

The Relationship Between Firm's Managerial Strategic Deviance and Cost Adjustment: Evidence from Korea

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Abstract

This study investigates the relationship between firm's cost behavior and the managerial strategic deviation. Firms which intend to reduce uncertainty and improve viability for future performance tend to implement managerial strategies similar to peer firms in the same industry. Since the managerial decisions affect firm's cost behavior, the strategic deviation including operations different from others would be associated with cost behavior distinct from peer firms. On firms listed on Korean Security Exchange and KOSDAQ markets from 2002 to 2017, the analysis show the results that the firm's strategic deviation is positively associated with cost-downward rigidity, indicating that the management strategy affects the cost behavior. Also, it means that corporate managers who choose a strategy that deviates from peer firms are less likely to adjust their resource even when sales decrease. This study is meaningful in expanding the literature on the determinants of cost behavior by analyzing the effect of the management strategy's characteristics of strategic deviation on cost behavior.

Key words: Management strategy, Strategic deviance, Cost behavior, Sticky cost, Manager characteristics

1. Introduction

This study analyzes how the characteristics of management strategy affect cost behavior. Management strategies reflect manager's characteristics in which the manager's tendency or properties are embodied, which affects the organizational structure and culture of the company (Dyreng et al., 2010). Managers develop specific strategies to achieve the company's goals in consideration of the company's internal resources and external factors, and such strategies can be different among even companies in the same industry (Wiersema and Bantel, 1992). Firm cost is the result of a manager's strategic decision to allocate resources to maximize corporate profits in consideration of the business environment or industrial characteristics. Thus, cost asymmetry, in which the rate of cost reduction that occurs when sales decrease is smaller than the rate of cost increase when sales increase, also can be said to be a result of reflecting management's decision-making (Anderson et al., 2003).

Cost behavior was assumed to be symmetrical in tradition. In other words, when sales decrease, costs decrease at the same rate as when sales increase (Noreen and Soderstrom, 1997). However, Anderson et al. (2003) empirically found a downward rigidity in cost that does not decrease proportionally when sales decrease compared to when sales increase. This asymmetric cost behavior means that cost input decision-making by managers is not mechanically made according to sales increase or decrease, but depends on the manager's operational strategy. In other words, managers' decision to allocate resources is one of the main factors that determine cost asymmetry (Anderson et al., 2003). Companies tend to choose strategies similar to those typically in the same industry to reduce uncertainty in future performance and increase growth potential (Dephousse, 1999; Higgins and Gulati, 2006). On the other hand, some companies pursue different strategies from the market-wide trend of strategies (Geretkanycz and Hambrick, 1997). The difference from the trend of overall strategies in the industry is called 'strategic deviation' (Carpenter, 2000; Tang et al., 2011).

According to previous studies on the strategic deviance, the higher the degree of strategic deviation, the higher the corporate business risk, and the lower the audit quality measured by discretionary accruals (Kim and Han, 2019). In addition, Wang (2018) reported the higher the degree of strategic deviation, the lower the tendency of conservative accounting, and managers who determine the direction of the strategy tend to secure justification for the strategy by improving corporate performance (Finkelstein et al., 2009). This means that the quality of

financial statements depends on the characteristics of management strategies in part, which is expected to affect the cost behavior. However, the research on the managerial strategic deviation with the linkage to corporate cost behavior is scarce by far, and the related studies needed to be further conducted for the academia and practice. In the response to this, this study aims to analyze the relationship between managerial strategic deviation and cost behavior and hypothesize that the downward rigidity of cost is not associated with the degree of strategic deviation.

This study measures the degree of strategic deviation by the method suggested by Tang et al. (2011) and tests the hypothesis using the Hamburg and Nasev (2008) and Anderson et al. (2003) models for non-financial listed companies in Korea, i.e., KSE and KOSDAQ markets, from 2002 to 2017. The results are as follows. First, the greater the degree of strategic deviation, the more rigid the cost behavior, confirming that the characteristics of the management strategy affect the cost behavior. The results are robust even when endogeneity concerns were controlled. This means that even if sales decrease, corresponding cost increases, which is a downward rigidity that does not adjust resources. That is, the higher the strategic deviation, so even if uncertainty about future performance and business risks exist, managers judge differentiated resource allocation and operation as the source of competitive advantage.

