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STUDY OF THE EFFECT OF THE FIRM SIZE ON COSTS STICKINESS: EVIDENCE FROM TEHRAN STOCK EXCHANGE

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Abstract: *A fundamental assumption in cost accounting is that cost behavior is symmetric for activity increases and decreases. However, recent studies suggest that the costs are asymmetric behavior; these costs increase more when revenues increase than they fall when revenues decrease by an equivalent amount. However, different size firms have different financial constraints, investment in assets, different adjustment costs to remove committed resources towards each other. Therefore, the firm size is one of the things that can affect the cost stickiness. The main purpose of this study is to empirically investigate effect of firm size on cost stickiness in two levels of cost of goods sold and administrative, general and sales expenses in the Tehran Stock Exchange (TSE) during the years 2003 to 2014. Also, in this study, firm size is divided two groups of companies to large and SMEs. The results showed that the costs stickiness in large companies more than SMEs. Overall, the results indicate that firm size plays an important role in the costs behavior.*

Key words*: Costs Stickiness, firm size, Cost behavior, cost of goods sold, SG&A expense.*

1. INTRODUCTION

Understanding cost behavior is important for use in management decision-making models, and one of the important issues is cost accounting and management accounting. For this reason, management accountants have always focused on the cost behavior as a major factor in the benefit analysis. Moreover, people within the organization who are interested in understanding and predicting the performance of the company need to understand the behavior of the company's costs. For example, financial analysts in the process of predict corporate profits have to estimate costs. Therefore, the anticipated costs necessary to carry out any profit forecast (Weiss, 2010).

In the traditional model of cost behavior, costs vary according to changes in cost driver, hence the amount of change cost depends on to the change in the level of activity, not to direction change (Noreen, 1991); but in fact costs, represents

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the consumption of resources and resources needed are provided to do different activities. Such activities are carried out in order to produce goods and services; the resources obtain based on expectations of demand and therefore, the costs do not comply with real demand (Anderson and Lanen, 2007). Previous studies show that costs increase more rapidly with an activity increase than they decrease with an activity decrease (Anderson et al., 2003; Medeiros and Costa, 2004). Anderson et al (2003) call this type of treatment, costs sticky behavior.

Anderson et al (2003) argue that the stickiness of costs takes place as a result of managers' deliberate decisions in the adjustment of resources at their disposal. Companies are forced to bear the adjustment costs to abandon and replace again the same sources if demand returns to the original condition. Adjustment costs include compensation to rejected employees, searching and training new employees, undermine the morale of the remaining employees and erode the remaining human resources, which is due to the disruption of working groups. When demand rises, managers raise resources adequately to achieve more sales. But when sales decrease, some sources are not usable in practice. Stickiness of costs occurs when managers decide to maintain the unused resources to avoid adjustment costs in the face of declining demand.

Despite this, there have been several studies on stickiness of costs, and these studies have provided evidence about the behavior of stickiness of costs and have proved variables that are factors of the stickiness of costs. Because large and small companies have financing constraints, investment in property and adjustment costs of removing the committed resources (such as compensation to rejected employees), managers tend to have different rules. Thus, in previous studies, focus on firm size as an important factor determining the stickiness of costs has been far from sight. Therefore, this research aims to fill this gap. The main objective of this paper is to study the stickiness of costs in large and SME companies in Tehran Stock Exchange. More precisely, the aim of this study is to answer these questions:

- Does the stickiness of costs occur in large firms and SMEs?
- Are identified factors influencing the stickiness of costs, effective in large firms and SMEs?

