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Impact of Capital Structure on Firm Performance: Moderating role of Corporate Governance

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Abstract:

Purpose *– The aim of this study is to empirically test the impact of capital structure on firm performance and to investigate the moderating role of corporate governance.*

Design/methodology/approach *– This study examines the capital structure impact on firm performance of non financial companies listed at Karachi Stock Exchange. 100 companies were taken as sample of the study. Panel data was analyzed by regression analysis, fixed-effects model is considered as most appropriate technique for extracting results.*

Findings *– The study disclosed that capital structure has significant and positive impact on firm performance and corporate governance act as moderator and enhances the firm's performance.*

Research limitations/implications *– Due to limited access to data of the non financial companies, and non availability of their share prices and annual reports we were unable to increase our sample size and to get more reliable results. Deliberate application of corporate governance is necessary, for betterment of the management to mitigate* *the opportunistic behavior and to increase the firm performance. So managers must focus on this aspect.*

Originality *– The findings are important because no previous studies have empirically tested the moderating role of corporate governance on this relationship. This work contributes and provide basis for testing corporate governance as moderator.*

Key words: capital structure, firm performance, corporate governance index, non financial firms

1. INTRODUCTION

The organizations' survival relies on upon their capital structure. Capital structure is the blend of obligation (debt) and value (equity) that used to back the organization operations. The publication of Modigliani and Miller (M&M) article in 1958 has made capital structure a major topic of discussion of financial economics. They expressed that market estimation of a firm is determined by earning ability of its genuine resources (real assets), not by selection of capital mix. If some other conditions (bankruptcy costs, absence of taxes and other imperfections which exist in the real world) are satisfied.

After publishing of capital structure irrelevancy paper by M&M much focus has been laid upon the appropriateness of those “other assumptions. The next step in history of debt and equity structure of a firm was introduction of capital structure theory by M&M (1963), which proposed that in presence of tax policy, interest installment is expense deductible. By disposal of this proposition they demonstrated that the level of leverage in capital structure has impact on organization value. Jensen and Meckling (1976) also argued that the debt level in a company's capital structure has effect on agency conflicts. These agency conflicts between agents (managers) and shareholder (principal), play vital role, by encouraging or constraining the agents to act more in the interest of the principal. Thus it can alter agent's decision making.

The separation of finance (ownership) and control (agent) in firm generates conflict of interests. Due to these conflicts agents work inefficiently, choosing projects that suit to their own interests or failing to maximize worth of shareholder. This opportunistic behavior is also controlled by better corporate governance. Corporate governance is a mean of governing activities of the firms, not only for the well-being of the shareholder but also for the stakeholder that eventually escorts to better financial performance. A mechanism is provided by the corporate governance to accomplish the organization's goals; to cover every aspect of management, from inside control to planning, execution of these plans to proper disclosure. Corporate governance plays a vital role to mitigate and moderate the organization issues. Additionally, it helps the origination of exceptional expertise needed in key choices and limit problems of asymmetric information.

Some studies Fluck (1998); Zhang (1998); Zingales (2000); Myers (2000); Heinrich (2000); Bhagat and Jefferis, (2002); Berger and Patti (2003); Brailsford et al. (2004); Mahrt-Smith (2005) showed that topic of capital structure is taking the attention of researchers. Researchers tried to examine whether it's essential to utilize the corporate governance as a variable that illuminate the relationship between firm performance and capital structure. Some researchers (O'Brien, 2003; Robinson and Mcdougall, 2001) said that the preceding paradoxical reported studies may be because of differences in methodologies used. Most previous studies have investigated only the direct effect of capital structure on firm performance.

La Rocca (2007) stated in his paper that the controversial results on this point can be inferable from absence of attention, to the relation between capital structure and corporate governance variables. In fact, capital structure stands for a corporate governance tool as others. The discussion must take the moderating role of corporate governance directly into account, on the relation between capital structure and firm's performance.

Capital structure and its impact on firm performance was a topic of interest for many researchers in developed countries. Different empirical findings motivated the researchers to work on this area of research. Capital structure and its impact on firm performance is also a topic of interest for developing countries as well, different dimensions of firm performance have been used in these studies. But a few researchers in developing countries specifically in Pakistan have used the Tobin's Q as a firm performance measure. On the other hand corporate governance and its relationship with firm performance has been empirically tested by many researchers in developing and developed countries but up to knowledge of my extent no one has tested its moderating role on the relation of capital structure and firm performance in Pakistan. We also adopted an index of corporate governance to measure it, which is composite measure of corporate governance and help to measure it in most appropriate manner. Also a large number of firms have been chosen as sample of study, which is also an important addition in generalization of results because in previous studies limited numbers of firms were used as sample of the study. These are the reasons that motivate us to select this topic.