This study is meaningful in expanding the literature on cost behavior by analyzing the effect of the characteristic of management strategy on cost stickiness, confirming that cost asymmetry is revealed in the company's strategy characteristics. In particular, the greater the degree of strategic deviation, the more incentives for the construction of the empire of managers can be expressed, suggesting that control is necessary to increase corporate value.

The remainder of this study is organized as follows. In Section II, the theoretical background and the previous studies are reviewed, and research hypotheses are established. Section III designs a research model used for empirical analysis. Section IV reports the results of empirical analysis and Section V conducts additional analysis, and Section VI presents research summaries and conclusions.

2. Theoretical Background and Literature Review

2.1 Strategic Deviance

One of the things that management considers when making strategic decisions is strategic similarity. As the industry develops and grows, managers tend to develop organizational strategies in reference to overall trends or norms in the industry (Meyer and Rowan, 1977). Previous studies have shown that firms belonging to the same industry tend to imitate the companies with excellent performance, and appear to use similar strategies. Particularly, pursuing strategic similarity secures the legitimacy of the strategy, lowers the uncertainty and increases the long-term viability of the company (Miller et al., 2013), and therefore most of the strategies in the same industry have similar forms (Hirschleiffer, 1977). However, some companies pursue strategies similar to those in the industry (Geketjabcz and Hambrick, 1997). These companies recognize that strategic similarities limit their capabilities and that differentiated resource management and allocation due to the operation of different strategies are competitive advantages (Miller and Shamisie, 1996; Tece et al., 1997). Such difference between a specific company's strategy and the trend of the overall strategy of the industry is defined as a strategic deviation (Carpenter, 2000; Tang et al., 2011).

Early previous studies on strategic deviation examined the relationship between strategic deviation and corporate performance. The most findings are the greater the degree of strategic deviation, the greater the exceptional large profit or loss, and the higher the degree of strategic deviation due to the characteristics of aggressive managers acts as a factor that increases corporate uncertainty and risk (Catterjee and Hambrick, 2007; Tang et al., 2011). And Tang et al. (2011) confirmed that the smaller the influence of the CEO, the higher the tendency to follow strategic similarities in the industry. Conversely, the higher the degree of strategic deviation, and the greater the influence of the CEO, the greater the exceptional large profit or loss. Moreover, Kim and Han (2019) reported that the higher the degree of strategic deviation, the higher the performance uncertainty and the lower the audit quality measured by discretionary accruals as the business risk. In addition, Wang (2018) documented that managers for firms with high strategic deviation have a higher incentive to take aggressive accounting, and accordingly, the tendency of conservatism decreased.

There exists a study examining the relationship between the characteristics of management

strategy and cost asymmetry performance. Banker et al. (2014b) predicted that the characteristics of management strategies would affect management decision on resource allocation, and examined the cost behavior different in the strategy of the company, i.e., a differentiation strategy vs. cost leadership strategy. As a result, the differentiation strategy showed stronger downward rigidity compared to cost leadership strategy, because it is difficult to reduce the costs when sales decrease by investing relatively more in capacity such as human resources in differentiation strategy than the cost leadership strategy.

2.2 Asymmetry Cost Behavior and Hypothesis

While cost behavior generally which corresponds sales has assumed symmetrical (Noreen and Soderstrom, 1997), Cooper and Kaplan (1998) argued that managers tend to increase costs when activity levels increase compared to cost reduction when activity levels decrease. Based on this argument, Anderson et al. (2003) found that the cost reduction rate was less when sales decreased than the cost increase rate when sales increased for US companies, that is, cost asymmetry. Cost asymmetry is divided into a downward *rigid* cost behavior (i.e., cost stickiness) in which the cost reduction rate is smaller when sales are reduced than the cost growth rate when sales are increased, and a downward *elastic* cost behavior in which the cost reduction rate is larger when sales are reduced. The cost behavior can largely be influenced by the company's environment, manager's characteristics, and agent problems. This study aims to analyze the effect of the characteristics of management strategy on cost behavior in terms of strategic deviation of companies.