2. LITERATURE REVIEW

Cost behavior analysis is very important to support management decisions. In the traditional model of cost behavior which is common in the literature of accounting, costs are divided into two categories of fixed costs and variable costs according to the change in activity volume. In this model, variable costs change according to the change in cost driver. This means that the cost variation depends on the change

in activities level and not in the direction of the change (Anderson and Lanen, 2009). The theoretical validity of such categories of costs strictly linked with the theory of the time horizon, the range and factors related to economic conditions. But costs in fact, show the consumption of resources and resources are provided to the various activities of the company. Because the activities are carried out in order to produce goods and services, resources are obtained on the basis of expectations of demand which lead to noncompliance of the costs from the actual demand. In this regard, some experts argue that costs reduction by reducing the volume of activity is less than costs increase due to increased volume of activity. This type of cost behavior is called sticky behavior (Anderson et al., 2003). Anderson et al (2003) suggest that a 1% increase in the level of sales, increase the sales, general and administrative costs by 0.55% and a decrease of 1% in sales decrease the sales, general and administrative costs by 0.35%.

The stickiness of cost model confirms that the costs incurred in a period depend to some extent on the costs incurred in previous periods. The level of activity in the current period and the level of spending and activity in the previous period influence the costs incurred in the current period. In contrast, traditional models of cost behavior claim that the costs incurred in the current period, only depend on the volume of activity of the current period. This dependence arises because the stickiness of cost model, unlike traditional static models, considers the strategic behavior of costs. In particular, stickiness of costs occurs due to the managers' role in adjusting the resources required for activities (Balakrishnan and Gruca, 2008). Anderson et al (2003) argue that the two factors, the adjustment costs and faith in the future demand for resources, could have an impact on management decisions.

Now in the accounting literature, two reasons are given for stickiness of costs. Due to the first reason, stickiness of costs is a result of considered decisions by managers. When managers face with declining sales, they may imagine the situation as temporary and expect a return to normal sales levels. Hence some managers do not reduce resources related to operating activities in the period when sale has a downward trend. This behavior is justified because the long-term conservation of resources may reduce costs. Because in case of declining resources, in response to declining sales, if sales increase in future periods, some costs will be imposed to companies to regain the same resources again. Thus, managers in a considered decision take action to conserve resources for reducing costs in the long term (Anderson et al., 2003).

The second reason for stickiness of costs is the agency. The managers' decisions to keep the unused resources may be caused by personal considerations and have some representation costs. Some of directors make decisions due to personal considerations that increase their personal interests, but are not optimal from the

perspective of shareholders (Anderson et al., 2003). Jensen and Meckling (1976) argue that managers may save unused resources of company to avoid personal consequences, such as losing their post due to the miniaturization of a section, or the fear of losing their colleagues that eventually leads to stickiness of costs.

3. RESEARCH HYPOTHESES

3.1 The Impact of Firm Size on Stickiness of Costs

Stickiness of costs takes place due to asymmetric adjustment of resources in the decrease and increase of the volume of activities. Downward adjustment of costs is more difficult than upward adjustment of costs, because enterprises are facing difficulties in the removal of committed resources. Cooper and Kaplan (1992) noted that managers may be reluctant to lay off staff or cut off the resources when demand decreases and usually delay the resources adjustment because they believe that the decline in demand and activity will be temporary. Anderson et al (2007) described three features creating the stickiness of costs including cost stability, the failure of management to control costs and economic decisions to conserve resources during a recession. Empirical evidence showed that large companies usually use more constant factors and have more expensive staff, while small companies are dependent on variable factors (Nor et al. 2007; You, 1995). So, when activity is reduced, large companies are faced with greater rigidity in the reduction of committed resources. On the other hand, large companies usually have complex organizations, a broader range of control, transaction and more agency costs. Blau (1970) and Kimberly (1976) provided substantial evidence that the increase in size, determines more complex structure in the organization. Iacobucci i and Rosa (2005) and Robson et al (1993) showed that small firms have important incentives to avoid complexity. In this regard, any decision needs to gather more information about the extent of organizational complexity, and these decisions have wider implications for larger companies. Thus, decisions are taken slower in these companies. They are less involved in the adjustment of resources at the time of recession and are likely to incur stickiness of costs. Finally, uncertainty plays an important role. As a result, larger companies with significant problems and inflexibility are faced with decision to reduce committed resources and tend to delay decisions until the decline in activity is ongoing. In contrast, the decision on the adjustment of resources for small businesses is automatically taken, because their activity is mostly based on variable resources. They can advantageously face with decreased activity. According to these considerations, Hypothesis 1 is expressed as follows:

Hypothesis 1: The degree of cost stickiness in large companies is more than in SMEs.

