012; Cohen, et al., 2014; Eltivia, et al., 2014; Marques,et al., 2014; Xu, et al., 2014; Bugeja, et al., 2015; Song,

et al., 2015; Yong, et al., 2015; Subrammaniam & Waston, 2016; Loy & Hartlieb, 2017). So, the literature on the cost stickness is divided into three stages starts with the investigation of cost stickness in many countries, then investigation the different causes of cost stickness, finally investigation the effects of cost stickness on the outcomes of financial statements.

In this regard, the first bulk of these literature started by Anderson, et al. (2003) and followed them numerous studies (e.g. Subrammaniam & Weidenmier, 2003; Balakrishnan, et al., 2008; Argilés & Blandón, 2009; He, et al., 2010; Porporato & Werbin, 2010; Bosch & Blandon, 2011; Yasukata & Kajiwara, 2011; Ghaemi & Nematollahi, 2012; Lang & Jones 2012; Cohen, et al., 2014; Eltivia, et al., 2014; Marques,et al., 2014; Via & Perego, 2014; Xu, et al., 2014; Bugeja, et al., 2015; Song, et al., 2015; Yong, et al., 2015; Hansen, 2016; Marudas, et al, 2016; Subrammaniam & Waston, 2016; Loy & Hartlieb, 2017) for investigation the cost stickness in many countries for supported or rejected the cost stickness, and all of them assured the existence of cost stickness and the difference between them limited to the percentage of stickness. Exception from these studies Zanella, et al., (2015) deny the cost stickness in the Dubai stock exchange market without any explanation for this.

Following to this bulk of literature another bulk (e.g. Balakrishnan, et al., 2008; Argilés & Blandón, 2009; Porporato

& Werbin, 2010; Bosch & Blandon, 2011; Lang & Jones 2012; Eltivia, et al., 2014; Via & Perego, 2014; Yong, et al., 2015; Hansen, 2016; Marudas, et al, 2016) by investigation the cost stickness in many sectors (such as hospitals, banks, and chemical industries) and they agree the existence of cost stickness.

The second bulk of literature (e.g. Balakrishnan, et al., 2003; Calleja, et al., 2006; Blue, et al., 2012; Darabi&Darvishi, 2013; Ryu, et al., 2014; Chae& Chung, 2015; Jang, et al., 2016; Noreen, 2017) analyzed the causes of cost stickness, which are asset intensity, employee intensity, legislations, capacity usage, managerial optimistic and pessimistic, and corporate governance. In this side of this literature illustrated how these causes can effect on the level of cost stickness and assured the increased importance of cost stickness in the accounting research field, as well as highlighting the importance of analyzing the effects of cost stickness on the outcomes of the financial statements which cared about it the third bulk of literature.

The third bulk of literature analyzed the effect of cost stickness on the outcomes of financial statements, where Banker & Chen (2006) introduced cost variability and cost stickness for predicting the earnings, and they foun more accurate prediction using this model. And followed them Kim & Kinsey (2010) and found the same result. In addition Weiss (2010) analyzed the relationship between cost stickness and the accuracy of analysts'

forecasts and they found a significant negative relationship between them. Another literature (e.g. Baumgarten, 2012; Sorros, 2013) found a great uncertainty related to the relationship between them. On the other side, Homburg & Nasev, (2008) Banker, et al. (2016) analyzed the relationship between cost stickness and the accounting conservatism and they found significant positive relationship between them.

Extending to the third bulk of literature, I can summarize the research gap in neglecting the effects of the asymmetric cost behavior on the earnings predictability, although the negative effects of asymmetric cost behavior on the accuracy of analysts' forecasts and predicting earnings. So, I conclude that my research will contribute to the accounting literature by two ways. First, concentrating on the earnings predictability as one of the most important characteristics on the financial statements. Second, it will cover the Egyptian environment as one of the developing economies which may suffer from high level of cost stickness because of the inflation and instable economy.

3- Hypotheses Development:

Numerous studies around the world tried to identify the stickness on their cost in many industries and sectors (e.g. Anderson, et al., 2003; Balakrishnan, et al., 2003; Weiss, 2010). All of these studies focus on the selling and general and administrative cost (SG&A Cost) and the cost of goods sold

(COGS Cost). So following these studies I will test the existence of sticky cost on the both SG&A Cost and the COGS in the Egyptian environment. This lead me to develop my first hypothesis on its null form as follow:

H1: decreasing activity in a certain percentage will lead to decreasing the cost in the same percentage when activity increase with the same percentage of decrease (No stickness).

