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### **CORPORATE GOVERNANCE AND DETERMINANTS OF COST ASYMMETRIC BEHAVIOR: EVIDENCE FROM PAKISTAN**

Hussnain Ali<sup>1</sup>, Owais Shafique<sup>1</sup>, Hafiz Muhammad Usman Khizar<sup>1</sup> Warda Najeeb Jamal<sup>1</sup>  
Shakeel Sarwar

<sup>1</sup>School of Business, Management and Administrative Sciences, The Islamia University of Bahawalpur, Pakistan.

dr.owais.shafique@gmail.com, owais.shafique@iub.edu.pk

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#### **Abstract**

This study is an attempt to furnish fresh empirical evidence on the influence of corporate governance and determinants on asymmetric cost behavior. It relies on three multiple regression models through panel data fixed model to examine the behavior of operational cost (OC) and the influence of corporate governance and other determinants variables by running panel data random effect model based on a sample of 86 listed companies during 2014-2018. The findings of the study reveal that OC increases by rupees 0.23, but decreases by rupees 1.25 for an equivalent activity change of 1 rupees. It shows anti-sticky behavior that refutes the classic cost model notion that costs act in a linear fashion. Moreover, findings suggest that firm-year observations with average number of members in committee (ANMC) and overlapped members in remuneration and audit committee (OMC) exhibit cost asymmetry (stickiness). Besides, greater economic growth and institutional ownership show that greater operational cost stickiness.

#### **Introduction**

Due to the global revolution, Pakistani's companies are facing increasingly fierce global competition due to the elimination of trade barriers and the rapid growth of economic dependence. This global competition stimulates Pakistani's companies to produce high-quality products and services and need to provide excellent customer service at low cost as compared to others (Trairatvorakul, 2011a). In order to operate successfully, managers need management accounting information, which can provide timely and relevant information for planning, control, decision-making, and performance evaluation (Horngen *et al.*, 2012).

As international competition intensifies, managers also need information about cost management. Managers are interested in estimating past

cost behavior patterns. This information can help make more accurate decisions and predictions about planned future costs. Cost behavior responds accordingly to changes in activities and decisions. Therefore, in order to make effective decisions, it is important for managers and accountants to understand the cost behavior of providing and using information (Maher *et al.*, 2008).

Due to the widespread nature of agency problems in modern business and because of correction and expectation from management of an organization, it is unlikely to behave as expected in an ideal world (Jensen & Meckling, 1976). There are conflicts of interest between management of a company and its owners like shareholders. Compensation contracts for earning management are one these conflicts. It is confirmed that the management manipulates the earnings of an organization in order to gain benefits in the form of compensation (Healy, 1985). Another study found that the management of the organization is trying to choose different accounting policies in order to prevent breach of debt contract (Sweeney (1994).

On the behalf of shareholders, members of the board of directors and the audit committee are responsible for overseeing and supervising managers' decisions. Thus, they can have a positive impact on the manager's cost behavior decisions (Ali & Shafique, 2020). It is argued that a strong corporate governance mechanism can mitigate the cost stickiness behavior. It may also have an approach to the optimal cost level in response to changing activity. (Chen *et al.*, 2012). Furthermore, strong CG minimizes the magnitude of asymmetric cost behavior more than the weak CG (Chen *et al.*, 2012; Pichetkun, 2012), which suggests that the CG system may decrease cost stickiness.

In addition, previous research has shown improvements in earnings management due to incentives to accumulate or gain from the past year, avoid losses, and meet or exceed analysts' consensus projections (Burgstahler & Dichev, 1997 and Degeorge, 1999). In recent studies, all costs react asymmetrically. The asymmetric cost behavior is mainly caused by the deliberate and opportunistic intervention of managers when demand changes. These interventions should be kept to a minimum level to bring cost reactions closer to the optimal level of cost reactions (Ibrahim, 2018, Ali & Shafique, 2020).

However, it is also noticed that there is paucity in research which consists of observation of the association between corporate governance mechanism and asymmetric cost behavior, especially different board characteristics. Ibrahim (2018) found out the relationship between CG and COGS. Another study confirmed the relationship between CG and SG&A (Chen *et al.*, 2012). In addition, other costs like OC are very important factors that still need to investigate the relationship with CG. Likewise, there are other factors that are considered to be the most important parts of CG such as the characteristics of the audit committee, number of committees, and various variables of ownership structures (Ibrahim, 2018). More research is also required to assess the association of management incentives with cost behavior (Ibrahim, 2018).

Accordingly, this study would like to contribute by examining the asymmetric operational cost behavior of Pakistani firms. Furthermore, it extends the literature of correlation of CG with asymmetric operational cost behavior. The objective of the study is to examine how costs in emerging economies, such

as Pakistan, behave asymmetrically and to examine corporate governance could affect the cost behavior of Pakistani firms.

This research enhances the literature by investigating possible cost-stickiness solutions in addition to Chen *et al.* (2012)'s work which interprets how CG could influence SG&A's stickiness of US firms. This research confirms Chen *et al.* (2012)'s study that would help to alleviate cost stickiness by effective CG. In addition to above, this study also contributes by examining the influence of CG on asymmetric behavior of OC. Furthermore, we can assume that this study is one of the earliest and rarest studies in Pakistan examining asymmetric cost behavior.

In chapter two, the theoretical and conceptual foundations of corporate governance and cost behavior are discussed. Chapter three discusses the methodology and chapter four discusses the descriptive analysis, Pearson correlation, unit root test, co-integration test and multiple regression analysis, results of the effect of corporate governance variables on asymmetric cost behavior. Chapter 5 concludes most important ideas and conclusions. It also describes the contribution in existing literature, limitations of research, and guidelines for future research.

### **Literature Reviews**

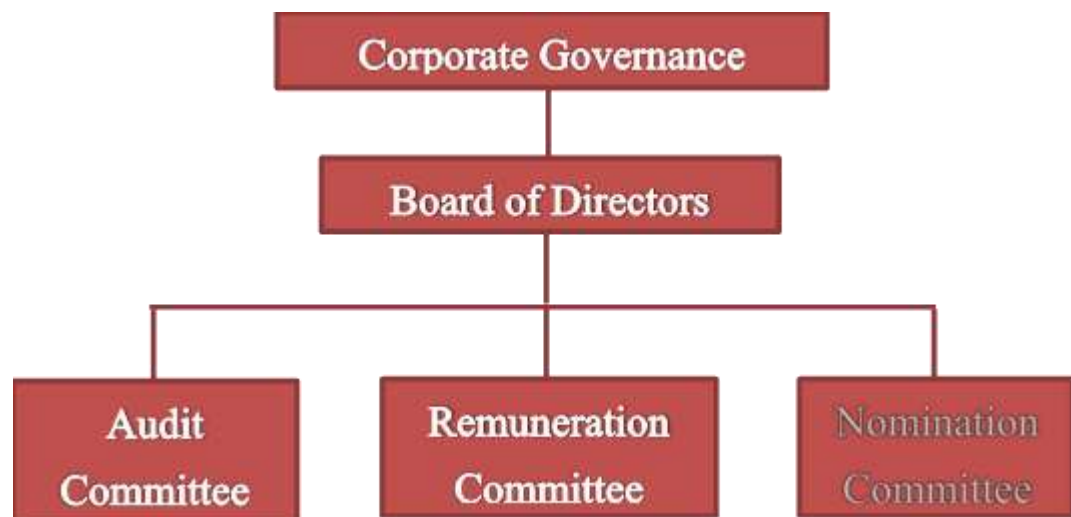
Corporate Governance has not agreed definitions. It has no limits for defining or reviewing (Solomon, 2007; Turnbull, 2000). Much of the literature related to corporate governance issues arise from an Anglo-American perspective (Melis, 1998). Corporate governance is not a problem, nowadays, for researchers (Berle & Means, 1932). It is clear that management was only a central issue and it was involved in the corporate world in the 1990s. A UK based committee on the Financial Aspects of Corporate Governance has defined corporate governance in the following sentence: "Corporate governance is the system by which companies are directed and controlled" (Clarke, 2007, p.2). It is important as it has relationship with business performance (Hameed, Nisar, & Wu, 2020).