3.2 The Impact of Assets on the Stickiness of Costs

It is expected that cost stickiness in companies whose activities are more based on assets is greater than those whose activities depend on purchased materials and services. The lower the value of long-term contracts is, the easier resource depletion is when demand is falling. But due to paying the cost of sales, asset replacement is costly. Moreover, in the face of declining resources, investments such as the costs of installation of machinery are also lost. Das et al (1993), found an inverse relationship between company size and variability in sales, so they argued that small firms chose technological products that allows them respond easily to the changes in market conditions. Nor et al (2007) reported that small firms employ more flexible methods of production that is based on variable costs. Cressy and Olofsson (1997) showed that small firms has lower ratio of fixed assets to total assets, more current debts related to total assets and higher financing risk. Calleja et al (2006) used the ratio of fixed assets to sale as the asset intensity. The results showed that companies with more investment in fixed assets, have a higher adjustment costs in these resources, and the managers of these companies have shown more reluctance to reduce the level of these resources in the sales decline. Thus, Hypothesis 2 of this paper is formed as follows:

Hypothesis 2: The degree of cost stickiness by increasing assets in large companies is more than in SMEs.

3.3 The Impact of the Number of Staff on Stickiness of Costs

It is expected that the costs of resources adjustment in companies with more employees at a certain level of sales to be higher. Due to unemployment pay by the employer, decreasing the number of employees is costly. On the other hand, by reducing the number of employees, companies lose the investments they have done for specialized training of their staff and in the case of increasing demand in the future, they are forced to hire new employees and pay to train them again. Moreover, due to the decline in the morale of the remaining employees and their reduced loyalty, companies are faced with lower productivity and are forced to do more displacements. Dierynck et al (2012) reported that layoffs bring with them costs for the company such as compensation payments, loss of morale of remaining employees and loss of reputation in the market as well. As a result, managers at companies who report higher profitability are less likely to lay off employees when faced with reduced activity. Managers of these firms tend to decrease the number of hours their employees work instead of layoffs in the face of reduced activity. On the other hand, companies with high profits at the time of increased activity are looking for temporary staff rather than increase the number of hours their employees work. In contrast, managers of companies

with low profits will decrease the number of employees and the working hours symmetrically in response to changes in levels of activity. Calvo and Wellisz (1978) reported that large corporations have more bureaucracies and pay more to their employees. Evans and Leighton (1989) suggest that small companies are looking for a less stable working environment, so they have a higher bankruptcy rate and more variable growth. As a result, small firms tend to recruit temporary staff. While large companies are seeking skilled workers, increasing staff skills within the company and assigning more specialized tasks to their employees. Also, Forbes and Milliken (1999) suggest that small firms have less specialized managers with less work experience. Thus, Hypothesis 3 of this paper is formed as follows:

Hypothesis 3: The degree of cost stickiness by increasing staff in large companies is more than in SMEs.

3.4 The Impact of Debts on Stickiness of Costs

Favorable access to credit markets is one of the identified resources for the financing of large companies. They can take advantage of the low cost of financing and loaning, while the growth of small companies is more limited with low and inadequate access to financing (Beck and Demirguc-Kunt, 2006). Brennan and Hughes (1991) and Collins et al (1981) showed that large companies have less information asymmetry than small companies. Therefore, small firms have borrowing constraints and higher costs of external financing than large firms (Whited, 1992; Kim et al. 1998). However, the size of a company is a reverse index to the information asymmetry and cost of external financing. Moreover, the company size can be related to the costs of the financial crisis. Large companies have more flexibility and therefore less likely to face the threat of bankruptcy and have easier access to sources of financing compared to small firms (Rajan and Zingales, 1995; Titman and Wessels, 1988). Also, they argue that large firms use more debt than small firms. On the other hand, small companies have less long-term debt and more short-term debt because of a conflict of interest between shareholders and creditors. Calleja et al (2006) suggest that firms with high levels of debt, showed no stickiness of costs on average. The fact is that companies with high levels of debt have to pay more interest cost and the issue will be discussed in detail by the creditors. So managers are encouraged to give creditors the assurance that at different economic conditions, they have a flexible cost structure. Thus, Hypothesis 4 of this paper is formed as follows:

Hypothesis 4: The degree of cost stickiness in large companies, decreases by increasing debts compared to those in SMEs.