On the other side, the causes of cost stickness differed among the studies when they were explaining the cost stickness phenomenon because of the difference of resource adjustment motives. Consequently, I can determine the most important causes of cost stickness through prior literature in: asset intensity, employee intensity, resource structure, cost structure, operating efficiency in using capacity, strategy, inventory assets, debt intensity, employment laws, and the level of using capacity (See, Subramaniam & Weidenmier, 2003; He, et al., 2010; Bosch & Blandón, 2011; Shust & Weiss, 2014; Apostolos, et al., 2015; Bugeja, et al., 2015; Chae & Chung, 2015; Holzhacker, et al., 2015; Qin, et al., 2015; Zanella, et al., 2015; Magheed, 2016; Pamplona, et al., 2016; Jang, et al., 2017).

In this regard, it turns out to me the importance of studying the effects of cost stickness causes on the level of cost stickness in the Egyptian environment, so the most important causes in the

Egyptian environment are asset intensity and the economic growth because Egypt is developing country characterized by a turbulent economy. This lead me to develop my second hypothesis on its null form as follow:

H2: there is no effect of asset intensity and economic growth on the cost stickness.

On another vein, analyzing the relationship between cost stickness and the outcomes of financial statements has a great importance on the last recent years. In this context and following prior literature (e.g. Banker & Chen, 2006; Weiss, 2010) about the negative relationship between cost stickness and earnings predictability, I can my third hypothesis on its alternative form as follow:

H3: there is negative relationship between cost stickness and earnings predictability.

4- Research Design:

My study aim to analyze the relationship between cost stickness and earnings predictability, consequently I can determine the measurement tools of my variables as follow:

4-1: Cost stickness and its causes measurement:

The cost become sticky if the increase percentage on the cost when the activity increase greater than decrease percentage when the activity decrease with the same level of increasing, so I can measure it by using the difference between the change in costs when the activity decrease (Anderson et al., 2003). In addition one of its causes is the asset intensity which can be measured by the percentage of total assets to sales revenue (See: Anderson, et al., 2003; Subramaniam & Weidenmier, 2003; He, et al., 2010; Jang, et al., 2017). The second cause of cost stickness is the economic growth which can be measured by the difference between the revenue of the year t and year t-1 divided by revenue of year t (See: Shust & Weiss, 2014; Apostolos, et al., 2015; Bugeja, et al., 2015; Chae & Chung, 2015).

4-2: Earnings predictability measurement:

My study use the Collins et al. (1994) returns-future earnings regression model to measure earnings predictability. However, only two future earnings growth variables are included in the regression (N = 1,2 and k = 1, 2) rather than three future years. In addition, in defining the earnings growth variable, earnings change is deflated by price and not by lagged earnings. The latter adjustment is made to preserve a maximum number of

observations for the analyses (Hussainey et al., 2003). These adjustments yields the following modified model:

$$Rt = \beta0 + \beta1\ Xt + \sum_{k=1}^{2} \beta k+1\ Xt+k + \sum_{k=1}^{2} \beta k+N+1\ Rt+k + \beta2N+2\ EPt-1 + \beta2N+3\ AGt + \varepsilon$$

Where:

$\beta0$ = intercept

$\beta1$- $\beta8$ = coefficients of regression variables;

Rt= stock return for the year t;

Rt+1= stock return for the year t+1;

Rt+2 = stock return for the year t+2;

Xt = earnings change per share in the year t deflated by the share price four months after the end of the financial year t – 1;

Xt+1 = earnings change per share in the year t+1 deflated by the share price fourmonths after the end of the financial year t-1;

Xt+2 = earnings change per share in the year t+2 deflated by the share price four months after the end of the financial year t - 1;

EPt-1 = earnings yield is defined as earnings per share for the year t-1 divided by share price four months after the end of the financial year t-1;

AGt = total assets growth for the year t.