As there are many definitions related to corporate governance, it can be categorized according to the agency and stakeholder theory. Boubakri *et al.* (2005, p.370) defined corporate governance as "a response to the agency problems that arise from the separation of ownership and control in a corporation". Further, Larcker (2005, p. 1), in his turn defined corporate governance as "the set of mechanisms that influence the decisions made by managers when there is a separation of ownership and control". The final definition focuses mainly on the concept of agency theory and defines corporate governance as a mechanism that has been developed to solve agency problems that can arise between managers and shareholders.

Following definitions support the concept of stakeholder theory. Sanda *et al.* (2005, p.1) defined corporate governance as "ways in which all parties interested in the well-being of the firm (the stakeholders) attempt to ensure that managers and other insiders take measures or adopt mechanisms that safeguard the interests of the stakeholders". Turnbull (2000, p.4) backs the last definition and defines corporate governance as "all the influences affecting the processes for appointing those who decide how operational control is exercised to produce goods and services and all external influences affecting operations or the controllers". Specific determinants of corporate governance are company size, type of industry, size of the board of directors, proportion of independent

directors and committees in board, and ownership structure. However, this research focuses on the characteristics of board committees and overlap members in committees.

The existence of a monitoring committee (audit committee, appointment and compensation) is positively related to aspects related to the support of monitoring (John & Senbet, 1998). The main pillars of corporate governance are audit committee, compensation committee, and nomination committee (Shukla, 2008).



**Figure 1: Board Committee**

The audit committee is one of the most important mechanisms of corporate governance. It ensures that the company provides relevant, accurate and reliable information that can be used by investors and other stakeholders to assess company performance. The audit committee plays an important role in ensuring the reliability of the company's financial management. It helps in creating confidence in the fairness and reliability of financial statements. Compensation committee is the second important mechanism of corporate governance practices because compensation paid to directors is a sensitive issue in corporate governance throughout the world. Shareholders expect that the director's compensation should be matched with the qualities needed (in terms of skills, competencies, and experience) in order to attract, retain, and motivate directors. Nomination committee is the third committee of corporate governance. The main task of this committee is to choose the names of directors or make recommendations to the board of directors to be appointed or reappointed for the next annual general meeting.

Corporate governance has an inverse relationship with expense stickiness (Xue & Hong, 2016). Pichetkun (2012) accepts that CG would influence the cost stickiness, but he did not take into consideration board characteristics in his study. A study shows that employment protection laws restrict managers' ability to minimize labor costs when demand falloffs, causing cost stickiness to increase (Banker *et al.*, 2013). Ibrahim (2018) found in his

study that small size of board and CEO duality has a negative effect on cost stickiness.

### **Hypotheses Development**

#### **Operational Cost Behavior is Asymmetric**

A model which helps to examine that costs behave asymmetrically (Anderson *et al.*, 2003), where most of the researchers follow their model. One recent study shows that SG&A costs respond to symmetric behavior and COGS looks anti-sticky, by examining all listed manufacturing companies in Jordan during 2008-2012 (Abu-Serdaneh, 2014). Furthermore, it also proved that Economic situation also affects the behavior of cost stickiness (He *et al.*, 2010). However, in Egypt CGS behave asymmetric. Weiss (2010) also proved the same thing that CGS behave asymmetric. Moreover, Banker and Byzalov (2014) found that operating costs behave sticky in 16 countries out of 20, they conclude that the behavior of asymmetric cost is a global phenomenon. In recent studies, the results indicate the stickiness of both SG&A and COGS but operating costs respond anti-sticky (Ibrahim, 2015). Furthermore, in other studies, COGS found sticky (Shafique & Ali, 2020) and SG&A found anti-sticky behavior (Ali & Shafique 2020). The first study, Dierynck *et al.* (2012) found that managers reaching the zero earnings benchmark, it will increase labor cost to little extent when activity increases, when activity falls, it will decrease labor costs to a larger extent.

From the above, it is extracted following hypotheses

**H1:** The OC behavior of Pakistan-listed firms is asymmetric.

#### **Corporate Governance and Cost Behavior**

Pichetkun (2012) accepts that CG would influence the cost stickiness but he did not take board characteristics in his study. A study shows that employment protection laws restrict managers' ability to minimize labor costs when demand falloffs, causing cost stickiness to increase (Banker *et al.*, 2013). Finally, a recent study shows that effective earnings management CG can help mitigate cost stickiness, and that cost stickiness is mitigated by the interaction between CG and earnings management (Xue & Hong, 2016). Likewise, board committees should consider while examining the relationship between corporate governance and firm performance. Since such a mechanism has potential in reducing certain costs that are connected with big and autonomous boards. So, this study will try to confirm whether establishing monitoring committees can alleviate these associated costs with boards or not.

#### **Number of Committees**

The number of committees on the board varies greatly from one company to another, with the board of directors having one to nine committees (Klein, 1998; Reeb & Upadhyay, 2010). Ferris *et al.*, 2003 focus on the number of committees and others are observed directors or the gender diversification in committee (Bilimoria & Pinderit, 1994).

Faleye *et al.*, 2011 stated that the effectiveness of board monitoring increases when the majority of independent directors work on two or more monitoring committees. They also found that this increase was expensive because the director could not spend enough time giving advice.

Harrison 1987, argues that managers can elect large board members and form many board committees to legitimize their corporate governance efforts. Previous research has found evidence that board committees play an effective monitoring role (Anderson *et al.*, 2004; Beasley, 1996; Carcello & Neal, 2000;

Hadani *et al.*, 2011). In a recent study, it is found that NCB has an insignificant relationship with COGS behavior (Shafique & Ali, 2020). Likewise, board committees should consider while examining the relationship between corporate governance and firm performance. Since such a mechanism has potential in order to reduce certain costs that are connected with big and autonomous boards. So, in this study, it needs to be confirmed whether establishing monitoring committees can alleviate these associated costs with boards or not. From the above, this concludes following hypotheses:

**H3:** NCB has a significant relationship with OC behavior.

#### **Average Number of Members in Committee**

The size of the audit committee or other monitoring committee influences the integrity of the account (Anderson *et al.*, 2004) and change will reduce the perception of risk. If the committee is smaller and has a clear mandate, they are more likely to promote the accountability of certain directors and thus reduce problems with release. In a recent study, it is found that ANMC has a significant relationship with SG&A cost behavior and cost behave sticky (Ali & Shafique, 2020). However, it expected a positive relationship between board size and company performance if the company has several committees. On average, three to five members are members of each of these permanent committees because these committees are more effective when they have more outsiders (Klein, 1998), the presence of the committee can also affect the relationship between board independence and solid performance.