According to Tang et al. (2011), the higher the strategic deviation is related to the more uncertainty and business risks for future performance, but the managers in such firms are less likely to adjust the cost even if sales decrease. Banker et al. (2014b) analyzed cost behavior in the management strategies that are divided into 'differentiation strategy' and 'cost advantage strategy' according to Porter (1980). They reported that firms pursuing differentiation strategies showing downward rigid cost behavior, or sticky cost behavior. This means that companies with a high degree of strategic deviation from the deployment and operation of differentiated resources away from general trends or norms in the industry are likely to exhibit downward rigid cost behavior. And according to Tang et al (2011), managers who has the dominant tendency and choose the different strategies from peer firms are likely to result in imperial

construction incentives, and ultimately, when sales decline, they will make decisions to maintain surplus resources without reducing related costs.

On the other hand, the higher the degree of strategic deviation can be related to the more elastic cost behavior. Managers may have an incentive to adjust their profits by improving performance to reduce the risk of choosing different strategies from other companies in the industry (Finkelstein et al., 2009). In addition, the greater the degree of strategic deviation, the greater the uncertainty of firm performance. Thus, when sales decline, managers do not expect optimistic expectations about future performance in anticipation that the strategy with the degree of deviation may not be successful and ultimately produce very low performance. That is, The decline in revenue with a high degree of strategic deviance can be accompanied by negative expectations that it is not a temporary phenomenon but a result of strategic failure. In this case, managers will be able to intentionally increase accounting profits by actively adjusting costs by disposing of surplus resources or restructuring to reduce the deficit. Through the managerial strategy distinct from others, managers' decision can be supported and justified on the selected corporate strategy and positive management performance (Finkelstein et al., 2009).

Therefore, based on these two conflicting predictions, this study establishes a hypothesis in the form of null hypothesis as follows.

H0: The degree of strategic deviation does not associated with the cost asymmetry.

3. Research Design

3.1 Measurement of Strategic Deviance

Based on the methods of Carpenter (2000) and Finkelstein and Hambrick (1990), Tang et al. (2011) measured strategic deviations (SD) in terms of resource allocation for firms to compete in the current business area. Specifically, six strategic resource allocation profiles: advertising concentration, R&D investment intensity, net tangible asset ratio, overhead cost ratio and debt ratio. Then, each measurement is standardized to mean of 0 and variance of 1 by year-industry, and the absolute value of each standardized figure is averaged. This measurement represents the extent to which firms' strategy and resource input differ from the trend or norm of strategies

primarily conducted by peer firms in the industry.

3.2 Measurement of Cost Stickiness

In this study, the stickiness of the cost (i.e., downward rigidity) was measured using Selling & administration expense (S&A) and Cost of goods sold (COGS). Selling & administration expense (S&A) represents coordinating costs generated in connection with the management's decision-making for firms' capacity regarding operation activities. Cost of goods sold (COGS) represents the management's decision-making on manufacturing costs. Homburg and Nasev (2008) explained that in order to assess the downward rigidity of costs, it is important to know how the market evaluates the cost signal which indicates the ratio of costs to sales. They measured an increase in the ratio of costs to sales (S&A and COGS) when sales decreased compared to the previous period as a downward rigidity, as shown in Equation (1). Specifically, if sales decrease ($DSales=1$) compared to the previous year and the ratio of costs to sales increased compared to the previous year ($DCost=1$), the rate of increase indicates stickiness of costs. Further, if costs are not actively reduced when sales decline, the ratio of cost to sales in the current period would be greater than the ratio of cost to sales in the previous period, which results in positive (+) CS values in equation (1) for firms that exhibit downward rigidity.