The rest of the paper is structured as follows. Section 2 contains review of pertinent literature. Section 3 illustrates the data and methodology. Section 4 includes empirical results and discussion. Section 5 contains conclusion.

2 LITERATURE REVIEW

2.1 capital structure and Firm performance

Over a half century the study of capital structure and its effects on firm performance is important for managers and researchers. A noteworthy issue faced by finance managers is not only to gather funds but also the better utilization of these funds that will lead to the maximum return of the firms. In most of the cases the financing of businesses is same, so what are the reasons that some businesses failed while others are succeeded. It clearly shows that there is something beyond financial success of business besides extraordinary idea and good geographic vicinity (Madan, 2007). Financial restructuring in South Asian countries and particularly in Pakistan had significant impact on working of financial markets in these countries (Raza, 2011). These things make study of capital structure more striking in different context.

According to Riahi-Belkaoui (2003) stakeholders define, performance of the firm as "total wealth generated by the organization before sharing to different partners", as opposed to the accounting benefits distributed to the shareholders. Deegan (2004) states that in previous studies Firm performance is based on firm's value. Share prices respond to the information furnished by the accounting frameworks and reproduce the information employed by the capital markets. Capital markets effectiveness leads to the investors trust and confidence, which is a key driver of financial stability, economic growth and success. Consequently increased investors trust and confidence result in higher share prices. Moreover, share prices symbolize a standard gauge of value of the firm, while share value symbolizes a standard gauge of performance of the firm.

Javed et al. (2014) studied the interrelationship among firm value, capital structure and governance. A positive and significant relationship between capital structure and firm value was found, while in case of governance only board independence and ownership concentration measures showed positive and significant relation with firm value. In case of third relationship which is impact of leverage on corporate governance measures no significant result was found. Salim and Yadav (2012) reported that ROE, ROA and EPS have negative relationship with STD, LTD and total debt. Tobin's Q reports significantly positive relationship with LTD, STD. While it has significant negative relationship with total debt. The impact of capital structure on performance of 15 Australian financial firms indicate that at relatively low level of debt an increase in debt will increase the profit efficiency of the firms (Skolpjak, 2012).

Antwi & Mills (2012) reported that equity capital is also a relevant part of capital structure in Ghana and relevant to firm value. While long-term debt has major contribution in firm value determination. A specific portion of debt in capital mix is helpful in corporate efficiency. But high level of debt is irrational it ultimately increases the financial risk of the firm (Liu & Chen ,2011).

Ma (2011) observed the capital structure and operating performance relation and argued that relation between operating performance and debt financing is higher than its relation with equity financing. Saeedi and mehmoodi (2011) observed that firm's performance, measured by EPS and Tobin's Q, is positively related with the capital structure, while they got a negative relation between capital structure and ROA. Hui (2010) argued that asset-liability ratio has major role in decision of capital structure and earning management. A significant impact of capital structure was also found in this study.

A negative relationship was found between debt and profitability measured by return on assets. SMEs are focused on debt financing, rather than equity financing. Due to this reason their bankruptcy cost is high, so a high demand of return from investor is also recorded, that leads to high cost of capital and lower SMEs performance (Othman et al.,2009). Firm's performance is very slightly or almost near to nil influenced by capital structure choice decisions in Egypt (Ebaid, 2009).

In South Africa and Ghana, the functioning of small and medium enterprises, influenced by debt policy (capital structure) and proposed that long term debt has an inverse relation with SMEs' performance (Joshau, 2007) . Demsetz and Villalonga (2001) taken leverage and Tobin's Q as endogenous variables. There were two way casual relationships between these variables. It showed that leverage affects firm performance which in turn affects leverage.

Campello (2006) argued using debt in capital structure can increase the firm performance or decreases the firm performance. Results depict that firms which are less focus on debt has a large market share gains as compared to other firms but when these firms more focus on debt then their performance in term of sales decreases.