3.5. The Impact of Reduction of Successive Periods on Stickiness of Costs

Because demand fluctuations are related to product market conditions and economic conditions, trends of these factors affect the demand amount. In the case of continuous decline in sales, management assessment of the sustainability of demand reduction becomes stronger. That's why, when sales decline occurs for the second consecutive period, managers probably assume this sales decline more stable. Increasing the likelihood of recession stability encourages the managers to reduce resources which in turn decrease the stickiness of costs. So, it is expected with a decrease in sales in the previous period, we see a reduction in stickiness of costs.

While large companies take the advantage of scale, favorable credit market conditions, more qualified workforce and better management, small businesses take advantage of the flexibility (You, 1995). Flexibility of small companies allows them to respond faster to changes in the environment. Also, small firms allow them to have the lower control range and faster response time to changes in economic conditions (Jensen and Meckling, 1976). Thus, Hypothesis 5 of this paper is formed as follows:

Hypothesis 5: The degree of cost stickiness in periods that reduced income has happened in the period before, decreases less in large companies than in SMEs.

4. METHOD

4.1 Sample

We test our hypotheses by using financial data of Iranian companies. The sample for our study is all companies that are listed on the Tehran Stock Exchange (TSE) as of 2005. Our sample covers the period of 2003 to 2014. Observations in the years 2001 and 2002 are not used, because the analysis required sales data to be available for the prior two years, because of the variable Successive_Decrease mentioned later. We drop (1) financial institutions and public utilities because the structure of their financial statements is incompatible with those of other companies, (2) Financial year end is not 20 March, (3) observations that are missing data on either sales revenue or costs for the current year or the previous year, (4) observations where costs are greater than sales revenue in the current year, (5) observations with non-positive amounts for either sales revenue or costs, and (6) observations for which costs and sales move in opposite directions (Anderson and Lanen (2009)). After this procedure the total number of remaining observations is for 195 firms. To carry out the empirical analysis, the necessary data were obtained from the Codal database.

Since the objective of this study was to evaluate the stickiness of costs in companies of different size. The sample was split in two groups of companies to large and SMEs. Given that there is no generally accepted definition of SMEs, but a quantitative definition, which employs total assets, annual turnover and number of employees of the firm, is commonly employed in the literature (see for example, Belghitar and Khan, 2013; Garcia-Teruel and Martinez-Solano, 2008). The sample of SMEs considered in this study is extracted from all nonfinancial listed firms in the Iran for the period of 2003–2014. More specifically, in each year firms that meet the following criteria are considered as SMEs: (1) total assets less than average total assets of all the companies listed in Tehran Stock Exchange; (2) total sales less than average total sales of all the companies listed in Tehran Stock Exchange; (3) total number of employees fewer than or equal to 250.

4.2 Empirical Models

The first step of the analysis is to test the sticky behavior of costs incurred in companies of different size. we rely on the basic model introduced by ABJ which is often used in this type of studies (Subramaniam and Weidenmier, 2003; Calleja et al., 2006; Anderson and Lanen, 2009).

$$\log\left(\frac{Cost\ i,t}{Cost\ i,t-1}\right) = \beta_0 + \beta_1 \log\left(\frac{Salse\ i,t}{Sales\ i,t-1}\right) + \beta_2\, DecDummy \times \log\left(\frac{Salse\ i,t}{Sales\ i,t-1}\right) + \varepsilon_{i,t} \quad (1)$$

Where Cost is the SG&A costs and cost of goods sold (COGS) of Company i in fiscal year t. The variable *DecDummy (dd)* is a dummy variable that takes the value of 1 when revenue decreases between two periods, and is otherwise 0.

