Evaluating the Effect of Political Uncertainty on the Cost Stickiness

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ABSTRACT

The present study's main objective is to assess the impact of political uncertainty on cost stickiness intensity. This paper attempts to compare the cost stickiness intensity in periods with high political uncertainty with other periods. The statistical population includes listed companies on the Tehran Stock Exchange during 2009-2016 that given the use of screening methods, and after omitting the remote observations, this amount reaches 131 firms. In this paper, political uncertainty and sales changes were considered independent variables to assess their impact on asymmetrical cost behavior. In this paper, the panel data approach is used to test the research hypothesis. The data analysis results of firms using the multivariate regression at the 95% confidence level demonstrate that political uncertainty has a significant effect on cost stickiness intensity. The presidential election years of 2009 and 2013 were considered as years with high political uncertainty to achieve the objectives. The study results indicate the presence of sticky behavior of sales, general, and administrative costs in the so-called years. The asymmetry in cost behaviors is stronger during election years than in the non-election years, even after controlling other firm-level and country-level determinants.

Keywords: cost stickiness, political uncertainty, presidential election

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Iranian Journal of Accounting, Auditing & Finance

1.Introduction

Political uncertainty has gained significant importance recently both in research and in public policy circles. Political events may create political uncertainty, and it may influence a firm's planned activities (Bloom et al., 2007; Bernanke, 1983). Political uncertainty usually rises toward the peak during the years a country deals with major political shocks, and this would shape the firm decisions. Recent studies are concentrated on national elections worldwide to figure out whether or not political uncertainty contributes to firms' decisions and results (Durnev, 2010; Julio and Yook, 2016).

In this paper, we are concerned about the impact of political uncertainty on managers' operational decisions, which causes a change in cost behaviors. More specifically, we analyze whether or not political uncertainty contributes to managerial decisions to protect the resources. The sensitivity of asymmetrical behavior of cost to activity changes, called cost stickiness, will be measured in proportion to political shocks. The primary key to understanding the cost stickiness is to realize when and where managers are more or less inclined to maintain the resources during the decrease of activities. The previous studies were mainly concentrated on the effect of influential cross-sectional factors on cost stickiness intensity, while few studies are conducted on the temporal aspects. Anderson et al. (2003) state that managers, in response to uncertainty, reduce the committed resources considerably, until when the stability of the decrease in demand is better understood. Hence, under such an argument, the cost stickiness may be inversed within a time dimension period that solved the uncertainty. Cost stickiness, however, is not compared in different periods. This paper attempts to compare the cost stickiness intensity in periods with high political uncertainty with other periods.

Despite the pivotal role of certainty in managerial decisions, there is no direct empirical evidence to figure out how such uncertainty affects the direction and magnitude of costs' asymmetrical behavior. This paper aims to fill the studies' gap on the impact of uncertainty on managerial decisions in asymmetrical behavior of costs. More specifically, this paper is concerned about the effect of political uncertainty due to holding an election in the country by comparing the election years with non-election years. Analyzing the relationship between political uncertainty and cost stickiness, which increases the understanding of management from the firm's cost structure, is a matter of the utmost importance. Since the current study only analyzes Iran's election, it is different from that of the Lee et al. (2020) and Izadpour et al. (2018) in terms of the study period and the obtained results.

In this study, we attempt to answer the question, "to what extent does the political uncertainty affect the cost stickiness? In the following, we first analytically discuss the theoretical principles and the literature of the study and formulate the study's hypotheses, then we work on the methodology of the topic. Finally, the findings of the study are presented, analyzed, and conclusions and suggestions are provided.

2. Review literature and previous researches

One of the critical issues that affect the country and, consequently, the managerial decisions is political uncertainty, which is derived from holding an election. According to Agmont (1985), political risk is defined as unpredicted changes in production factors, exchange of goods, and services related to governmental measures and reactions (Zorgui, 2011). Managers make temporary decisions due to uncertainties they face in the year of an election, or they may attempt to preserve the resources due to a decrease in demands and the chance of temporalities of these cuts to pass these periods. Being aware of cost behavior changes with the changes in activity and/or sales level is among

other important information required for managerial decision-making in planning and budgeting, pricing the products, and determining the break-even point and other managerial issues (Namazi et al., 2012). Similar to all uncertainties, political uncertainty contributes to management decisions. Consequently, the financial performance and firm behaviors, which means the number of sales or demand and consequently, firms' financial position, are influenced by any political tension, either domestically or internationally.