2.2 Corporate governance and firm performance

Governance Corporate governance becomes an important factor to consider due to increasing demand of financial and other resources across the countries. It becomes difficult for the firms to get finance and maintain their operations and liquidity conditions. It is very tough for the firms operating in less developed markets where financial institutions are not developed (McGee, 2009). Corporate governance is concerned not only internal management, but also other stakeholders, suppliers and customers of the firm as well. Corporate governance is composite of custom, policies, process and law that not only dictate the publically listed firms of the countries but also helps to maximize the shareholder wealth and to achieve firm's objective (Tabassum, 2012).

Corporate governance play pivotal role in the growth of the economy especially in the context of developing economies like Pakistan (Ghani and Ashraf ,2005).Firms having greater growth opportunities, needs for external financing and more strenuous cash flow rights, disclose more and perform higher quality of governance. In markets more value is given to those firms that have higher transparency and better governance (Durnev and Kim, 2005).

Latif et al. (2013) reported significant impact of corporate governance on firm performance. They examined the impact of corporate governance mechanisms on firm performance in sugar industry of Pakistan. Sami, Wang et al., (2011) found composite measures of corporate governance were significantly related to the firm performance in China. Bauer et al. (2008) argued that firms in Japan having more governance provisions perform better than firms having less governance provisions. Financial disclosure, remuneration and shareholder rights are the important provisions that have impact on firm performance while market for control, corporate behavior and board accountability has limited impact.

Javed and Iqbal (2007) reported significant relation between corporate governance level of the firm and firm performance. Results of the study also demonstrate that decision making process of listed firms is potentially improved by the code of corporate governance.

Drobetz et al. (2004) constructed a broad corporate governance rating (CGR) of German public firms. A strong positive relation was reported between firm level governance and firm valuation. 14 emerging countries companies' data was studied by Klapper and Love (2004) and found firms with average lower governance level also have poor legal system. Better governance results into higher valuation and better operating performance of the firms, measured by Tobin's Q and ROA. Better protection of minority shareholder's results into more valuation of the firm's assets (La Porta et al. 2002)

Corporate governance is strongly correlated with stock returns during the 1990s in the US. Results clearly depicts that higher equity returns were documented for the firms having good governance and those firms were more valued and better performance is shown by their accounting statements (Gompers et al.,2001). Firms could improve their share value and also reduces the cost of equity capital by improving their corporate governance (Black, 2001).

Sheilfer nad Vishny (1997) did a survey of corporate governance and identify a number of factors that defined corporate governance structure. Agency problem and separation of finance (ownership) and management are the most important factors, governance deals with. Several broad approaches of corporate governance were also the part of their survey, like investors legal protection, concentrated ownership benefits.

Since the last decade of twentieth century, corporate governance has been emerged as central policy matter in Pakistan in the context of economic development.

2.3 Capital structure and Corporate Governance

The connection between corporate governance and capital structure becomes significant when analyzing its role in value creation and distribution (Bhagat and Jeffries, 2002). Capital structure relation with practices and mechanisms of corporate governance, result into shielding a well organized value generation process, by setting up the ways in which later allocation of generated value is made (Zingales, 1998). A change in debt and equity mix affects the governance activities of the firm and changes the structure of managerial control and incentives. This different mix of capital structure generates different categories of the investors. Those investors influence the governance decisions with different strength. Managers have preferences to define the capital mix which also define how one of these categories will prevail. More importantly, governance efficiency of the firm can considerably increased by selection of a specific design of equity and debt contracts.

Although the corporate governance structure of Pakistani companies is not very well developed, but it definitely has a strong impact on the organizational structure of companies to some extent. Profitability, board composition, ownership concentration, and CEO duality are negatively related to debt ratio and is statistically significant. A positive and significant relation was reported between Board size and debt ratio; while size, director remuneration and Tangibility of assets depicted positive, but insignificant relationship with the debt ratio (Masnoon and Rauf, 2013).

Nyonna (2012) found significant but negative association leverage and managerial ownership. This result is in line with that documented for public companies by (Chen and Steiner, 1999).

Jjiraporn et al. (2012) argued that governance quality has a material influence on vital corporate decisions such as leverage choices. The study grounded in agency theory. Governance quality is measured by a broad based comprehensive metric developed by Institutional Shareholder Services (ISS). This study explores the robust inverse relation between capital structure and quality of governance. This depicted that firms showing poor governance were significantly more leveraged. It appears that capital structure is proxy for corporate governance in increasing the agency conflicts. Results of the study were important as they Haque et al. (2011) reported statistically significant inverse relationship between corporate governance quality and the total as well as long-term debt ratios. The agency theory proposes that better corporate governance will decrease agency costs and develop the investor confidence. This will lead to increase the firm ability to get access to equity finance, reduce dependence on debt financing. On the other hand, the controlling shareholders of poorly governed firms are likely to prefer debt, in order to retain absolute ownership and control rights. Result of the study supported the agency theory. Godfred and Anastacia (2009) reported positive and significant influence of corporate governance and ownership structure on capital structure of Ghanian companies. Joher et al. (2006) reported negative association between leverage and managerial ownership.