On the basis of the above-mentioned literature, this study develops this hypothesis:

**H4:** ANMC has a significant relationship with OC behavior.

#### **Overlapped Member in Committee**

Research has confirmed that overlapping members in compensation committee and audit committee play a beneficial role in environments where managers are more likely to reach or exceed profit margins (Habib & Bhuiyan, 2018). Audit committee members having expertise in accounting and finance can play a useful role in limiting opportunistic reporting behavior (Dhaliwal *et al.*, 2010; Kent *et al.*, 2016). Therefore, the common member in both committees who also sit on the compensation committee and audit committee has been identified as beneficial for better information exchange. In a recent study, it is found that OMC has a significant relationship with SG&A cost behavior and cost behave sticky (Ali & Shafique, 2020).

A study on the audit committee having financial expertise confirmed that more financial experts members in audit committee improved income quality (Krishnan & Visvanathan, 2007; Dhaliwal *et al.*, 2010), reducing the possibility of repetitive changes (Marciukaityte & Varma, 2008; Cohen *et al.*, 2010) and increasing the likelihood of eliminating internal weaknesses on time (Goh, 2009).

From the above-mentioned analysis this study postulate following hypotheses:

**H5:** OMC has a significant relationship with OC behavior.

#### **Number of Overlapped Members in Committees**

Van der Zahn and Tower (2005) empirically examine the idea of Higgs (2003) that overlapping directors is sub-optimal. Using a sample of companies in Singapore, they examine directors, who overlap between audit committees, remuneration, and nominations. They found that boards with higher levels of overlap of members in committees were less attractive for earning management.

However, there are some costs related to the degree of overlap of members in board committees. As described by Laux and Laux (2009), the potential benefit of the delegating function to committees is that the use of smaller subgroups can reduce free-rider problems rather than large groups. If there is a full overlapping committee, the subgroup structure and its benefits will fall. In a recent study, it is found that NOMC has an insignificant relationship with COGS cost behavior (Shafique & Ali, 2020). In another study, it is also found that NOMC has an insignificant relationship with SG&A cost behavior (Ali & Shafique, 2020). Furthermore, high levels of overlap in committees must reduce efforts and eliminate accountability, which can affect the audit committee's oversight role. The higher level of overlap between committees is therefore not related to the higher quality of financial statements. In addition, research shows that committee structures have a reduced benefit when committees have overlap of members and its earning decreases (Laux & Laux, 2009).

**H6:** NOMC has a significant relationship with OC behavior.

#### **Managerial Incentives**

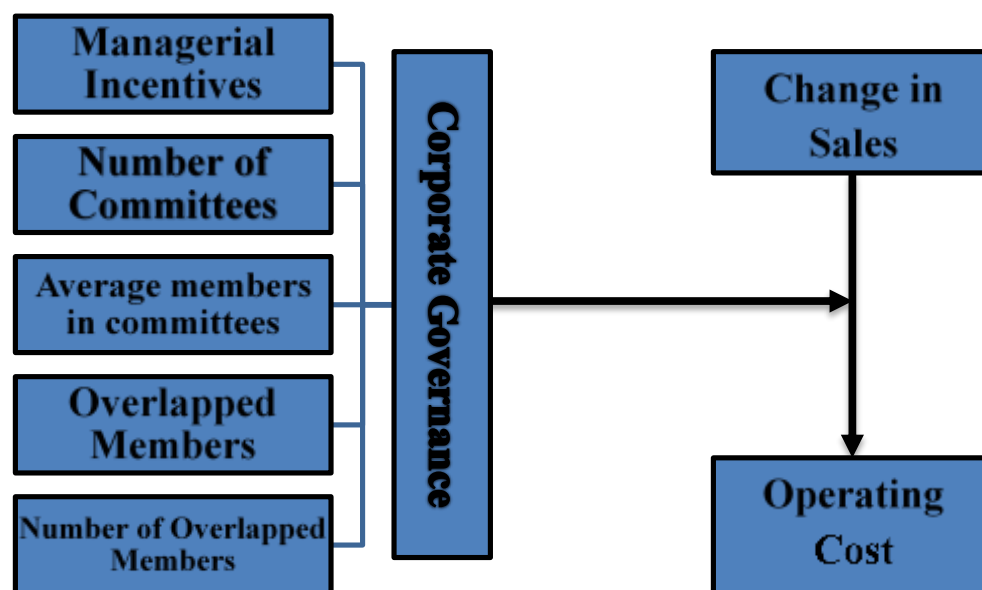
Authors investigate incentives for managers to avoid losses. It will mitigate the cost stickiness (Kama & Weiss, 2013). In another study, Koo *et al.* (2015) examines the association between earnings management and cost stickiness. They found that managers minimize costs to manage earnings while declining in activities. However, firms having earnings management incentives found cost stickiness. Chen *et al.* (2012) also indicate that institutional ownership, board independence and threats to takeover could alleviate the agency problem's influence on cost stickiness. In recent studies, it is found that managerial incentives have a significant relationship with sticky cost behavior of COGS (Shafique & Ali, 2020). Authors investigate incentives for managers to avoid losses.

However, we developed the following hypothesis:

**H7:** Managerial Incentives have a significant relationship with OC behavior.

#### **Theoretical Framework**

This study extracts the following theoretical framework from the above discussion. The figure 2.3 shows the relationship between Board committee's structures with asymmetric cost behavior. Furthermore, this research also finds the impact of managerial incentives on asymmetric cost behavior and also describing the moderation effect on relationship between board committee's structure and asymmetric cost behavior.



**Figure 2: Theoretical Framework**

### Research Methodology

This is a quantitative type of research and it helps to find out the relationship between corporate governance and operational cost behavior. The listed companies in the Pakistan Stock Exchange (PSX) are taken as a whole population. It is Pakistan's largest stock exchange. It has over 940 listed companies representing over 38 industries. It is the merger of three stock exchange markets (Karachi Stock Exchange, Lahore Stock Exchange and Islamabad Stock Exchange) (Shafique & Ali, 2020 and Ali & Shaique, 2020). It is appropriate to create a non-probability sample to represent all industries. This study followed a number of selection criteria, followed by previous literature. First, the financial sector and services sectors are excluded due to having differences in capital structure and risk characteristics. Secondly, companies having inappropriate data and facing financial crises are excluded (Tseng *et al.*, 2015). Thirdly, if the expenses exceed the income of the current year, such firms are also excluded, and lastly, according to Cannon (2014), extreme observations, where the standardized residual value of each observation exceeds an absolute value of 3. As a result, 86 companies were taken into account as samples. It represents 19.56% of the total population. Data required in measuring the dependent variables is collected from the companies audited annual financial reports and their websites for the years 2014-2018. Financial reports are downloaded from Pakistan Stock Exchange (PSX), websites and head offices of companies. This study covers a period of five years (2014-2018). Different levels of gross national expenditure (GDP) from 2014 to 2018 may justify the definition of this period. This data is taken from the website of the World Bank.

### Measurement of Variables

Anderson *et al.* (2003) suggest an innovator regression model in order to determine whether an increase in costs is dissimilar from a decrease in costs when the corresponding activity changes. This model is helpful to measure cost reactions to alteration in current sales. It will also help to differentiate the periods of rising and falling sales of a firm (Anderson *et al.*, 2003). A dummy variable (DecDummy) in this model helps to nominate years of falling and rising activity.



Hence, the popular studies (e.g. Kama & Weiss, 2013 and Ibrahim, 2018) follow the model of Anderson *et al.* (2003). To test for possible relationship between board characteristics and cost asymmetry, this study extends this model to include number of committees in board, average number of members in committee, overlapped member in committee (dummy variable) number of overlapped in committee, board compensation and other control variables like; economic growth and institutional ownership by taking product of each variable with  $\text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it})$ . Consequently, three-way interactions terms are created according to relevant studies (Anderson *et al.*, 2003; Chen *et al.*, 2012; Dierynck *et al.*, 2012 Ibrahim, 2018; Shafique & Ali, 2020 and Ali & Shafique, 2020).