$$CS_{i,t} = CostSignal_{i,t} \times DSales_{i,t} \times DCost_{i,t} \quad (1)$$

where, $CS_{i,t}$ = downward rigidity measure of i firm, t year

if $Cost_{i,t}$ is cost of goods sold (COGS), $CS_{i,t} = CCS_{i,t}$

if $Cost_{i,t}$ is sales & administration expense (S&A), $CS_{i,t} = SCS_{i,t}$

$$CostSignal_{i,t} = \left(\frac{Cost_{i,t}}{Sales_{i,t}} - \frac{Cost_{i,t-1}}{Sales_{i,t-1}} \right)$$

$DSales_{it} = 1$ if sales of t year is less than that of $t-1$ year, 0 otherwise;

$DCost_{it} = 1$ if CS of t year is less than 0, 0 otherwise.

3.3 Test model

Equation (2) is a model to test the impact of firms' strategic deviations on cost behavior.

$$CS_{i,t} = \alpha_0 + \alpha_1 SD_{i,t-1} + \alpha_2 SIZE_{i,t} + \alpha_3 NW_{i,t} + \alpha_4 CFO_{i,t} + \alpha_5 LEV_{i,t} + \alpha_6 ROS_{i,t} + \alpha_7 LOSS_{i,t} + \sum YR + \sum IND + \varepsilon \quad (2)$$

Where,

- CS* = The degree of cost asymmetry calculated in equation (1). Larger values mean higher downward rigidity;
- SD* = Strategic deviance measured by Tang et al. (2011);
- SIZE* = Firm size, measured as natural log value of total assets;
- NW* = Employee concentration level, natural log value of the number of employees;
- CFO* = Cash flows from operating activities scaled by total assets;
- LEV* = Debt ratio, measured as total liabilities/total assets;
- ROS* = Financial performance, the ration of gross profit to sales revenues;
- LOSS* = Indicator of financial loss, 1 if net loss in the current period, 0 otherwise;
- $\sum YR$ = Year dummies;
- $\sum IND$ = Industry dummies.

The coefficient of SD variables representing the degree of strategic deviation (α_1) would indicate a significant positive or negative sign if the null hypothesis is rejected. Particularly, if the greater the degree of strategic deviation of firms is related to the lower (higher) cost when sales are reduced, the sign of α_1 would be negative (positive), indicating cost elasticity (stickiness). The model includes the firm size (SIZE), employee concentration (NW), operating cash flow ratio (CFO), liability ratio (LEV), gross profit margin (ROS), and financial loss (LOSS).

Since a larger firm tends to increase political costs, which may induce managers to increase discretionary costs or reduce profits (Watts and Zimmerman, 1986), SIZE representing the firm size is included in our test model. Labor-intensive firms tend to incur relatively high adjustment cost when cutting off their employees due to sales decrease and subsequently experiencing sales increase (Anderson et al., 2003; Yoo and Chae, 2015). Hence, Employee concentration (NW) should be included in test model. The cost stickiness is mitigated by active decrease in S&A expense when sales decrease, because the ratio of operating cash flows is low or higher debt ratio increases pressure from creditors (Jang and Baek 2009). Thus, the test model includes cash flows from operation (CFO) and debt ratios (LEV). The profit margin (ROS) and financial loss (LOSS) is controlled as managers implement different cost strategies for changes in sales and loss (Gu et al., 2009). Finally, industry and year dummies are added to control the fixed effect

of year or industry-specific characteristics on test results.

3.4 Sample Criteria

The sample comprises 18,019 firm-year observation on the listed firms of Korean Stock Exchange and KOSDAQ markets from 2002 to 2017. The final sample is restricted as follows.

- (1) Excluding firms with financial and insurance industry
- (2) Excluding firms with non December year end
- (3) Excluding firms with no financial data using Kis-Value database

Finally, for the upper and lower 1% of the variable, the observations are winsorized.