The use of the log model is consistent with previous studies (Anderson et al., 2003; Subramaniam and Weidenmier, 2003). Since the value of the decrease variable (dd) is 0 when revenue increases, β1 measures the increase in percentage terms in costs with a 1% increase in revenue. On the other hand, since the value of decrease is 1 when revenue decreases, the sum of β1 and β2 measures the decrease in percentage terms in costs following a 1% decrease in revenue. If the traditional cost behaviour model is valid, β2 would be equal to 0 since upward and downward changes in costs will be equal, and β1 would be equal to 1, reflecting proportionality. If companies exhibit sticky cost behaviour, β2 will be negative and statistically significant.

Compared to the basic model, the extended model given by equation (2) includes firm characteristics (such as asset intensity etc.) that have an impact on the cost behavior as identified earlier in this study.

ABJ considered asset intensity, employee intensity and decrease in revenues in the previous period. Results suggest that bigger firms in term of assets and employees demonstrate a more sticky behavior and that the degree of stickiness is lower in revenues-declining periods preceded by revenues-declining periods. Subramaniam and Weidenmier (2003) and Calleja et al. (2006) tested the same variables, adding respectively measures of inventory intensity and interest ratio, and measures of debt intensity and working capital intensity.

Following the literature, the model applied in this paper includes assets (ASSETS) intensity, employee intensity (EMP), debt (TOT_DEBTS) intensity and SD equals one if sales have decreased in two consecutive years (i.e., sales $_{t-2}$ > sales $_{t-1}$ > sales $_{t}$), and zero otherwise. All measures of intensity are scaled by revenues of the contemporaneous year. Similarly to ABJ, the selected firm-characteristics are inserted in the model as a specification of β2 (Model 2).

$$
\begin{aligned}
log\left(\frac{Cost\ i,t}{Cost\ i,t-1}\right) &= \beta_0 + \beta_1 log\left(\frac{Salse\ i,t}{Sales\ i,t-1}\right) + \beta_2\, DecDummy \\
&\times log\left(\frac{Salse\ i,t}{Sales\ i,t-1}\right) + \beta_3\, DecDummy \\
&\times log\left(\frac{Salse\ i,t}{Sales\ i,t-1}\right) \times log\left(\frac{ASSETS\ i,t}{Sales\ i,t}\right) \\
&+ \beta_4\, DecDummy \\
&\times log\left(\frac{Salse\ i,t}{Sales\ i,t-1}\right) \\
&\times log\left(\frac{EMP\ i,t}{Sales\ i,t}\right) + \beta_5\, DecDummy \\
&\times log\left(\frac{Salse\ i,t}{Sales\ i,t-1}\right) \\
&\times log\left(\frac{TOT\_DEBTS\ i,t}{Sales\ i,t}\right) + \beta_6\, DecDummy \\
&\times log\left(\frac{Salse\ i,t}{Sales\ i,t-1}\right) \times SD_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{2}
$$

5. EMPIRICAL RESULTS

5.1 Descriptive Statistics

The descriptive statistics for the firms with different size presented in Table 1. On average, our sample large firms have 3,418 Billion Rials in annual sales revenue (median = 810 Billion Rials) and average of the sales revenues in SME firms are 266 Billion Rials (median = 166 Billion Rials). Also the CGS and SG&A costs for

large firms are 2,493 Billion Rials (median = 577 Billion Rials) and 175 Billion Rials (median = 41 Billion Rials) respectively. However, the CGS and SG&A costs for SME firms are 195 Billion Rials (median = 120 Billion Rials) and 16 Billion Rials (median = 11 Billion Rials) respectively. The average ratio of CGS to sales revenues is for large firms, 74 percent for SME firms, 75 percent and the average ratio of SG&A to sales revenues is for large firms, 7 percent for SME firms, and 8 percent. These high percentages indicate that CGS costs are a very significant cost category for firms. On average, the large firms use 1.37 Billion Rials (mean = 1.32) of assets and 0.88 Billion Rials (mean = 0.83) of debt to support each Billion Rials in sales revenue. Also On average, the SME firms use 1.35 Billion Rials (mean = 1.30) of assets and 0.83 Billion Rials (mean = 0.81) of debt to support each Billion Rials in sales revenue.