### Variable and Operational Definition

Table 1: Variables and Operational Definition			
Variables	Operational Definition	Measurement	Source
<b>Dependent Variables</b>			
$\Delta \text{OC}_{it}$	Change of Operation Cost	“It is calculated as the year <sub>t</sub> OC divided by year <sub>t-1</sub> for the company I”	From Annual Report
<b>Independent Variables</b>			
$\Delta \text{Sales}_{it}$	Change of Sales	“It is calculated as the year <sub>t</sub> net sales divided by the net sales of year <sub>t-1</sub> for the firm I”	From Annual Report
$\text{DecDummy}_{it}$	Dummy Variable	“if the current year’s sales less than the previous year’s net sales then take dummy variable that equal to ‘1’ and ‘0’ otherwise”	Created on the basis of annual report data
$\text{DecDummy}_{it} \times \log(\Delta \text{Sales}_{it})$	Interaction-Term	“A two-way interaction term resulting from the multiplication of the dummy variable by the natural logarithm of change in net sales for the year <sub>t</sub> for firm I”	Created on the basis of annual report data
<b>Board Committee’s Structure</b>			
Overlapped Members of Committees	Dummy Variable	“A dummy variable that equal to ‘1’ if at least one member is common in the compensation committee and audit committee and ‘0’ otherwise”	Created on the basis of annual report data
Number of Committees in Corporate Governance	Number of Committees in Board	“Number of Committees in Board”	Created on the basis of annual report data
Average number of members in committees	Average number of members in Committees	“Average number of members in Committees”	Created on the basis of annual report data
Number of overlapped members in Committees	Average number of overlapped members	Average number of overlapped members	Created on the basis of annual report data
Board Compensation	All incentive of CEO, Executive & Non-Executive Directors	“Sum of all compensation of board of directors”	From Annual Report
<b>Control Variables</b>			
Economic Growth	Real GDP	“Percentage of real gross domestic product growth in year <sub>t</sub> , used as	World Bank

### Empirical Model

The objective of the study is to check the asymmetric operational cost behavior of Pakistani firms and find out the relationship between corporate governance (NCB, ANMC, OMC, NOMC and BC) and operational cost (OC) behavior. This study develops the following equation with including three-way interaction-term only (Anderson *et al.*, 2003 and Kam & Weiss, 2013) and develop other equation with three-way interaction terms added standalone variables (Dierynck *et al.*, 2012; Ibrahim *et al.*, 2018; Shafique & Ali, 2020 and Ali & Shafique, 2020).

All of the above, this study develops equations on the basis of control variables and without control variables.

#### 3.1 Model 01

$$\Delta OC_{it} = \beta_0 + \beta_1 \text{Log}(\Delta \text{Sales}_{it}) + \beta_2 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) + \Sigma$$

#### 3.2 Model 2: (No controls)

$$\begin{aligned} \Delta OC_{it} = & \beta_0 + \beta_1 \text{Log}(\Delta \text{Sales}_{it}) + \beta_2 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \\ & + \beta_3 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{NCB}_{it} \\ & + \beta_4 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{ANMC}_{it} \\ & + \beta_5 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{OMC}_{it} \\ & + \beta_6 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{NOMC}_{it} \\ & + \beta_7 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{BC}_{it} \\ & + \beta_8 \text{NCB}_{it} + \beta_9 \text{ANMC}_{it} + \beta_{10} \text{OMC}_{it} + \beta_{11} \text{NOMC}_{it} + \beta_{12} \text{BC}_{it} + \Sigma \end{aligned}$$

#### 3.3 Model 3: (control variables)

$$\begin{aligned} \Delta OC_{it} = & \beta_0 + \beta_1 \text{Log}(\Delta \text{Sales}_{it}) + \beta_2 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \\ & + \beta_3 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{NCB}_{it} \\ & + \beta_4 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{ANMC}_{it} \\ & + \beta_5 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{OMC}_{it} \\ & + \beta_6 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{NOMC}_{it} \\ & + \beta_7 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{BC}_{it} \\ & + \beta_8 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{EG}_{it} \\ & + \beta_9 \text{DecDummy}_{it} \times \text{Log}(\Delta \text{Sales}_{it}) \times \text{IOS}_{it} \\ & + \beta_{10} \text{NCB}_{it} + \beta_{11} \text{ANMC}_{it} + \beta_{12} \text{OMC}_{it} + \beta_{13} \text{NOMC}_{it} + \beta_{14} \text{BC}_{it} \\ & + \beta_{15} \text{BC}_{it} + \beta_{16} \text{BC}_{it} + \Sigma \end{aligned}$$

### Data Analysis and Results

The study demonstrates the operational cost asymmetric behavior, its determinants, and the relationship of corporate governance with asymmetric cost behavior of a firm. To better understand the panel data, basic descriptive information is used for data collected over a five-year period. Table 2 presents descriptive statistics about annual sales, OC for the complete 5-year samples. OC average is 1.7 million Pakistani Rupees which are lower than OC mean of \$1635.93 million as reported by Kama & Weiss (2013) by considering the exchange rates. However, the average value of OC as a ratio of sales is 15.38% (standard deviation = 49.38%). The sample average net sales is 20 million Pakistani rupees with a standard deviation of 33 million, which is below the average net sales of \$ 5,383 million of USA based samples (Chen *et al.*, 2012). Moreover, The sample average net sales is also less than average net sales, which are \$ 1,277, \$ 1,153, \$ 1,294 and \$ 2,416 million reported by Anderson *et al.*

(2003), Calleja et al. (2006), Subramaniam & Weidenmier (2003) and Ibrahim (2018) correspondingly.

The average net sales is 20 million in Pakistani Rupees along with a standard deviation of 33 million of this study sample. A study in USA, reported by Chen et al. (2012) that the average net sales of \$5,383 million of study sample is greater than this study sample and also less than the average net sales of \$1,277, \$1,153, \$1,294 and 2,416 million of samples tested by Anderson *et al.* (2003), Calleja *et al.* (2006), Subramaniam & Weidenmier (2003) and Ibrahim (2018) respectively.

The mode of NCB is 2. It means that the majority of the firms have two major board committees (Remuneration and Audit) as reported by Madhani (2015). ANMC mode is 3. It represents that the size of the committees is three which is supporting the finding of Upadhyay *et al.* (2013). There are 3 to 7 members in committees in firms listed in Pakistan Stock Exchange.

About 91% of the observation from the sample consisted of overlapping membership in the audit and remuneration committee. It means that at least one member in the audit committee is also present in the remuneration committee. Whereas, there are on average 2 overlapped members in both committees (audit and remuneration). Maximum overlapped members in committees is 5.

The average value of Economic Growth is 5.12%, it indicates that the average economic growth remains 5.12% from 2014 to 2018. Lastly, institutional ownership has 6.44% average value, which indicates that on average 6.44% of the properties of the sample companies are owned by institutional investors.