4-3: Empirical models:

For testing my hypotheses I can divide the empirical models which goes along with my hypotheses as follow:

- For testing my first hypothesis I can use the following empirical models:

$$Log(SG\&A_{i,t}/SG\&A_{i,t-1}) = B_0 + B_1 * Log(Sales_{i,t}/Sales_{i,t-1}) + B_2 * DecDummy * Log(Sales_{i,t}/Sales_{i.t-1}) + \varepsilon_{i,t} \ldots\ldots\ldots (1)$$

$$Log(COGS_{i,t}/COGS_{i,t-1}) = B_0 + B_1 * Log(Sales_{i,t}/Sales_{i,t-1}) + B_2 * DecDummy * Log(Sales_{i,t}/Sales_{i.t-1}) + \varepsilon_{i,t} \ldots\ldots\ldots (2)$$

Where:

SG&A = the selling and general and administrative costs;

COGS = the cost of goods sold;

Sales = sales revenue;

DecDummy = indicator equals 1 if the activity level decrease and zero otherwise;

- For testing my second hypothesis I can use the following empirical models:

$$\text{Log}(SG\&A_{i,t}/SG\&A_{i,t-1}) = B_0 + B_1 * \text{Log}(Sales_{i,t}/Sales_{i,t-1}) + B_2 * DecDummy_{i,t} * \text{Log}(Sales_{i,t}/Sales_{i.t-1}) + B_3 * DecDummy_{i,t} * \text{Log}(Sales_{i,t}/Sales_{i.t-1}) * Aint_{i,t} + B_4 * DecDummy_{i,t} * \text{Log}(Sales_{i,t}/Sales_{i.t-1}) * Growth_{i,t} + \varepsilon_{i,t} \ldots (3)$$

$$\text{Log}(COGS_{i,t}/COGS_{i,t-1}) = B_0 + B_1 * \text{Log}(Sales_{i,t}/Sales_{i,t-1}) + B_2 * DecDummy_{i,t} * \text{Log}(Sales_{i,t}/Sales_{i.t-1}) + B_3 * DecDummy_{i,t} * \text{Log}(Sales_{i,t}/Sales_{i.t-1}) * Aint_{i,t} + B_4 * DecDummy_{i,t} * \text{Log}(Sales_{i,t}/Sales_{i.t-1}) * Growth_{i,t} + \varepsilon_{i,t} \ldots . (4)$$

Where:

Aint = asset intensity, total assets divided by sales revenue;

Growth = economic growth, the difference between the revenue of the year t and year t-1 divided by revenue of year t

And the other variables are defined above.

- For testing my third hypothesis I can use the following empirical models:

Rt = β0 + β1 Xt + $\sum_{k=1}^{2}$ βk+1 Xt+k + $\sum_{k=1}^{2}$ βk+N+1 Rt+k + β2N+2 EPt-1 + β2N+3 AGt + β8 $DecDummy_{i,t}$* Log($Sales_{i,t}$/$Sales_{i.t-1}$) + β9 $DecDummy_{i,t}$* Log($Sales_{i,t}$/$Sales_{i.t-1}$)*Xt + $\sum_{k=1}^{2}$ β k+9 Xt+k*$DecDummy_{i,t}$* Log($Sales_{i,t}$/$Sales_{i.t-1}$) + $\sum_{k=1}^{2}$ β k+11 Rt+k*$DecDummy_{i,t}$* Log($Sales_{i,t}$/$Sales_{i.t-1}$) + β14 EPt-1*$DecDummy_{i,t}$* Log($Sales_{i,t}$/$Sales_{i.t-1}$) + β15 AGt*$DecDummy_{i,t}$* Log($Sales_{i,t}$/$Sales_{i.t-1}$) + ε. ……………………………………………….(5)

Where all of these variables are defined above.

5- Data and sampling:

The Egyptian stock exchange is characterized by in stability in the stock prices in the recent few years, because of the uncertainty which faces the foreign investors which lead to great pressure from the foreign investors on the listed firms about

providing more quality information in the financial statements for increasing the earnings predictability. In this context, I use the Collins et al. (1994) model for measuring the earnings predictability in a time series for two years only, consequently my sample cover the period from 2015 to 2017 on the Egyptian listed companies, which lead to 310 firm year observations and by excluding all observations related to non-manufacturing companies my sample will be 216 firm year observations, in addition by excluding extreme values of my observations the final sample will be 162 firm year observations, I can summarize the sample choice procedure from the following table as follow:

Table (5-1): sample choice procedure

The initial size of sample	310
Non-manufacturing observations	94
Extreme values	54
Final sample	162

Besides, I can show the distribution of my sample on the sectors and the series of my study as follow:

Table (5-2): sample distribution on the sectors and years

Sector / year	**2017**	**2016**	**2015**	**Total**
Basic resources	5	5	5	15
Chemicals	6	6	6	18
Construction and building materials	15	15	15	45
Foods	10	10	10	30
Industrial products and services and cars	4	4	4	12
Home and Personal Products	3	3	3	9
Real estate	11	11	11	33
Total	**54**	**54**	**54**	**162**

The previous tables shows the equality of observations among years of time series as a result of using the Collins et al. (1994) model, which predicts along two years only, where the observations differ among sectors of my sample.