4. Empirical results

4.1 Descriptive Statistics

Descriptive statistics of variables used in the analysis are presented in <Table 1>. The average value of the CCS, which measures the CS using the cost of goods sold (COGS), is 0.008, and the average value of the SCS, which is measured using Selling & administrative expense (S&A), is 0.003. The mean of the degree of strategic deviance (SD), the main

<Table 1> Descriptive Statistics (n=18,019)

Variable	Mean	STD	Median	Min	Max
<i>CCS</i>	0.008	0.040	0.000	0.000	0.157
<i>SCS</i>	0.003	0.026	0.000	0.000	0.068
<i>SD</i>	0.508	0.275	0.449	0.132	1.503
<i>SIZE</i>	25.459	1.453	25.265	22.673	30.109
<i>NW</i>	5.375	1.248	5.283	2.708	9.138
<i>CFO</i>	0.051	0.118	0.050	-0.260	0.348
<i>LEV</i>	0.421	0.217	0.417	0.050	0.910
<i>ROS</i>	-0.019	0.694	0.039	-1.856	0.451
<i>LOSS</i>	0.231	0.421	0.000	0.000	1.000

Variable Definition: CCS=Cost (COGS) Stickiness as measured by Homburg and Nasev(2008); SCS=Cost (Selling & Administration) Stickiness as measured by Homburg and Nasev(2008); SD=Strategic deviance (Tang et al. 2011); SIZE=Natural logarithm of total assets; NW= Natural logarithm of the number of employees; CFO=Operating cash flow divided by total assets; LEV=Total liabilities divided by total assets; ROS=Profit margin ratio; LOSS= 1 if net income is negative, 0 otherwise.

independent variable, is 0.508 and the median is 0.449. The firm size (SIZE), measure as the natural logarithm of the total asset, presents mean value of 25.459 and median value of 25.265. The mean value of debt ratio (LEV) and the financial performance (ROS) is 0.421 and -0.019, respectively. The average employee concentration (NW) is 5.375. In addition, about 23% of sample firms experiences financial loss.

<Table 2> presents the result of a correlation analysis between variables. The main variable, SD, showed significant positive (+) correlation with both CCS and SCS at 1% level. This means that the greater degree of strategic deviance is related to the stronger downward rigidity of cost. The control variables, SIZE and LOSS both show a positive (+) correlation with the cost stickiness measures, CCS and SCS, meaning that the downward rigidity of cost would be increased for firms with a large size or financial loss. The variables, CFO and ROS show a negative (-) correlation with the variables, CCS and SCS, showing a downward elastic cost behavior as the operating cash flows are larger and the net profit margin is larger. However, since these results are based on a simple correlation analysis, a regression analysis that controls variables affecting cost behavior needs to be conducted.

<Table 2> Correlation Matrix (n=18,019)

	PEARSON CORRELATION								
	<i>CCS_t</i>	<i>SCS_t</i>	<i>SD_{t-1}</i>	<i>SIZE_t</i>	<i>NW_t</i>	<i>CFO_t</i>	<i>LEV_t</i>	<i>ROS_t</i>	<i>Loss_t</i>
<i>CCS_t</i>	1	-0.162 <.0001	0.041 <.0001	0.184 <.0001	-0.109 <.0001	-0.045 <.0001	-0.015 0.036	-0.035 <.0001	0.054 <.0001
<i>SCS_t</i>	-0.221 <.0001	1	0.085 <.0001	0.100 <.0001	-0.069 <.0001	-0.065 <.0001	0.023 0.001	-0.058 <.0001	0.075 <.0001
<i>SD_{t-1}</i>	0.032 <.0001	0.055 <.0001	1	0.126 <.0001	-0.022 0.002	-0.068 <.0001	0.103 <.0001	-0.061 <.0001	0.126 <.0001
<i>SIZE_t</i>	0.085 <.0001	0.058 <.0001	0.102 <.0001	1	-0.236 <.0001	-0.207 <.0001	-0.215 <.0001	-0.150 <.0001	0.249 <.0001
<i>NW_t</i>	-0.067 <.0001	-0.016 0.023	-0.024 0.001	-0.199 <.0001	1	0.149 <.0001	0.144 <.0001	0.119 <.0001	-0.178 <.0001
<i>CFO_t</i>	-0.037 <.0001	-0.042 <.0001	-0.053 <.0001	-0.226 <.0001	0.154 <.0001	1	-0.239 <.0001	0.249 <.0001	-0.348 <.0001
<i>LEV_t</i>	-0.014 0.056	0.007 0.321	0.056 <.0001	-0.244 <.0001	0.172 <.0001	-0.162 <.0001	1	-0.128 <.0001	0.199 <.0001
<i>ROS_t</i>	-0.056 <.0001	-0.091 <.0001	-0.071 <.0001	-0.001 0.900	0.065 <.0001	0.478 <.0001	-0.378 <.0001	1	-0.307 <.0001
<i>Loss_t</i>	0.046 <.0001	0.083 <.0001	0.101 <.0001	0.229 <.0001	-0.185 <.0001	-0.394 <.0001	0.183 <.0001	-0.730 <.0001	1