**Table 2: Descriptive Statistics**

Construct	Variables	Mean	Mode	Maximum	Minimum	Std. Dev.
Asymmetric Cost Behavior	OC	1,777,885		27,769,200	1,588	3,199,290
	OC%	15.38		785	0.94	49.38
	Sales	20,800,765		233,607,420	599	33,050,880
Board Committee's Characteristics	NCB		2	6	1	
	ANMC		3	7	3	
	OMC		1			
	NOMC		2	5	0	
Board Compensation	BC	385,589.2		5,883,220	0	716,107.8
Control Variables	EG	5.213		5.701	4.675	0.476
	IOS	6.438		618.834	0.137	42.178

$\Delta OC_{it}$ =Change in Operating Cost, NCD=Number of Committees in Board, ANMC=Average Number of Members in Committee, OMC=Overlapped Members in Committee, NOMC=Number of Overlapped Members in Committee, BC=Board Compensation, EG=Economic Growth, IOS=Institutional Ownership.

Table 3 provides the Pearson correlation between independent variables. Sales have an insignificant relationship with all board committee's variables and control variables. However, the results reflect positive correlations between board committee's variables. NCB has positive associations with ANMC (0.249\*\*\*), OMC (0.129\*\*\*), NOMC (0.139\*\*\*), BC (0.339\*\*\*), significantly and no relationship found with EG. But, NCB has a negative insignificant relationship with IOS (-0.013). ANMC has positive correlation with OMC (0.111\*\*), NOMC (0.452\*\*\*), and BC (0.174\*\*\*), significantly and no relationship found with EG. But, It has a negative insignificant relationship with

IOS (-0.049). OMC has positive and significant relations with NOMC (0.517\*\*\*) and BC (0.112\*\*) and no relationship found with EG. But, OMC has a negative insignificant relationship with IOS (-0.01). NOMC has an insignificant positive relation with BC (0.068\*\*) and insignificant relationship found with EG (0.677) and it has negative insignificant relationship with IOS (-0.065). BC has an insignificant negative relationship with EG and IOS. Moreover, EG has no relationship with IOS. These results reflect that the increase in number of committees in board and committee size are related to an increase in chances of overlapped members in committee. Furthermore, the number of board committees in corporate board and committee size are resulting in more board compensation.

Table 3 shows the value of Pearson correlation between the independent variables and the dependent variable. OC has a negative relationship with Sales, NCB, OMC NOMC BC and IOS except ANMC and EG, but the relationship remains insignificant. These variables have high values in representing the lower the quality of the board committee. Consequently, the costs show more asymmetric behavior. This correlation indicates, there is an inverse relationship between quality of the committee and asymmetric costs. It means that stronger the board committees, lower the asymmetric cost behavior and lower the quality of board committees, the higher the degree of asymmetric behavior.

Generally, the high correlation among independent variables may mislead the results obtained from the regression model. It is because of the multicollinearity among independent variables in the regression model and multicollinearity between two variables or more variables that affect estimated results. Even if there is no high correlation among the independent variables, there is still a certain degree of multidimensionality among the independent variables (Kanagaretnam *et al.*, 2007). Correlation among the independent variables is a big problem. It can be checked through seeing the correlation matrix among independent variables. So, values remained between -0.0294 to 0.447. Tabachnick and Fidell (1996) explained that the bivariate correlation between the independent variables of 0.90 or more, indicates multicollinearity. In addition, multicollinearity through Variance Inflation Factor can also be examined.

Variables	$\Delta OC_{it}$	$\Delta Sales_{it}$	NCB	ANMC	OMC	NOMC	BC	SD	EG	IOS
$\Delta OC_{it}$	1.000									
	---									
$\Delta Sales_{it}$	-0.025	1.000								
	0.604	---								
NCB	-0.022	-0.015	1.000							
	0.648	0.756	---							
ANMC	0.043	-0.030	0.249	1.000						
	0.378	0.529	0.000	---						
OMC	-0.015	0.013	0.129	0.111	1.000					
	0.755	0.788	0.007	0.020	---					
NOMC	-0.031	0.014	0.139	0.452	0.517	1.000				
	0.527	0.775	0.000	0.000	0.000	---				
BC	-0.027	-0.026	0.339	0.174	0.112	0.068	1.000			
	0.576	0.597	0.000	0.000	0.020	0.159	---			
SD	0.181	0.039	0.026	0.118	0.042	-0.001	0.091	1.000		
	0.000	0.425	0.591	0.010	0.390	0.979	0.059	---		
EG	0.160	0.074	0.000	0.000	0.000	0.677	-0.627	0.632	1.000	
	0.797	0.154	0.000	0.000	0.000	0.209	0.257	0.253	---	
IOS	-0.022	0.011	-0.029	-0.049	-0.001	-0.065	-0.021	0.033	0.000	1.000
	0.657	0.814	0.537	0.300	0.983	0.181	0.657	0.496	0.000	---

$\Delta OC_{it}$ =Change in Operating Cost, NCD=Number of Committees in Board, ANMC=Average Number of Members in Committee, OMC=Overlapped Members in Committee, NOMC=Number of Overlapped Members in Committee, BC=Board Compensation, EG=Economic Growth, IOS=Institutional Ownership.

(VIF) technique is used to see the multicollinearity among independent variables. It is determined that VIF values ranged from 1.01 to 1.77. It means that there is no multicollinearity among independent variables because these values are less than threshold value 9.00 in all cases. Furthermore, it also indicates that none of the independent variables can be explained by other independent variables. As noted by Myer (1990), values less than 10 do not pose a risk of multicollinearity.

The white heteroscedasticity test (non-cross products) was used. The LM statistic (Breusch-Pagan / Cook-Weisberg test for heteroscedasticity) remained below its critical value in almost all cases. It indicates that the deviation of independent variables at each level is homogeneous. Accordingly, there is no evidence of heteroscedasticity. In this way, we can rely on the regression results and do not need to find the generalized/ weighted least squares for further analysis.

Table 4 shows the results of normality test. To check the normality of data that if the probability value of Jarqua-Bera test is less than 0.05, then accepted data is not following normal distribution. Table 4 shows that, probability value of Jarqua- Bera test rejects that data is following normally distribution. Kurtosis and skewness values also reject the null hypothesis ( $H_0$ ). Kurtosis values are greater than 3.00 and skewness value is also not coming in the range -0.8 to 0.8 (Jondeau & Rockinger, 2003). Non normal distribution of data can be transformed into normal distribution after taking log. It means that the presence of extreme or outliers values has been removed. Deletion of such extreme value may result in inefficient or misleading conclusions (Cook & Weisberg, 1982).

Besides, the normal residual probability graph confirms that there is no serious violation of the normal assumptions.

Construct	Variables	Skewness	Kurtosis	Jarque Bera	Prob Value
Asymmetric Cost Behaviour	$\Delta OC_{it}$	-0.42	4.30	43.37	0.00
	$\Delta Sales_{it}$	4.93	99.90	169989.5	0.00
Board Committee's Characteristics	NCB	1.43	8.47	683.92	0.00
	ANMC	1.25	3.82	124.52	0.00
	OMC	-2.95	9.72	1432.70	0.00
	NOMC	0.26	1.97	23.90	0.00
Board Compensation	BC	-1.76	11.25	1439.73	0.00
Control Variables	EG	-0.30	1.25	61.73	0.00
	IOS	0.93	6.23	248.08	0.00

$\Delta OC_{it}$ =Change in Operating Cost, NCD=Number of Committees in Board, ANMC=Average Number of Members in Committee, OMC=Overlapped Members in Committee, NOMC=Number of Overlapped Members in Committee, BC=Board Compensation, EG=Economic Growth, IOS=Institutional Ownership,

### Unit Root Test

The purpose of unit root test is to determine whether the entire variable has stationary value or non-stationary values. Stationary data means that average variance and covariance or correlation remain the same all the time. To check if the data is stationary or non-stationary, first, we saw the intercept and trends of values. Figures depict that there is existence of intercept but not showing any trends. Now the unit root test is applying on all dependent and independent variables at individual intercept. The Table 5 shows that (panel unit root test) only one variable OC is stationary at level. Independent variables (NCB, ANMC, OMC, NOMC and BC) and control variables (EG and IOS) are stationary at 1<sup>st</sup> difference.