6- Empirical Results:

In this section I will show the descriptive statistics for all the variables, the Pearson correlation matrix and the results of

regression analysis resulting from running the empirical models for testing hypotheses as follow:

- First: descriptive statistics:

Table (6-1): Descriptive statistics

Variable	Obs	Mean	Median	Std. Dev.	Minimum	Maximum
Log (COGSi,t/COGSi,t-1)	162	0.1068	0.0509	0.3564	-1.1029	2.1071
Log (SGAit/SGAit-1)	162	0.1214	0.0539	0.3942	-0.6145	2.9949
Log (SALESi,t/SALESi,t-1)	162	0.0700	0.0421	0.4682	-2.9853	3.1100
Rt	162	3.4852	7.2637	7.7161	0.3135	59.7966
Xt	162	1.3834	0.0226	3.4272	-11.4107	31.7650
Xt+1	162	0.4283	0.0221	0.3244	0.0005	2.3915
Xt+2	162	-0.0266	1.0245	0.1538	-1.1247	0.5883
Rt+1	162	8.2255	7.0942	0.9855	5.3214	10.3917
Rt+2	162	8.1860	7.3444	0.9904	5.3214	10.2763
Ept-1	162	0.1128	-0.4379	0.3482	-1.0000	2.4089
Agt	162	-0.0028	0.0549	0.6957	-4.2522	6.6077

Table (6-1) represents descriptive statistics for the Egyptian sample from 2015 to 2017 period. As shown in this table the mean of the variables Log (COGSi,t/COGSi,t-1) ،Log (SGAit/SGAit-1) ،Log (SALESi,t/SALESi,t-1) are 0.1068, 0.1214, 0.0700 respectively which are near to its Peers on the previous literature (e. g. Anderson, et al., 2003; Balakrishnan, et al., 2003; Weiss, 2010)

On the other side, the mean of variables Xt ،Xt+1 ،Xt+2 are 1.38, 0.4283, -0.0266 respectively, which indicates to drop in the level of earnings per share so it is important identifying the level of earnings predictability. Besides, the mean of returns are equal compared to achieved earnings, however the market prices of stocks and its fluctuations are completely separated from the firm ability to achieve earnings and the investors ability to predict earnings.

Based on these results, I conclude that my results can be compared with the results of the other prior research.

- Second: Pearson correlation matrix:

My study try to investigate the relationship between the cost stickness and the earnings predictability, and try to analyze the effect of cost stickness causes on the level of cost stickness for

the cost of goods sold and the selling and general and administrative cost. Consequently, I can show the Pearson correlation matrix for identifying the nature of relationship between independent variables and the dependent variable and studying the level of multicolinearity among variables, in addition measuring the variance inflation factor for approving that my models don't suffer from multicolinearity problems.