SPEARMAN CORRELATION

Please see <Table 1> for definition of variables

4.2 Regression Analysis Results

<Table 3> provides the analysis results using a multiple regression which is implemented to verify the effect of firms' strategic deviance on cost behavior. The statistical significance of regression coefficients is determined by using firm- clustered standard error. The first column is on a measure of downward rigidity on the cost of goods sold (COGS) as the dependent variable and the second column is on Selling & administration expense (S&A).

We find that the variable SD, which measures the extent of firms' strategic deviance, shows significantly positive (+) sign at 1% levels in both columns (1) and (2), respectively (t-stat=3.47 and 3.96). This rejects the null hypothesis that the different strategies that firms have from those in the same industry is not related to the asymmetric cost behavior. Specifically, the more different firms' strategies are, the higher downward rigidity the cost has. These results imply that the factors that affect the management's decision-making to allocate costs are associated with the property of the firm's strategy. As pointed out by Banker et al. (2014), highly investing to human resource as the managerial strategy is likely to induce the cost-downward rigidity,

<Table 3> Strategic Deviation and Cost Stickiness

	Dependent Var.= $CCS_{i,t}$		Dependent Var.= $SCS_{i,t}$	
	Coeff.	t-statistics	Coeff.	t-statistics
<i>Const.</i>	-0.0262	-1.94*	0.0034	0.43
$SD_{i,t-1}$	0.0043	3.47***	0.0061	3.96***
$SIZE_{i,t}$	0.0026	3.70***	0.0004	1.01
$NW_{i,t}$	-0.0057	-6.08***	-0.0015	-3.22***
$CFO_{i,t}$	-0.0046	-1.13	-0.0058	-1.98**
$LEV_{i,t}$	-0.0010	-0.50	0.0016	1.11
$ROS_{i,t}$	-0.0007	-0.25	-0.0010	-1.43
$LOSS_{i,t}$	0.0020	1.71*	0.0018	2.70***
$\sum YR$		Included		Included
$\sum IND$		Included		Included
Firm Clustered SE		Yes		Yes
<i>Adj. R</i> ²		0.0269		0.0196
# of Obs.		18,019		18,019

The notations *, **, *** denote the significance at 10%, 5%, and 1% level, respectively. Detailed definition of variables is presented in <Table 1>.

which indicates less reduction of the cost in response to sales decrease when compared to the case of sales increase. Moreover, managers in firms with high strategic deviation may have optimistic expectations regarding future earnings, but they tend to be unwilling to adjust costs through the disposal or restructuring of surplus sources when sales decline.

For other control variables, *SIZE* shows significant positive (+) sign, meaning that larger firms reveals the stronger cost-downward rigidity, which means that costs are not actively reduced when there are more stakeholders (Gu, 2011). Interestingly, employee concentration (*NW*) has a significant negative (-) coefficient, indicating that labor-intensive firms have less cost-downward rigidity, in contrast to previous studies (Anderson et al., 2003). The coefficient of net loss (*LOSS*) shows a positive (+) sign, suggesting that managers do not actively reduce the cost when sales decrease under the financial distress.