### Co-integration Test

The purpose of cointegration test is to check that all variables are in same order or not and having long run association. Before running the panel cointegration it should be assured that variables are non-stationary at level and become stationary at 1<sup>st</sup> difference. Table 5 shows the same conditions. Cointegration test states that the H<sup>0</sup> of no cointegration is rejected because t-statistics -15.05 at significance level 0.00 is given by Kao Residual Cointegration Test. Hence, it is concluded that all variables have long run association with each other and are co-integrated in the same order.

Variables	Levin, Lin & Chu t*		ADF - Fisher Chi-square		PP - Fisher Chi-square		Unit at
	Statistic	Prob.	Statistic	Prob.	Statistic	Prob.	
$\Delta OC_{it}$	-27.24	0.00	369.12	0.00	374.08	0.00	Level
$\Delta Sales_{it}$	-32.59	0.00	634.87	0.00	631.71	0.03	1 <sup>st</sup> Difference
NCB	-3.67	0.00	3.94	0.14	5.53	0.06	1 <sup>st</sup> Difference
ANMC	-17.3	0.00	69.87	0.00	84.32	0.00	1 <sup>st</sup> Difference
OMC	-1.77	0.00	3.44	0.75	4.94	0.00	1 <sup>st</sup> Difference
NOMC	-14.65	0.00	66.62	0.00	82.45	0.00	1 <sup>st</sup> Difference
BC	-38.81	0.00	452.34	0.00	473.84	0.00	1 <sup>st</sup> Difference
EG	-1.99	0.02	91.27	1.00	91.27	1.00	1 <sup>st</sup> Difference
IOS	-8.09	0.00	77.66	0.00	77.07	0.00	1 <sup>st</sup> Difference

### Multiple Regression Analyses

This research tested the asymmetric behavior of operational cost of Pakistani firms. Moreover, corporate governance is also included to see the operational cost behavior.

The Table 6 shows the estimated values of necessary statistics of the model. Huasman test rejects the  $H^0$ . It means panel data fixed effects model is appropriate because the guideline for the Huasman test is that, if the statistical value of the test is significant ( $p\text{-value} > 0.05$ ) then  $H^0$  is rejected and  $H^1$  is accepted. The intercept term  $\beta^0$  is negative and significant in this model. The coefficient  $\beta^0$  represents the fixed cost which does not change with change of activity within a certain limit. Here  $\beta^0$  is -0.048 at significant level 0.01. Most of the cases, it has no economic meaning. It has only mechanical interpretation. It represents the average effect of all those variables which are not included in this model. Remaining coefficients are considered as partial slope coefficient. These partial slope coefficients represent the variation in dependent variables because of one percent change in explanatory variables while other variables held constant. Here  $\beta^0$  shows the fixed cost. If production is zero, then cost will be -0.048 rupees. So, it has no sense. Thus the coefficient  $\beta_1$  0.23 is attached with  $Sales_{it}$  means that if Sales is increased by one rupee, another variable holds constant, and the  $OC_{it}$  increases by Rs. 0.23. The relationship is positive. The estimated value of  $\beta_2$  is 1.02, which supports cost anti-stickiness. The combined value of  $\beta_1$  and  $\beta_2$  ( $0.23+1.02$ ) is 1.25 which shows that  $OC_{it}$  decreases by rupees 1.25 for a One rupees decrease in sales. The coefficient  $\beta_1$  and  $\beta_2$  are significant at 0.01. It means that OC has shown decline more than revenue fall than rise when sales revenues rise by an equivalent amount. The possible reason is that managers become more pessimistic when they realize that sales is about to fall, resulting in anti-stickiness behavior (Banker *et al.*, 2013, 2014). Furthermore, it supports the result of the study conducted by Ali & Shafique (2020). To conclude, the finding shows that cost behaves asymmetrically. Furthermore, that  $F\text{-Statistics} = 35.55$  (0.00) and  $R^2 = 0.17$  shows that the model is statistically significant and explain 17% variations.

Variable	Coefficient	t-Statistic	Prob.	$\Delta OC_{it}$
$\beta^0$ : C	-0.048	-3.24	0.00	
$\beta_1$ : $Sales_{it}$	0.226	2.91	0.00	
$\beta_2$ : $DeDummy_{it} \times \text{Log}(\Delta Sales_{it})$	1.020	5.69	0.00	
R-squared				0.17
F(2,342)				35.55
Prob				0.00
Hausman Test ( chi-sq. statistics)				9.93
Prob (Hausman Test)				0.00
$\Delta OC_{it}$ =Change in Change of Operating Cost, $DeDummy_{it} \times \text{Log}(\Delta Sales_{it})$ =Interaction Term				

The Table 7 shows the estimated values of necessary statistics of the model. Huasman test accepts the  $H^0$ . It means panel data random effects model is appropriate because the guideline for the Huasman test is that, if the statistical value of the test is insignificant ( $p\text{-value} > 0.05$ ), then  $H^0$  is accepted and  $H^1$  is rejected. The intercept term  $\beta^0$  is negative in column (01), column (02), column

(03) and column (04) and significant in this model. The coefficient  $\beta^0$  (-0.02\*\*, -0.02\*\*\*, -0.39\*\*\* and -0.44\*\*\*) represent the fixed cost which does not change with change of activity within a certain limit. Most of the cases, it has no economic meaning. It has only mechanical interpretation. It represents the average effect of all those variables which are not included in this model. Remaining coefficients are considered as partial slope coefficient. These partial slope coefficients represent the variation in dependent variables because of one percent change in explanatory variables while other variables held constant.

Table 7 exhibits that the value of coefficients ( $\beta_1$ ) is positive and it is significant at the level of 0.05 ( $\beta_1 = 0.12$ , t-statistic = 2.23) in column (1). Likewise, the value of coefficient ( $\beta_2$ ) is also positive and it is significant at the level of 0.01 ( $\beta_2 = 4.91$ , t-statistic = 8.73). As the value of coefficients ( $\beta_1$ ) is positive and it is significant at 0.1 and the value of coefficient  $\beta_2$  is also positive and it is significant at the level of 0.1. It shows anti-sticky cost behavior. It means that OC showed decline more than revenue fall than rise when sales revenues rise by an equivalent amount. The possible reason is that managers become more pessimistic when they realize that sales is about to fall, resulting in anti-stickiness behavior (Banker *et al.*, 2013, 2014). Moreover, after adding standalones but before and control variables, the cost also shows anti-sticky behavior because column (03) shows that  $\beta_1$  and  $\beta_2$  remains positive and statistically significant at 0.01 respectively. Same as column (04) shows that  $\beta_1$  and  $\beta_2$  remain positive and statistically significant at 0.1 and 0.01 respectively. However, after adding control variables with no standalone,  $\beta_1$  turns to insignificant. Table 7 shows mixed results in four columns. Nevertheless, the results are supporting the empirical hypothesis of asymmetric cost behavior in all columns of Table 7. So, this study approves that OC behaves asymmetrically, as is the case with the application of the basic model (see Table 6).