Table 1
Descriptive Statistics

Variable		*Mean*	*Median*	*Std-dev*
Sales revenue (Billion Rials)	Large	3,418.50	810.13	5,740.97
	SME	266.41	166.37	299.75
CGS (Billion Rials)	Large	2,493.38	577.52	3,500.60
	SME	195.30	120.59	221.75
CGS% of revenue	Large	73.71	76.63	16.48
	SME	74.56	75.62	15.64
SG&A(Billion Rials)	Large	175.27	41.30	310.23
	SME	16.32	11.48	17.94
SG&A% of revenue	Large	6.61	5.78	4.82
	SME	8.01	6.48	6.02
Asset Intensity	Large	1.368	1.323	1.735
	SME	1.353	1.303	1.720
Debt Intensity	Large	0.877	0.835	1.873
	SME	0.828	0.815	1.939
Employee Intensity	Large	0.0009	0.0010	2.662
	SME	0.0013	0.0013	2.353

5.2 Hypothesis Tests

The empirical findings on each of the hypotheses are set out below.

5.2.1 Cost Stickiness

The data used in our study are arranged as a pooled (across firms) regression model, and estimated using Generalised Least Squares with cross-sectional weighting, to better account for the heteroscedasticity in our model. The variables in the models are initially tested for multi-collinearity. Each model is also tested for heteroscedasticity using White's (1980) test. Heteroscedasticity-corrected standard errors are used by applying the White (1980) correction (in addition to the GLS correction of the coefficient estimates themselves).

Table 2 presents the estimated values from the basic model (Model 1). When the dependent variable is CGS, the estimated value of $ß_1$ is 0.880 (t= 45.19) for the large firms and 0.956 (t= 66.92) for the SME firms. This indicates that CGS increase by about 0.88 percent for the large firms and 0.96 percent for the SME firms per 1 percent increase in sales revenue. The estimated value of $ß_2$ is -0.067 (t= -1.70) for the large firms and -0.056 (t= -1.83) for the SME firms. The combined value of $ß_1+ß_2$= 0.813 for the large firms and $ß_1+ß_2$= 0.900 for the SME firms indicates that CGS decrease by about 0.81 percent for the large firms and 0.900 percent for the SME firms per 1 percent decrease in sales revenue. These results indicate that CGS asymmetry is robust in both the large and SME firms. Since the value of $ß_2$ in the large firms compared to larger the SME firms is greater, indicates that the degree of CGS stickiness in the large firms more than the SME firms. Thus, according to the results on the CGS, hypothesis 1 is confirmed.

When the dependent variable is SG&A, the estimated value of $ß_1$ is 0.479 (t= 8.825) for the large firms and 0.515 (t= 11.60) for the SME firms. This indicates that SG&A increase by about 0.48 percent for the large firms and 0.52 percent for the SME firms per 1 percent increase in sales revenue. The estimated value of $ß_2$ is -0.264 (t= -2.28) for the large firms and -0.159 (t= -2.03) for the SME firms. The combined value of $ß_1+ß_2$= 0.215 for the large firms and $ß_1+ß_2$= 0.356 for the SME firms indicates that SG&A decrease by about 0.22 percent for the large firms and 0.356 percent for the SME firms per 1 percent decrease in sales revenue. These results indicate that SG&A asymmetry is robust in both the large and SME firms. Since the value of $ß_2$ in the large firms compared to the SME firms is greater, indicates that the degree of SG&A stickiness in the large firms more than the SME firms. Thus, according to the results on the SG&A, hypothesis 1 is confirmed.