In this paper, two major political events, namely presidential elections of 2009 and 2013, are used as the years with high political uncertainty. One of the significant reasons for why we selected the elections as the variable of political uncertainty was that the results of elections are closely related to managerial decisions in that the subsequent changes will have extensive consequences on the regulations of industrial, monetary, commercial, and tax policies (Julio and Yook, 2016). Julio and Yook (2016) demonstrate that companies decrease their investment before national elections, and also Jens (2017) posits that companies, before the election in America, lower their investment.

The other significant factor is that elections are an ideal turning point, enabling us to analyze the management behavior in preserving unused resources during the periods the management is optimistic about temporary sales reduction. On the other hand, since cost stickiness is the result of temporary changes of costs during uncertainty periods, years of election, as the periods with high uncertainty, allow the scholars to directly observe how cost stickiness will change following the uncertainty that affects the managerial decisions (Durnev, 2010). Lee et al. (2020) carried out a study on the relationship between political uncertainty and cost stickiness and discovered that political uncertainty in the years around major political shocks, like an election, can affect costs' asymmetrical behaviors. By evaluating the real effects of political uncertainty, Durnev (2010) reports that firm investment during the election years has less sensitivity to stock price. Hence, Banker et al. (2013) provide some evidence concerning political uncertainty's economic consequences and declare that political uncertainty increases unemployment and decreases investment. According to the theoretical principles and literature review, the following hypothesis was formulated.

Research hypothesis: political uncertainty has a significant impact on cost stickiness intensity.

3. Research methodology

The present study is practical, in terms of classification based on the objective. The aim of practical studies, in terms of method and nature, is correlational. In terms of method, the study is descriptive-correlational. Those studies that measure the relationship between two or more variables are correlational. In this paper, since the goal is evaluating the relationship between independent and dependent variables, the correlational method is used. After selecting the sample and calculating the study's min variables, we tested the hypothesis using the multiple regression and R and SPSS software.

3.1. Data Collection

The statistical population of this study includes the listed companies on the Tehran Stock Exchange during 2009-2016. The samples under study were selected using the screening method by considering the following criteria:

These firms should be enlisted on the Tehran Stock Exchange before 2009 and should be active during the period of study.

They should have no change in their fiscal year.

Due to the particular nature of their activity, they should not be affiliated with investment companies, banks, credit, and other monetary institutions and financial intermediaries.

The number of sample firms will be selected regarding the desired statistical confidence interval, which will be 95%. Among the statistical population, the sample firms are also selected using a systematic method, through which it is assumed that the statistical population is consistent. Thus, a code will be given to each firm, and given the adjusted statistical population, a firm will be selected in the statistical population. Finally, the volume of the final sample is 131 firms concerning the screening elimination method.

3.2. Test Model

In this study, we are specifically concerned about the impact of political uncertainty on cost stickiness intensity in the regression model. In this paper, the cost stickiness model of Anderson et al. (2003) is used. According to Dai and Ngo (2020), we consider two determining factors in this study for the amount of cost stickiness because lack of sufficient control on these determining factors would lead to an inappropriate relationship between political uncertainty and cost stickiness. First, assets intensity, which is indicative of the adjustment costs at the firm level (Anderson et al., 2003) and second, an index for showing sales drop in the previous year, which is indicative of management expectations of future sales (namely, management optimism or pessimism) (Banker et al. 2013). Finally, the gross domestic product's growth rate will be controlled because it affects management expectations (Andrson et al., 2003).

3.3. Measuring the main variables

Dependent variable:

$\Delta lnSGA_{it}$: changes in the natural logarithm of selling, general, and administrative costs for the firm i in the year t.

$$\Delta lnSGA_{it} = \log\left(\frac{SGA_{it}}{SGA_{i,t-1}}\right)$$

Independent variables:

$\Delta lnSALE_{i,t}$: Change of natural logarithm of sales is equal to:

$$\Delta lnSALE_{i,t} = \log(\frac{SALE_{i,t}}{SALE_{i,t-1}})$$

$DEC_{i,t}$: Dummy variable equal to 1 in case $SALE_{i,t} < SALE_{i,t-1}$, otherwise, 0.

$ElectionYear_t$: Dummy variable for the presidential election years 1, otherwise, 0.

The election-year is defined as political uncertainty indices (Dai and Ngo, 2020; Yook and Julio, 2016; Lee et al., 2020).