Many committees show lesser cost stickiness. More committees on board will show higher standards of corporate governance. However, here, a number of committees on board show insignificant relationship with operational cost behavior before control variables. Whereas  $\beta_3$  in Column (2), Column (3) and Column (4) of Table 7  $\{(\beta_3 = 2.21 (2.29); 2.62 (2.35); 3.93 (3.28))\}$  shows positive and statistically significant relationship with OC behavior after adding standalone variables. These committees are designed to protect the interests of shareholders and supervise the board of directors which may conflict in interest between the committees. Additionally, managers become more pessimistic when they realize that sales are about to fall, resulting in anti-stickiness behavior (Banker *et al.*, 2013, 2014). Moreover, our results show that strong CG reduces the cost stickiness (Chen *et al.*, 2012). Furthermore, when activity changes, then board committees may report to managers to adjust resources in any way regardless of its effects on cost behavior.

For ANMC, the results indicate that the value of coefficients ( $\beta_4$ ) are negative and it is significant at the level of 0.01. Four columns of Table 7 show prescribed value of  $\beta_4$   $\{\beta_4 = -4.02 (-3.64); -4.27 (-3.91); -5.78 (-4.05); -6.07 (-4.27)\}$ , either with standalone and control variables or without these. This result confirms that ANMC could affect asymmetric cost behavior. This study has observations that ANMC has experienced less cost stickiness. This result is not matched with the researcher's argument. This result is not consistent with my argument. End result also proves the argument of Chen *et al.* (2012) that larger members in board committees can effectively improve the quality of governance.



Additionally, Argument of Jensen (1993) is also established that huge boards face more trouble because they are not able to coordinate between their board members effectively and Goodstein *et al.* (1994) proved that the bigger the board member lesser their participation in strategic decisions of the company. The probable justification, which emphasizes that small boards effectively observe decisions of adjustment of resources because they face minimum disputes and with high level of agreement with board members other than large boards.

For the OMC, the results propose that the value of coefficients ( $\beta_5$ ) are negative and it is significant at the level of 0.11 for the four cases of Table 7  $\{\beta_5 = -4.41 (-15.63); -4.12 (-14.18); -5.88 (-18.13); -5.56 (-16.40)\}$ . This result shows that cost stickiness behavior is greater when, at least, one member is present in audit as well as remuneration committee. Audit committee members can critically evaluate accounting discretion and they can use improved information from a common member sitting in a compensation committee to monitor the management decision. Previous studies have proved that enforcement compensation structures can lead to higher returns (Bartov & Mohanram, 2004; Cheng & Warfield, 2005) or to reduction in income (Baker *et al.*, 2003; McAnally *et al.*, 2008). Overlapped members can expect a potential increase in revenue or a decrease in revenue over the financial year based on knowledge of the opportunistic behavior of compensation in revenue management. For example, if an audit committee member knows that stock options will be available during this fiscal year and will likely be available in a future year, they may want to avoid management accounting judgments that carry current year's earnings into future earnings. Such attentiveness over transferred compensation information can cause it to challenge management accounting decisions, use of estimates, changes in accounting policies, and decisions to write derivative assets and other profit management mechanisms.

When an audit committee member is also a member of the compensation committee, that member can use knowledge of management-driven incentives to outline the opportunistic accounting decisions made by the management (Laux & Laux, 2009). Therefore, overlapping members of the Audit Committee with members of the Compensation Committee can help to reduce asymmetric information between the audit committee and management. Consequently, it will be resulting in better financial reporting due to increased oversight by the audit committee.

NOMC shows greater cost stickiness, but here a number of overlapped members in the audit and remuneration committee show insignificant relationship with cost asymmetric behavior whether, with control variables or without. Whereas Column (3) and Column (4) of Table 7 shows positive and statistically significant relationship with OC asymmetric behavior, after adding standalone variables and control variables. The possible reason is that there are costs associated with overlapping levels. The potential benefit of making committees is to reduce problems and delegating roles to large groups is proved to create problems (Laux & Laux, 2009). If there is complete overlap of members in different committees, then the committee's structure and its role break down. In addition, research shows that the committees' on-board structure has the advantage of being reduced if there is too much overlap (Laux & Laux, 2009). Consequently, the purposes of overlapped members in committees is not attained. Its benefit decreases after a certain point. More overlapping between

the audit and remuneration committee have a detrimental effect. Means, costs of the overlap increase by its benefits (Chandar *et al.*, 2012).

For the BC, the results indicate that the coefficients  $\{\beta_7 = 0.26; (3.19)\}$  are positively and statistically significant at the 0.05 level in column 01 of Table 7. This result means that cost stickiness is lower in boards with a high board compensation, which supports the study assumptions. However, after adding control variables, BC turns to insignificant relationship with OC cost behavior. Sometimes, managers cut the resources in order to achieve earning targets when sales fall. They do so to get incentives. Therefore, incentives influence the manager's deliberated decisions. Ultimately, it affects asymmetric cost behavior. The results show that manager's deliberated decisions effect in creating an asymmetry of the firm's cost structure. Preliminary studies proved that how management decisions help to increase firm value and lead to cost stickiness (Anderson *et al.*, 2003; Balakrishnan *et al.*, 2004; Balakrishnan & Gruca, 2008 and Banker *et al.*, 2011). Chen *et al.* (2012) suggest that agency-driven incentives introduce greater cost stickiness.

There is a negative and statistically significant correlation shown by the coefficient of economic of growth at 0.01 before and after standalone variables  $\{\beta_8 = -9.18 (-3.61); -7.75 (-2.61)\}$ , which infers that there is greater cost stickiness, all through, there is high economic growth periods. Managers are optimistic during the economic growth period because they believe that reduction in sales is momentary. Therefore, managers are hesitant to retire slack resources even after the reduction of sales, which shows increase in cost stickiness (Anderson *et al.*, 2003; Ibrahim, 2015). On the other hand, this argument is incompatible with the regression result and the result inferred by the Anderson *et al.* (2003), Banker *et al.* (2013), and Ibrahim (2015) proposed the negative relation significantly and Dierynck *et al.* (2012) proposed an insignificant relation.

Finally, a negative and statistically significant correlation is displayed by coefficient of institutional ownership at 0.05  $\{\beta_9 = -0.47 (-2.15); -0.51 (-1.91)\}$ , which shows that there is greater OC stickiness if there is higher institutional ownership, and this also prove the study prospect. It also correlates with the monitoring hypotheses and agency theory which explains that institutional investors are well experienced in analytical skills, grasp more experience and control than others. It also facilitates these investors to observe and influence the decision making of managers (Jensen & Meckling, 1976; Abdel-Fattah, 2008). Chen *et al.* (2012) found reliable results that also confirmed that effective governance mechanisms can be used as the tool of institutional ownership that can be used to alleviate the control of agency problems on stickiness of OC.

Overall, OC insists on behaving anti-sticky. Moreover, anmc and omc found to increase cost stickiness whether before or after adding the standalone and control variables. Whereas, BC and NCB found to decrease cost stickiness. Further, economic growth, and institutional ownership are found to increase cost stickiness.