5. Additional Analyses

5.1 Endogenous problem – concerned Analysis: 2SLS

Generally, managers make choice of the strategy in response to the different characteristics and performance of the firm (Miller and Friesen, 1983). The cost behavior may be endogenous if the factors affecting the strategy chosen by the manager relate to the same factors that affect the cost behavior of the firm (Lennox et al., 2012). To address this potential endogenous problem and test the robustness of the results, two-stage least square (2SLS) analysis is conducted in this section.

Because the cost-downward rigidity variables for the multiple periods could affect strategic deviations and thus act as an omission variable, they are included in the first-stage model. In examining the relation between firms' strategic deviance and cost behavior, the first model to control the endogeneity of a strategic deviance is Equation (3) as follows.

$$SD_{t-1} = \beta_0 + \beta_1 CS_{t-2} + \beta_2 CS_{t-1} + \beta_3 CS_t + \beta_4 SIZE_t + \beta_5 CFO_t + \beta_6 LEV_t + \beta_7 ROS_t + \beta_8 LOSS_t + \beta_9 NW_t + \sum YR + \sum IND + \varepsilon \quad (3)$$

The first-stage model includes variables that affect both firms' strategic deviations and

<Table 4> Robustness Test: 2SLS

	Dependent Var.= $CCS_{i,t}$		Dependent Var.= $SCS_{i,t}$	
	1 st stage SD_{t-1}	2 nd stage $CCS_{i,t}$	1 st stage SD_{t-1}	2 nd stage $SCS_{i,t}$
	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)
<i>Const.</i>	-0.2825 (-3.29)***	0.2761 (2.72)***	-0.4874 (-5.49)***	0.3861 (4.62)***
$CS_{i,t-2}$	-0.2516 (-4.50)***		-0.3452 (-3.73)***	
$CS_{i,t-1}$	-0.3771 (-6.98)***		-0.5039 (-5.57)***	
$CS_{i,t}$	-0.2600 (-4.98)***		-0.9107 (-10.88)***	
$SD_{i,t-1}$		1.0062 (9.60)***		0.7942 (12.77)***
$\sum YR$	Included	Included	Included	Included
$\sum IND$	Included	Included	Included	Included
Firm Clustered SE	Yes	Yes	Yes	Yes
<i>Adj. R</i> ²	0.0757	0.0016	0.0910	0.0056

The notations *, **, *** denote the significance at 10%, 5%, and 1% level, respectively. Detailed definition of variables is presented in <Table 1>.

cost-downward rigidity (CSs) and then estimates the predicated value of SD (\hat{SD}) by the regression of equation (3).

<Table 4> presents the test results, showing that the \hat{SD} variable has a significant positive (+) sign at 1% level (t-stat=9.60 and 12.77 respectively), consistent with the main analysis results. That is, after even considering the endogeneity problem, firms with the higher degree of strategic deviance show the greater downward rigidity in cost. The control variables also showed the same results as main analysis, though not tabulated.

5.2 Impact of Firms' Performance on the Relationship of Strategic Deviations with Cost Behavior

Regarding firms' resource allocation, managers make decisions on whether to maintain or immediately reduce a given resource in consideration of the overall financial position of firms (Jang and Baek, 2009). That is, it is the firm's financial situation that determines the degree of

asymmetry in costs. Faced with financial difficulties, managers will focus more on the survival concerns of a firm, such as debt redemption, even if future sales growth is expected. Thus, they will be more active in reducing costs if sales are reduced compared to those in firms with sound financial situations. In other words, a firm in financial difficulties would exhibit a cost-downward elastic behavior if sales decline. However, firms with high levels of strategic deviance are rather optimistic to have earnings increase in the future, and thus they are likely to make choice of maintain an existing cost. As a result, firms with a higher degree of strategic deviation exhibit more downward-rigidity of cost behavior would be greater for that facing financial difficulties.