Table (6-2): Pearson correlation matrix

Variables	Rt	Xt	Xt+1	Xt+2	Rt+1	Rt+2	Ept-1	Agt	Log (St/St-1)	Dummy _Log (St/St-1)	D.D *Xt	D.D *Xt+1	D.D* Xt+2	D.D* Rt+1	D.D* Rt+2	D.D* Ept-1	D.D*Agt
Rt	1.00																
Xt	0.17	1.00															
Xt+1	-0.05	0.40	1.00														
Xt+2	-0.04	-0.01	-0.01	1.00													
Rt+1	-0.45	-0.02	0.17	0.10	1.00												
Rt+2	-0.42	-0.05	0.17	0.10	0.19	1.00											
Ept-1	-0.17	0.17	0.07	-0.03	-0.03	-0.16	1.00										
Agt	-0.21	0.04	0.01	-0.04	0.02	-0.03	0.31	1.00									
Log (St/St-1)	-0.04	-0.04	-0.05	-0.01	0.01	0.01	-0.06	-0.03	1.00								
Dummy_Log (St/St-1)	-0.03	0.03	0.09	0.03	0.09	0.08	0.05	0.05	0.09	1.00							
D.D*Xt	-0.22	-0.36	-0.24	0.03	-0.01	-0.00	-0.06	0.01	0.12	0.27	1.00						
D.D*Xt+1	-0.07	-0.09	-0.16	0.03	-0.06	-0.06	-0.03	0.01	0.17	0.47	0.78	1.00					
D.D*Xt+2	0.06	-0.01	-0.04	-0.01	-0.11	-0.10	-0.04	-0.04	0.06	-0.39	0.22	0.36	1.00				
D.D*Rt+1	-0.02	0.03	0.08	0.03	0.06	0.06	0.04	0.05	0.11	0.19	0.32	0.55	-0.30	1.00			
D.D*Rt+2	-0.02	0.03	0.08	0.03	0.06	0.06	0.04	0.05	0.11	0.19	0.31	0.55	-0.31	0.00	1.00		
D.D*Ept-1	0.17	-0.06	-0.13	0.00	-0.14	-0.10	-0.31	-0.08	0.07	-0.30	0.27	0.35	0.53	-0.23	-0.24	1.00	
D.D*Agt	0.03	-0.03	-0.09	-0.01	-0.11	-0.10	-0.07	-0.08	-0.02	-0.87	-0.03	-0.09	0.74	-0.81	-0.81	0.49	1.00

The results shown in table (6-2) assure that there is no significant relationship among independent variables and dependent variables which are inserted in the empirical models related to testing hypotheses, which mean that my hypotheses are correct and don't suffer from multicolinearity.

- Third: Hypotheses test Results:

The first hypothesis predicts that there is no stickness in the cost of goods sold and the selling and general and administrative costs on the Egyptian environment, so I used the Anderson, et al., (2003) model, and by running model (1) & (2) the results of the first hypothesis can be as follow:

Table (6-3)
Results of regression analysis for the first hypothesis

Variable	Panel A: COGS			Panel B: SG&A		
	Coef.	t-stat.	p-value	Coef.	t-stat.	p-value
Constant	0.0268	1.09	0.279	0.1358	3.76	0.000
Log (SALESi,t/SALESi ,t-1)	0.5803	9.42	0.000	-0.0155	-0.17	0.863

DecDummy*Log (SALESi,t/SALESi ,t-1)	-0.6271	-5.75	0.000	0.1054	0.67	0.502
N	**162.00**			**162.00**		
F.value Sig.	**44.40**			**28.00**		
F. Sig.	**0.000**			**0.000**		
VIF (Max)	**1.66**			**1.69**		
Adj. R2	**34.89%**			**35.06%**		

The above table No. (6-3) show that the explanatory power of this model is 34.89% for the cost of goods sold and 35.06% for the selling and general and administrative cost and these percentages are close to its peers on Anderson, et al., (2003) which are 36.63%, 39.93% respectively. But on the other vein it so far from its peers on Ezat (2015) which is 79% in the Egyptian environment and this difference may be related to the different sample, where my sample are equal through years of time series.

In addition, there are significant relationship in this model, where ($\beta1 = 0.58$, $t = 9.42 > 2$); ($\beta2 = -0.63$, $t = 5.75 > 2$) for the cost of goods sold, but it is not significant in panel B where ($\beta1 = -0.01$ $t = 0.17 < 2$) ،($\beta2 = 0.1054$, $t = 0.67 < 2$) for selling and general and administrative cost. And given that cost stickness assumption depend on $\beta1$ & $\beta2 > 0$, so the stickness is really obvious for the cost of goods sold and not exist on the selling and general and administrative cost.

Based on these results, I conclude that decrease in activity level with 1% percent will lead to decreasing in the cost of goods sold with -0.0467%, where increasing the activity level with 1% will lead to increasing in the cost of goods sold with 0.58% these results are closed to its peers in numerous studies (See; Anderson, et al., 2003; Balakrishnan, et al., 2003; Weiss, 2010).

In contrast, there is no any stickness in the selling and general and administrative cost, So I can accept the null hypothesis for the selling and general and administrative cost and accepting the alternative hypothesis for the cost of goods sold.