Table 7: Panel Least Square of Model CG & Asymmetric OC Behavior				
Variable Statistics	No Standalone		Standalone	
	Before Controls 01	After Controls 02	Before Controls 03	After Controls 04
$\beta^0$ : Intercept	-0.02** (-2.31)	-0.02*** (-2.37)	-0.39*** (-4.91)	-0.44** (-2.18)
$\beta^1$ : Sales <sub>it</sub>	0.12** (2.23)	0.09 (1.55)	0.12*** (2.45)	0.09* (1.83)
$\beta^2$ : DeDummy <sub>it</sub> × Log( $\Delta$ Sales <sub>it</sub> )	4.91*** (8.73)	12.21*** (6.13)	6.71*** (9.85)	13.08*** (5.55)
<b>Three-Way Interaction Terms (Variables × DeDummy<sub>it</sub> × Log(<math>\Delta</math>Sales<sub>it</sub>))</b>				
$\beta^3$ : NCB × DeDummy <sub>it</sub> × Log( $\Delta$ Sales <sub>it</sub> )	1.29 (1.38)	2.21** (2.29)	2.62*** (2.35)	3.93*** (3.28)
$\beta^4$ : ANMC × DeDummy <sub>it</sub> × Log( $\Delta$ Sales <sub>it</sub> )	-4.02*** (-3.64)	-4.27*** (-3.91)	-5.78*** (-4.05)	-6.07*** (-4.27)
$\beta^5$ : OMC × DeDummy <sub>it</sub> × Log( $\Delta$ Sales <sub>it</sub> )	-4.41*** (-15.63)	-4.12*** (-14.18)	-5.88*** (-18.13)	-5.56*** (-16.40)
$\beta^6$ : NOMC × DeDummy <sub>it</sub> × Log( $\Delta$ Sales <sub>it</sub> )	0.82 (1.59)	0.61 (1.20)	1.42** (2.28)	1.13* (1.80)
$\beta^7$ : BC × DeDummy <sub>it</sub> × Log( $\Delta$ Sales <sub>it</sub> )	0.26** (3.19)	0.08 (0.84)	0.21** (2.32)	-0.01 (-0.07)
$\beta^8$ : EG × DeDummy <sub>it</sub> × Log( $\Delta$ Sales <sub>it</sub> )		-9.18*** (-3.61)		-7.75*** (-2.61)
$\beta^9$ : IOS × DeDummy <sub>it</sub> × Log( $\Delta$ Sales <sub>it</sub> )		-0.47** (-2.15)		-0.51** (-1.91)
<b>Standalone Variables (Variables without Interaction)</b>				
$\beta^{10}$ : NCB			-0.17 (-1.60)	-0.24** (-2.16)
$\beta^{11}$ : ANMC			0.31** (2.20)	0.32** (2.30)
$\beta^{12}$ : OMC			0.30*** (8.55)	0.29*** (7.97)
$\beta^{13}$ : NOMC			-0.08 (-1.35)	-0.07 (-1.19)
$\beta^{14}$ : BC			0.002 (0.20)	0.02 (1.18)
$\beta^{15}$ : EG				0.002 (0.01)
$\beta^{16}$ : IOS				0.004 (0.20)
<b>Wald Chi2 (16)</b>	453.24 (0.00)	483.44 (0.00)	622.81 (0.00)	648.76 (0.00)

## Conclusion

This study confirmed that OC<sub>it</sub> behaves anti-sticky. Sales increased by one rupee, the OC<sub>it</sub> increased by Rs. 0.23 and OC<sub>it</sub> decreased by about rupees 1.25 for a one rupees decrease in sales. This result confirmed the Hypothesis 3. It shows that operating costs behave asymmetrically.

OC insists on being anti-sticky in this study. Additionally, ANMC and OMC found to increase cost stickiness. OC behavior remains stickiness, either before or after adding the independent and control variables. Whereas, BC found to behave cost anti-stickiness. Further, EG and IOS are found helpful to increase cost stickiness.

This study also contributes to the existing literature by examining whether costs in the Pakistani business environment are shown asymmetrical behavior. In addition, research was conducted to investigate sticky behavior of operation cost at multiple levels. First, it examines whether the cost-effectiveness behavior is dependent on changes in the sales of the most actively traded Pakistani's companies listed in 2014 to 2018. The results show that

investigated operational costs (OC) behave asymmetric. It means that they increase/decrease more than they decrease/increase when the demand changes by an appropriate amount.

This study expands the literature on costs by providing new evidence from emerging markets and examining the impact of corporate governance (CG). In addition, Average numbers of members in committees have been found to influence managers' decisions and therefore cost behavior change. Like, OMC has also been helpful in increasing the cost stickiness behavior. The results showed that smaller panels increase cost stickiness. However, Board Compensation decreases cost stickiness. Moreover, Economic growth and institutional ownership, as a control variable, was found to raise the OC stickiness. Second, this study examines and compares the asymmetric behavior of cost before and after implementation of control variables. The reason for this comparison is to show how CG (e.g. NCB, ANMC, OMC, NOMC and BC) affect OC behavior while in economic growth and institutional ownership. OC behave stickiness after control variables. The assumption that corporate governance mechanisms are effective. It can influence managers' decisions as well as cost behavior. The general assumption is that lack of costs is the dominant cost behavior in developing and developed countries, and that the central government can influence managers' decisions to adjust resources when activities are changed.

The results of the study have several implications. This research is useful for researchers as well as for practitioners in Pakistan. Firstly, this study examines the asymmetric OC behavior of Pakistani firms. It will also contribute to literature for researchers of developing economies like Pakistan. Apart from that, this research is one of those studies that combine the perspective of management and financial accounting. It encourages researchers to apply this multidisciplinary approach in exploring numerous exploration topics. Secondly, it is more useful when a practitioner is to take consideration of fixed costs where he estimates the change in volume of variable cost corresponding to activity changes. It also helps to avoid underestimating or overestimating the responsiveness of costs to rises or declines in production. It can help Security Exchange Commission of Pakistan (SECP) as well as production management to make accurate decisions based on accurate cost analysis.

One of the most important implications is that auditors can carefully evaluate various cost estimation. Cost accounting, management accounting techniques such as standard costing, cost planning, Activity Based Cost (ABC), Cost-Volume-Profit (CVP) and budgeting can easily be handled by the auditor. It is important because the slope of cost is not always constant in traditional cost models.

For CG regulators, they need to consider how deliberate management interventions can lead to asymmetric behavior in costs and how CG can mitigate such interventions. You should consider smaller committee size, only one overlap members and institutional ownership as variables that can reduce under-costs. For investors and analysts, they need to consider asymmetric cost behavior when making sales forecasts.

One limitation is that this study has a small sample as compared to related studies. Additionally, only five board committees' characteristics were examined in this study, although several other characteristics still need to be investigated. Furthermore, this study examines the possible effect of CG with

OC. Although there are fixed costs included in variable cost, need to be examined carefully.

The main limitation of this study is that when the results may be due to other circumstances other than the CG application, the comparative method is used to examine the impact of CG on cost behavior. Moreover, the CG variables were not examined in this study except by the board committee's characteristics. However, during the investigation, we did not find any data on the level of regulatory compliance in Pakistani's emerging markets.

Future research may consider the deployment of inherent cost rather than variable cost. CG is predictable to impact the cost behavior of Pakistani companies. In addition, it is valuable to find out the effects of cost reduction behavior. Either sticky behavior affects the corporate value of listed companies in Pakistan or not. Furthermore, in the field of cost accounting, studying the cost implications of standard costing tools can add value to current research.

The relationship between cost behavior and other CG mechanisms, such as the characteristics of the audit committee, the types of auditors, and various variable ownership structures can be examined. Further research is required to examine the relationship between management incentives and disproportionate cost behavior. In addition, potential authors should exercise caution to prevent prices or sales data or both from being tampered with, which may lead to misleading results when determining price stability. You need to look into these issues and check actual cost and sales data before tampering. Further research is also needed to examine the relationship between CEO compensation and asymmetric cost behavior. In addition overlapped members in committees holding positions of chairman in one of the committees or both can also identify. Finally, future research might suggest a solution in which we find most of the previous research to either suggest asymmetric cost behavior or the relationship between this behavior and other accounting problems.

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