Control variables:

$lnAINT_{i,t}$: Assets intensity which is equal to:

$$ASINT_{i,t} = \log(\frac{ASSETS_{i,t}}{REV_{i,t}})$$

$GDPGROWTH_t$: gross domestic product is the most important index of economic performance evaluation, which is of great importance, and most of the other macroeconomic indicators rely on the calculation and estimation of this variable, directly or indirectly. Based on the definition, the Rial value of all final products manufactured by local economic units within a certain period (annually or periodically) is called gross domestic product, calculated in different methods. The growth rate of gross domestic product is computed on the Central Bank's Internet website and is available for different years.

$LAGDEC_{i,t}$: Dummy variable for sales drop with a period of delay $((SALE_{i,t-1} < SALE_{i,t-2})$.

4. Research findings

To better understand the study and be familiar with the study variables before statistical data analysis, these variables must be described. As shown in Table (1), the descriptive statistics of the observed data are obtained.

Table 1: descriptive statistics of research variables

Variable	$\Delta lnSGA$	$\Delta lnSALE$	DEC	ASINT	LAGDEC	GDPGROWTH	ElectionYear
Mean	0.013	0.062	0.45	65.075	0.52	2.38	0.25
Median	0.085	0.087	0	1.48	0	3	0
Minimum	-1.185	-1.31	0	0	0	-6.8	0
Maximum	7.75	0.741	1	32218.054	1	7.5	1
Std. dev.	0.779	0.502	0.498	1027.57	0.5	4.34	0.433
Coefficient of skewness	2.38	-0.821	0.2	29.6	-0.088	-0.99	1.56
the coefficient of kurtosis	13.37	-0.028	-1.964	919.5	-1.99	-0.062	-0.664

4.1. Inferential findings

Before model estimation, the stagnation of all variables used in estimations should be examined. In this paper, the Madala Vio Test is used due to the presence of numerous cross-sections (number of firms) and a few numbers of time-series, the result of which is depicted in Table (2).

Table 2: the collective unit root test of variables

ElectionYear	GDPGROWTH	LAGDEC	ASINT	DEC	$\Delta lnSALE$	$\Delta lnSGA$	
<2×10-16	<2×10-16	<2×10-16	<2×10-16	<2×10-16	<2×10-16	<2×10-16	**P-value**

As can be seen, the p-value is less than 0.05 for all variables. Hence, we can accept the stagnation of all variables. Before testing the research hypothesis, it is necessary to fit the study's base model (Anderson et al., 2003) to determine the cost stickiness.

Model (1)

$$\Delta lnSG\&A_{i,t} = \beta_0 + \beta_1 \Delta lnSALE_{i,t} + \beta_2 DEC_{i,t} \times \Delta lnSALE_{i,t} + \varepsilon_{i,t}$$

We used the F-Limer test to select between the regression and panel models. In case the level of significance of the test is more than 0.05, the OLS regression and if the level of significance is less than 0.05, the panel model will be used.

Table 3: the results of the F-Limer test for the first model

F statistic	Degree of freedom 1	Degree of freedom 2	P-value	Result (appropriate model)
2.05	130	915	0.000	Panel model

Therefore, the panel regression model should be selected. In this regard, the diagnostic tests should be used, and the premises of this model should be examined. First, we analyze the Hausman test. The test aims to select between a model with fixed effect and random effects. In case the p-value of this test is less than 0.05, the model with fixed effects will be selected.

Table 4: the results of the tests for the first model

test	Chi-square statistic	Degree of freedom 1	P-value	Result
Hausman test	0.755	2	0.685	Random effects
Breusch-Godfrey test	4.97	8	0.76	There is no serial autocorrelation
Breusch- Pagan test	3.85	2	0.15	Variance homogeneity is set

As can be seen, the model with random effects is accepted. Breusch-Godfrey Test is used for evaluating serial autocorrelation that, in case its p-value is less than 0.05, we can say the data have serial autocorrelation. As can be seen, errors have no serial autocorrelation, but variance homogeneity is also tested. In case the p-value is less than 0.05, the variance homogeneity hypothesis is rejected. Variance homogeneity is set, then after performing this panel regression with random effects, the results would be as follows:

Table 5: results of model 1

Coefficients	VIF	Coefficients of the variable in the model	The standard deviation of error	T statistic	p-value
$\Delta lnSG\&A_{i,t} = \beta_0 + \beta_1 \Delta lnSALE_{i,t} + \beta_2 DEC_{i,t} \times \Delta lnSALE_{i,t} + \varepsilon_{i,t}$					
Intercept	-	0.097	0.04	2.43	*0.015
$\Delta lnSALE$	1.64	0.071	0.01	6.91	***0.000
$DEC \times \Delta lnSALE$	1.64	-0.163	0.015	-10.38	***0.000
Coefficient of determination = 0.19				Significance test of the model: Test statistic = 16.66 p-value = 0.000	

Linearity is a condition that shows an independent variable is a linear function of other independent variables. In this paper, the tolerance statistic and the inflation factor of variance is used to evaluate the collinearity. As shown in Table 5, the variance inflation factor (VIF) is also less than 10. Hence, the presence of all variables in the model does not manipulate that. Moreover, the p-value (0.000) of the test's test and significance also confirm the appropriateness of the model. This test is performed at the 5% significance level, and as can be seen, the coefficient of β1 is positive and significant and is equal to 0.0715. This coefficient shows that for 1 unit of increase in sales income, the selling, general, and administrative costs will increase by 0.0715 units. On the other hand, the coefficient of β2 is negative and significant and is equal to -0.163, which shows 1 unit of decrease in sales will lower the selling, general, and administrative costs by 0.163 units.

4.2. Research hypothesis
H: political uncertainty has a significant impact on cost stickiness intensity.

The following model, which is derived from the study of Lee et al. (2020), is fitted for evaluating the research hypothesis:

Model (2)

$$\Delta lnSG\&A_{i,t} = \beta_0 + \left(\beta1 + \beta2\ ElectionYear_t + \beta3\ lnAINT_{i,t} + \beta4\ GDPGROWTH_t\right) \times \Delta lnSALE_{i,t} + (\beta5 + \beta6\ ElectionYear_t + \beta7\ lnAINT_{i,t} + \beta8\ GDPGROWTH_t + \beta9\ LAGDEC_{i,t})\ DEC_{i,t} \times \Delta lnSALE_{i,t} + \varepsilon_{i,t}$$

In the model of Lee et al. (2020), the primary model of the study shows the total coefficients of $\Delta lnSALE_{i,t}$, which approximates the percentage of change in costs for a

1% increase (decrease) in sales (total coefficients of $\beta 1$ to $\beta 4$) and total coefficients of the variable of $DEC_{i,t} \times \Delta lnSALE_{i,t}$ (namely, total coefficients of β_5 to β_9), and the percentage change in costs for a 1% sales decrease. Hence, the total coefficients of β_5 to β_9 which are indicative of the difference in the percentage of change in costs during increase (decrease) in sales measure the percentage of cost stickiness in the years with political uncertainty.

According to Lee et al. (2020), in case of significance and negativity of coefficients, we can say that in the years of political uncertainty, the selling, general, and administrative costs are sticky.

The F-Limer test is used to select between regression and panel model. In case the test's level of test significance is more than 0.05, the OLS regression model and if the level of significance is less than the 0.05-panel model will be used.

Table 6: the results of the F-Limer test for the hypothesis model of the study

F statistic	Degree of freedom 1	Degree of freedom 2	P-value	Result (appropriate model)
2.08	130	908	0.000	Panel model

Hence, the panel regression model is selected. In this regard, the diagnostic tests should be used, and the assumptions of this type of model should be tested. Initially, we analyze the Hausman test. This test aims to select a model between fixed effects and random effects. In case the p-value of this test is less than 0.05, the model with fixed effects will be selected.

Table 7: test results concerning the hypothesis model of the study

Tests	Chi-square statistic	Degree of freedom	P-value	Result (appropriate model)
Hausman test	3.99	9	0.911	Random effects
Breusch - Godfrey test	6.4	8	0.602	There is no serial autocorrelation
Breusch-Pagan test	15.19	9	0.085	variance homogeneity is set

As can be seen, the model with random effects will be accepted. Breusch-Godfrey test is used for evaluating the serial autocorrelation that, in case the p-value is less than 0.05, we can say that data under study have serial autocorrelation. Also, errors have no serial autocorrelation, but variance homogeneity is also studied. In case the p-value is less than 0.05, the hypothesis of variance homogeneity is rejected. As can be seen, variance homogeneity is set. After performing this panel regression and panel with random effects, the following results are achieved:

As shown in the table, the maximum value of VIF is also less than 10, so it does not vitiate all variables in the model. Moreover, the p-value (0.000) of the test and the significance of models confirm this model's appropriateness. Given the presented results, we can observe that the coefficient of the independent variable of the natural logarithm of sales is positive and significant. This means that sales changes have a significant relationship with selling, general, and administrative costs changes. Besides, given the positivity of this coefficient, we can conclude that by a 1-unit increase in sales in proportion to the previous year, the selling, general, and administrative costs will increase by 0.0435 than the last period. Among the control variables of gross domestic product growth and asset intensity, none of them are significant.