Table 5 shows the result of analyzing the effect of firms' financial status on the relationship between the level of strategic deviation and the cost-downward rigidity. The firms' financial position is measured as a dummy variable of whether it announces net income or not (POS). The analysis results show that the interaction term, $SD \times POS$, has a significant negative (-)

<Table 5> Financial Performance, Strategic Deviation, and Cost Stickiness

	Dependent Var.= $CCS_{i,t}$		Dependent Var.= $SCS_{i,t}$	
	Coeff.	t-statistics	Coeff.	t-statistics
<i>Const.</i>	0.0289	2.10**	-0.0067	-0.82
$SD_{i,t-1}$	0.0066	2.42**	0.0109	4.00***
$POS_{i,t-1}$	0.0079	4.18***	0.0013	0.82
$SD_{i,t-1} \times POS_{i,t-1}$	-0.0071	-2.36**	-0.0074	-2.15**
$SIZE_{i,t}$	-0.0030	4.19***	-0.0002	-0.60
$NW_{i,t}$	0.0057	5.97***	0.0012	2.59***
$CFO_{i,t}$	0.0017	0.38	0.0054	0.91
$LEV_{i,t}$	0.0051	2.12**	-0.0010	-0.57
$ROS_{i,t}$	0.0002	0.08	0.0011	1.32
$LOSS_{i,t}$	0.0013	1.00	0.0000	0.01
$\sum Year$	Included		Included	
$\sum Industry$	Included		Included	
Firm Clustered SE	Yes		Yes	
F-statistics	208.48		5.85	
Adj. R ²	0.0406		0.0295	
# of Obs.	18,019		18,019	

The notations *, **, *** denote the significance at 10%, 5%, and 1% level, respectively. Detailed definition of variables is presented in <Table 1>.

sign (t -stat=-2.36 and -2.15, respectively). This means that while showing higher downward rigidity, the cost behavior of high-deviating firms is less likely to be downwardly rigid under the sound financial position. That is, high-deviating firms with good financial condition do immediately adjust their cost in response to the sales decrease to reconsider firm profitability rather than maintain their resources in preparation for future sales growth.

6. Conclusion

This study investigates how the characteristics of management strategy affect cost behavior. Firms which intend to reduce uncertainty and improve viability for future performance tend to implement managerial strategies similar to peer firms in the same industry. Since the managerial decisions affect firm's cost behavior, the strategic deviation including operations different from others would be associated with cost behavior distinct from peer firms. To test this conjecture, this study examines the relationship between firm's cost stickiness / elasticity and the managerial strategic deviation.

This study measures the degree of strategic deviation by the method suggested by Tang et al. (2011) and tests the hypothesis using the Hamburg and Nasev (2008) and Anderson et al. (2003) models for non-financial listed companies in Korea. On firms listed on Korean Security Exchange and KOSDAQ markets from 2002 to 2017, the analysis show the results that the firm's strategic deviation is positively associated with cost-downward rigidity (i.e., cost stickiness). This indicates that the management strategy affects the cost behavior. Also, it means that corporate managers who choose a strategy that deviates from peer firms are less likely to adjust their resource even when sales decrease. That is, the higher the strategic deviation, so even if uncertainty about future performance and business risks exist, managers judge differentiated resource allocation and operation as the source of competitive advantage.

This study is meaningful in expanding the literature on cost behavior by analyzing the effect of the characteristic of management strategy on cost stickiness, confirming that cost asymmetry is revealed in the company's strategy characteristics. In particular, the greater the degree of strategic deviation, the more incentives for the construction of the empire of managers can be expressed, suggesting that control is necessary to increase corporate value.

This study recognizes several limitations in research methodology. First, sample observation which corresponds to the period from 2002 to 2017 seems to be relatively outdated for current research. Since research findings may vary in analysis period and sample criteria even within the same period, the analysis results including more current data can be different from the findings in this study. That is, this study has concerns regarding generalization of research findings. Second, this study does not consider the actual company's strategy in practice. Therefore, further research on improved measures is needed to reflect practical management strategy elements for manager's characteristics.

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