On the other side, the second hypothesis predict the effect of causes on the level of cost stickness for the cost of goods sold and the selling and general and administrative cost by developing the Anderson, et al. (2003) model by the causes which are asset

intensity and economic growth following numerous studies (See, Subramaniam & Weidenmier, 2003; He, et al., 2010; Bosch & Blandón, 2011; Shust & Weiss, 2014; Apostolos, et al., 2015; Bugeja, et al., 2015; Chae & Chung, 2015; Holzhacker, et al., 2015; Qin, et al., 2015; Zanella, et al., 2015; Magheed, 2016; Pamplona, et al., 2016; Jang, et al., 2017).

By running models No. (3) & (4) it turns out the explanatory power are 94.77% for the cost of goods sold and 78.54% for the selling and general and administrative cost which are more better of its peers on the prior literature (e.g. Subramaniam & Weidenmier, 2003; He, et al., 2010; Bosch & Blandón, 2011; Shust & Weiss, 2014; Zanella, et al., 2015; Magheed, 2016; Pamplona, et al., 2016; Jang, et al., 2017) as shown below:

Table (6-3)
Results of regression analysis for the second hypothesis

Variable	Panel A: COGS			Panel B: SG&A		
	Coef.	**t-stat.**	**p-value**	**Coef.**	**t-stat.**	**p-value**
Constant	1.9757	6.82	0.000	-0.0848	-2.30	0.023
Log (SALESi,t/ SALESi,t-1)	0.4190	15.64	0.000	-0.0069	-0.17	0.869
DecDummy*Log (SALESi,t/ SALESi,t-1)	-8.6278	-10.21	0.000	-0.0082	-0.11	0.910
DecDummy*Log (SALESi,t/ SALESi,t-1)*Aint	-0.2299	-5.82	0.000	0.2287	6.15	0.000
DecDummy*Log (SALESi,t/ SALESi,t-1)*Growth	-0.1125	-5.60	0.000	0.9058	1.83	0.070
N	**162.00**			**162.00**		
F.value Sig.	**734.53**			**141.89**		
F. Sig.	**0.000**			**0.000**		
VIF (Max)	**1.94**			**9.13**		
Adj. R2	**94.77%**			**78.54%**		

In addition, it turns out that the significance of the coefficients of cost stickness in panel A where (β1 = 0.4190, t = 15.64 > 2) ،(β2 = -8.63, t = 10.21 >2) for the cost of goods sold, but it is not significant in panel B where (β1 = -0.0069, t = 0.17 < 2) ،(β2 = - 0.0082, t = -0.11 < 2). Besides, it turns out significance of DecDummy*Log (SALESi,t/SALESi,t-1)*Aint ، DecDummy*Log (SALESi,t/SALESi,t-1)*Growth in Panel A where (β3 = -0.2299, t = 5.82 > 2) ،(β4 = -0.1125, t = 5.60 >2), which means that the cost stickness causes represented in asset intensity and economic growth lead to increasing the level of cost stickness for in the cost of goods sold which agree with the prior literature (e.g. Subramaniam & Weidenmier, 2003; He, et al., 2010; Bosch & Blandón, 2011; Shust & Weiss, 2014; Zanella, et al., 2015; Magheed, 2016; Pamplona, et al., 2016; Jang, et al., 2017).

This result due to the asset intensity motive mangers toward disposing the unused capacity for achieving the earnings targets without any threats from the other stakeholders, which increase the level of cost stickness.

But on the other side, there are no significance for the variables DecDummy*Log (SALESi,t/SALESi,t-1)*Aint ،DecDummy*Log (SALESi,t/SALESi,t-1)*Growth, where (β3 = 0.2287, t = 6.15 > 2) ،

($\beta 4 = 0.9058$, $t = 1.83 > 2$) this mean that cost stickness causes represented in asset intensity and economic growth haven't any effects on the level of cost stickness of selling and general and administrative cost which is different from the results of prior literature (e.g. Subramaniam & Weidenmier, 2003; He, et al., 2010; Bosch & Blandón, 2011; Shust & Weiss, 2014; Zanella, et al., 2015; Magheed, 2016; Pamplona, et al., 2016; Jang, et al., 2017). And this result may be due to increasing the analysis period than two years which lead to fade the stickness of selling and general and administrative cost.

Based on these results, the decrease on the activity level by 1% will lead to decrease the cost of goods sold by -8.2% and this very high and indicate to accelerated decisions related to disposing the unused capacity, in addition the increase in activity level by 1% will lead to increasing cost by 0.419%. But there is no stickness on the selling and general and administrative cost.