Concerning the results, the t statistic (-15.9) shows that the moderator variable of $DEC \times \Delta lnSALE \times ElectionYear$ is statistically significant at 95% confidence level, because first, the absolute value of this statistic is more than 1.96, and second, the p-value (0.000) is also less than 5%. On the other hand, this variable's coefficient is

negative in the model, which indicates the presence of a cost stickiness phenomenon in the years with high political uncertainty.

Table 8: the results of the research hypothesis model

		$\Delta lnSG\&A_{i,t} = \beta_0 + (\beta 1 + \beta 2\ ElectionYear_t + \beta 3\ lnAINT_{i,t} + \beta 4\ GDPGROWTH_t) \times \Delta lnSALE_{i,t} + (\beta 5 + \beta 6\ ElectionYear_t + \beta 7\ lnAINT_{i,t} + \beta 8\ GDPGROWTH_t + \beta 9\ LAGDEC_{i,t})\ DEC_{i,t} \times \Delta lnSALE_{i,t} + \varepsilon_{i,t}$				
Coefficients	VIF	Variable coefficients in the model	Std. dev.	T statistic	p-value
Intercept					
$\Delta lnSALE$					
$\Delta lnSALE \times ElectionYear$					
$\Delta lnSALE \times lnAINT$					
$\Delta lnSALE \times GDPGROWTH$					
$DEC \times \Delta lnSALE$					
$DEC \times \Delta lnSALE \times ElectionYear$		-0.356	0.023	-15.9	***0.000
$DEC \times \Delta lnSALE \times lnAINT$		0.00054	0.0010	0.536	0.59
$DEC \times \Delta lnSALE \times GDPGROWTH$		-0.010	0.022	-0.483	0.628
$DEC \times \Delta lnSALE \times LAGDEC$	1.77	0.28	0.13	2.157	*0.031
Coefficient of determination = 0.323				Test of model significance Test statistic = 31.49 p-value = 0.000	

Moreover, the following results are derived from the study of Lee et al. (2020):

$\beta_1 + \beta_2 = 0.2285$

This equation shows that for a one-unit increase in sales in years with high political uncertainty, selling, general, and administrative costs increase by 0.2285 units.

$\beta_5 + \beta_6 + \beta_9 = -0.265$

This equation also shows that for a one-unit decrease in sales in years with high political uncertainty, selling, general, and administrative costs decrease by 0.2265 units. Further, the research hypothesis is also confirmed given the negativity and significance of β_6 coefficient. Hence, we can say that political uncertainty contributes to the intensity of cost stickiness.

5. Conclusion

In this paper, following the previous studies, the selling, general, and administrative costs were sticky during 1999-2016 (Namazi et al., 2012). Like all other uncertainties, political uncertainty contributes to management decisions and follows that, financial performance and firm behavior. This means that the generation of any type of political tension, including domestic or international, will influence the volume of sales or demand and, consequently, the firms' financial position. In this paper, a major political event, like the presidential election, is selected during 2009-2013 as the years with high political uncertainty. One of the main reasons why we select elections as the variable for political uncertainty is that the results of elections have a significant relationship with management decisions in that their subsequent changes have extensive consequences on

the industrial regulations, monetary, commercial, and tax policies (Julio and Yook, 2016). Another critical factor is that elections provide an ideal turning point for scholars and allow them to analyze the management behavior in preserving unused resources within the periods where management is optimistic about the temporary reduction of sales. The present study shows that selling, general, and administrative costs are sticky in the years with high political uncertainty. The research hypothesis is accepted. The obtained result is in line with that of Lee et al. (2020) but different from Izadpour et al. (2018). They find that cost behavior is not sticky in the years of the presidential election, but in other years cost behavior is sticky. Moreover, Rezaei et al. (2018) analyzed the impact of economic growth and economic sanctions on selling, general, and administrative costs. The election years of 2009 and 2013 were in periods with strict sanctions, and this paper also concluded that during 2006-2014, the selling, general, and administrative costs are sticky.

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