Table 2
Costs and sticky behavior: estimations with Model 1

Variable	*large firms*		*SME firms*	
	Cost of goods sold	*SG&A costs*	*Cost of goods sold*	*SG&A costs*
β_0: Constant	0.011***	0.032***	0.003*	0.028***
	(4.466)	(4.529)	(1.941)	(4.735)
β_1: Log (Salesit/Salesit-1)	0.880***	0.479***	0.956***	0.515***
	(45.19)	(8.825)	(66.92)	(11.60)
β_2: DecDummy* Log(Salesit/ Salesit-1)	-0.067*	-0.264**	-0.056*	-0.159**
	(-1.701)	(-2.285)	(-1.836)	(-2.028)
Adjusted R^2	0.898	0.168	0.902	0.195
F-statistic	4397.57	104.59	4064.39	120.07
	(0.0000)	(0.0000)	(0.0000)	(0.0000)

The models are estimated using pooled OLS and T-statistics are in parentheses. *, **, ***represent significance at the 10%, 5% and 1%level.

5.2.2 Cost Stickiness and Firm Characteristics

With the aim of examining firm specific factors that could affect stickiness behavior of costs, we apply a regression model which includes, in addition to the basic variables, also measures of asset intensity, employee intensity, debt intensity and a dummy variable indicating a decline in sales revenue happened the previous year (Model 2). Intensity is calculated scaling assets, number of employees and total debts by sales revenue of the same year. The results presented in Table 3 support the hypothesis that the degree of stickiness depends on firm characteristics.

Table 3
Cost Stickiness and Firm Characteristics: estimations with Model 2

Variable	*Large firms*		*SME firms*	
	Cost of goods sold	*SG&A costs*	*Cost of goods sold*	*SG&A costs*
β_0: Constant	0.013***	0.043***	0.005***	0.026***
	(3.467)	(10.54)	(2.894)	(6.460)
β_1: Log (Salesit/Salesit-1)	0.884***	0.347***	0.940***	0.498***
	(25.86)	(9.618)	(66.98)	(16.23)

β_2: DecDummy* Log(Salesit/Salesit-1)	-0.686*** (-2.958)	0.548* (1.795)	-0.787*** (-4.012)	-0.404 (-1.022)
β_3: DecDummy* Log(Salesit/Salesit-1) * Asset Intensity	-0.600* (-1.781)	-1.143*** (-2.693)	0.296** (2.196)	0.600** (2.045)
β_4: DecDummy* Log (Salesit/Salesit-1) * Employee Intensity	-0.235*** (-3.350)	0.108 (1.067)	-0.215*** (-3.292)	0.034 (0.273)
β_5: DecDummy* Log (Salesit/Salesit-1) * Debt Intensity	0.708** (2.380)	0.789* (1.923)	-0.168 (-1.352)	-0.138 (-0.553)
β_6: DecDummy* Log(Salesit/Salesit-1) * *Successive Decrease*	0.115* (1.893)	-0.019 (-0.175)	0.069* (1.852)	-0.114 (-1.165)
Adjusted R^2	0.823	0.161	0.909	0.198
F-statistic	780.94 (0.0000)	33.203 (0.0000)	1589.56 (0.0000)	40.380 (0.0000)

The models are estimated using pooled OLS and T-statistics are inparentheses. *, **, ***represent significance at the10%,5% and 1%level.

The effect of total assets is estimated by the coefficient β_3, which is significant and negative both for CGS and SG&A costs in large firms (-0.600 and -1.143, respectively). In contrast, CGS and SG&A costs are significant and positive in SME firms (0.296 and 0.600, respectively). Thus, assets intensity increases the stickiness of SG&A and CGS costs in large firms. This result implies that while assets increase when revenue increases, large firms are unable or are reluctant to reduce assets by the same proportion when revenue is declining. Our findings confirm hypothesis 2.

The effect of number of employees is estimated by the coefficient β4, which is significant and negative both for CGS in large firms (β_4= -0.235) and in SME firms (β_4= -0.215). Therefore, employee intensity increases the stickiness of CGS costs in both of large firms and SME firms. This result indicates that firms that require relatively more employees to support operations. Since the coefficient β_4 for large firms to SME firms is higher, showing that the CGS costs in large firms are more stickiness. These results are consistent with the rationale underlying hypothesis 3 that stickiness increases with the adjustment costs that would be incurred to reduce committed resources.