Consequently, the cost stickness level increase with the increasing of asset intensity and economic growth, So I can accept the alternative hypothesis for for the cost of goods sold and refusing it and accepting the null hypothesis for the selling and general and administrative cost.

The third hypothesis of my research predict the relationship between cost stickness and earnings predictability, so I moderated the Collins, et al. (1994) model by the effects of the cost stickness. But before this step I must run Collins, et al. (1994) model without moderating it as shown below:

Table (6-4): Results of regression analysis for the third hypothesis

Variable	Panel A: Earnings predictability model			Panel B: Earnings predictability model moderated by stickness		
	Coef.	t-stat.	p-value	Coef.	t-stat.	p-value
Constant	-2.5387	-0.99	0.322	-0.2685	-0.15	0.882
Xt	3.2417	1.94	0.054	2.1673	10.58	0
Xt+1	3.4336	14.37	0	4.7579	4.41	0
Xt+2	13.0928	5.73	0	125.0149	9.38	0
Rt+1	-2.3688	-0.39	0.696	-7.2334	-1.88	0.062
Rt+2	2.4396	0.4	0.69	7.0722	1.83	0.07
Ept-1	0.4926	0.21	0.833	2.0984	1.39	0.166
Agt	0.123	0.29	0.775	0.3638	1.36	0.176
Log (St/St-1)				0.0962	0.21	0.835
Dummy_ Log (St/St-1)				-11.6046	-0.46	0.647
D.D*Xt				-67.4295	-8.1	0

D.D*Xt+1		-69.7902	-8.07	0
D.D*Xt+2		-0.3222	-3.79	0
D.D*Rt+1		-113.8382	-0.92	0.359
D.D*Rt+2		115.2562	0.92	0.359
D.D*Ept-1		37.3185	0.77	0.444
D.D*Agt		2.8422	0.29	0.775
N	**162**	**162**		
F.value	**84.23**	**115.16**		
Sig.				
F. Sig.	**0**	**0**		
VIF (Max)	**7.84**	**8.72**		
Adj. R2	**77.21%**	**91.90%**		

The results shown above in the table (6-4) turns out that explanatory power of Collins, et al. (1994) is 77.21% and this is a good percentage indicate that this model are valid to the Egyptian environment.

In addition, it turns out the significance of Xt+1, Xt+2 and they positive which means the investors Have more capability for predicting the future earnings i.e. the investors in the Egyptian environment can make a good prediction by the current level of financial information in the financial statements.

But by running the model again by moderating it with the effects of cost stickness the explanatory power became 91.90% i.e. the explanatory power increased and this mean the cost stickness effects have the ability to increase the quality of this model.

In this regard, it turns out the significance of Xt, Xt+1, Xt+2 and positive where (β1 = 2.17, t = 10.58 > 2) ،(β2 = 4.76, t = 4.41 >2) ،(β3 = 125, t = 9.38 >2), this mean that the investors can predict efficiently by future earnings. But with moderating the model by cost stickness effects turns out the significance of D.D*Xt, D.D*Xt+1, D.D*Xt+2 and negative where (β10 = -67.43, t = 8.10 > 2) ،(β11 = -69.79, t = 8.07 >2) ،(β12 = -0.32, t = 3.79 >2). This result means that inserting the cost stickness variable lead to negative effect on the investors capabilities for predicting the future earnings.

Based on these results, I can accept the alternative hypothesis with the negative relationship between cost stickness and earnings predictability.

7- Conclusions

This study aims to investigate the relationship between the cost stickness and the earnings predictability. By exploring the

stickness on the cost of goods sold and the selling and general and administrative cost, then exploring the effect of causes represented in asset intensity and economic growth on the level of cost stickness. Finally, investigating the relationship between cost stickness and the earnings predictability in the Egyptian environment.

Using a sample of 162 firm year observations to the period 2015-2017 on the Egyptian stock exchange, I found the stickness on the cost of goods sold and I cannot found it in the selling and general and administrative cost, Besides I found effective role for the causes represented in asset intensity and economic growth in increasing the stickness of cost of goods sold whereas it haven't any role on the selling and general and administrative cost. Finally, I found negative relationship between cost stickness and earnings predictability in the egyptian environment.

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