The effect of total debt is estimated by the coefficient β3, which is significant and positive both for CGS and SG&A costs in large firms (0.708 and 0.789,

respectively). Thus, debt intensity decreases the stickiness of SG&A and CGS costs in large firms. Calleja et al. (2006) conclude that firms with higher levels of debt exhibit, on average, no cost stickiness since managers are pushed by creditors to meet payments with a flexible cost structure. The positive value of our estimation supports this argument, revealing that large firms with a high level of debt tend to reduce CGS and SG&A costs. The results provide support for the hypothesis 4. Finally, the positive coefficient on the second decrease variable, representing two consecutive years of revenue reduction, shows that over the long-term managers do reduce costs when revenue drops-for each type of cost (CGS and SG&A) in large firms, implying stickiness is a short run phenomena. Thus this result confirm hypothesis 5.

6. CONCLUSIONS

The present study investigated the effect of firm size on stickiness of costs behavior in Tehran Stock Exchange (TSE). Therefore, costs were divided into two parts of CGS and SG&A costs. The size of companies was also divided into two groups of large firms and SMEs using the above criteria.

The results of hypothesis 1 indicate that there is a stickiness of costs behavior in CGS and SG&A costs in both large firms and SMEs. The stickiness of costs behavior in large firms is more than SMEs. These findings are consistent with the findings of Anderson et al (2003), Subramaniam and Weidenmier (2003), Calleja et al. (2006). Also, the findings of this study in relation to SMEs are inconsistent with the findings of Dalla Via and Perego (2013).

The results of hypothesis 2 indicate that stickiness of costs behavior in CGS and SG&A costs is higher in large firms with the increase in assets. In addition, SMEs show an Anti-sticky behavior with an increase in assets. These results suggest that large firms have more investments in operating assets and thus don't have greater flexibility to adjust the operating assets during the period with declining sales. These findings about large firms are consistent with the findings of Anderson et al (2003) and Subramaniam and Weidenmier (2003). Also, these findings in relation to small and medium companies are inconsistent with the findings of Dalla Via and Perego (2013).

The results of hypothesis 3 showed that the stickiness of the CGS increases with an increase in employees in large firms more than SMEs. Results indicate that large firms have more expenses to search for new skilled workers and their training and also invest more to train their employees. Therefore, managers of large firms are looking for more stable work force. Thus, managers of large firms prefer to retain skilled workers in the decline of demand. On the other hand, layoffs at big

companies may bring social consequences for them. These findings for large firms regarding the CGS are consistent with the findings of Anderson et al (2003), and Subramaniam and Weidenmier (2003). Also, these findings for SMEs regarding the CGS are inconsistent with the findings of Dalla Via and Perego (2013).

The results of hypothesis 4 indicate that stickiness of CGS and SG&A costs decreases in large firms with an increase in debt. On the other hand, SMEs do not show the sticky behavior with an increase in debts. These results indicate that large firms have a high level of debt and reduce their debt at the period of sales decline in order to reassure the creditors. So they can obtain their financing requirements with lower costs at the time of returned demand. These findings for SMEs are inconsistent with the findings of Dalla Via and Perego (2013).

The results of hypothesis 5 about the CGS showed that the sales decline in consecutive terms, creates anti-stickiness property in the second period costs because frequent sales decline in consecutive terms ensures managers about demand recession, and in this case, managers are less likely to have surplus resources and reduce resources to stop the decline in their profits. These findings for large firms regarding the CGS are equal to the findings of Subramaniam and Weidenmier (2003), and about SG&A costs are inconsistent with the findings of Anderson et al (2003), and Subramaniam and Weidenmier (2003). Also, these findings for SMEs are inconsistent with the findings of Dalla Via and Perego (2013).

Generally, results showed that firms' size plays an important role in the behavior of costs. Results indicate that firms have specific characteristics depending on the type of management and governance in the same economic environment, which can affect the behavior of costs. The results contain information about the type of firms on behavior of costs that may be used by different users especially managers, financial analysts, investors and auditors to evaluate and make decisions.

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