In today's world, where competition is prevailing everywhere, managers are forced to take on capital structure choices those are consistent with the objective of shareholder's wealth maximization. If they unable to achieve this goal, they probably will undertake the risk of being disconnected from their jobs. Literature of corporate governance proposes to sort out a system that supports the performance of agents (management), help the agents to make financial decisions that ensure optimal capital structure. So for as the performance of the firms is concerned the capital structure has significant impact on it and different researchers have found out different empirical results.

3. RESEARCH METHODOLOGY

3.1 Data and Sampling Technique

The population of this study consisted of 396 non financial firms listed on KSE, while the sample of the study is comprised of 100 firms. Five years data of these firms is analyzed which is collected from annual reports of the company, company's web sites, KSE websites and financial statement analysis of these companies provided by State bank of Pakistan. We have selected non financial companies because financial companies are regulated by certain regulatory bodies they have to follow all the rules and regulations so there are no differences in governance structure of those firms and to measure the changes in governance level volatility is required in sample units. Companies having complete data relevant to required variables were sample of the study.

Purposive sampling technique was used to collect the data. Purposive sampling technique is non-probability sampling technique; according to this sampling technique data for a specific purpose is gathered and specific units are selected that fulfill the requirement of the purpose. We initially examined, whether every selected organization has remained listed during research period, and not consolidated /procured/delisted/ renamed.

Following this introductory examination, we began to gather the data of the research variables. State Bank of Pakistan (SBP) issued periodicals that carry the data of capital structure, of about all the organizations, so it was most accessible data. On the other hand to gather data about the corporate governance measures, entire yearly reports were needed. Not all the recorded organizations have their official sites and the individuals who have their sites are not tie to keep their yearly reports for more than past three years as given by Securities and Exchange Commission of Pakistan (SECP). An organization not having volatile governance structure (amid study period) was disqualified to be part of sample on the grounds, that principle target of the research is to investigate the moderating role of corporate governance. While, for some organizations prices of shares were not accessible due to e.g. lack of trading. At the end 100 companies were included as the sample of this study.

List of companies selected for analysis and their name and sector detail are given in appendix A & B.

3.2 Variables

Capital structure, firm performance and corporate governance are variables of this study. Operational definition of the variables is given below.

Table 1: Operational Definitions of Variables Included in the Study

Variable Name	Symbol Used	Operational Definition
Capital structure		
Total debt ratio	TDR	Total debt to total assets ratio
Long term debt ratio	LTDR	Long term debt to total assets ratio
Firm Performance		
Tobin's Q	TQ	(Market value of equity+ book value of debt) / book value of assets)
Corporate governance Index	CGI	Corporate governance Index

3.3. Methodology

Corporate governance index is used to measure the quality of the corporate governance. We used the corporate governance index developed by Ananchotikul (2006). To bypass the issues of survey-based governance rating, we utilize just openly accessible data of each organization, in the soul as Cheung et al. (2005) and Ananchotikul (2006) utilized in their studies. Regression analysis is used to test the hypothesis. During interaction analysis multiple regressions is used. The econometric models of the study and hypothesis are given below.

$\mathbf{H_1}$: Impact of Capital Structure on Firm performance

$TQ_{it} = \beta_0 + \beta_1 TDR_{it} + \square_{it}$

$TQ_{it} = \beta_0 + \beta_1 LTDR_{it} + \square_{it}$

$\mathbf{H_2}$: Corporate governance moderate the relation between capital structure and firm

(1) $TQ_{it} = \beta_0 + \beta_1 TDR_{it} + \square_{it}$

$TQ_{it} = \beta_0 + \beta_1 TDR_{it} + \beta_2 CGI_{it} + \square_{it}$

$TQ_{it} = \beta_0 + \beta_1 TDR_{it} + \beta_2 CGI_{it} + \beta_3 TDR*CGI_{it} + \square_{it}$

(2) $TQ_{it} = \beta_0 + \beta_1 LTDR_{it} + \square_{it}$

$TQ_{it} = \beta_0 + \beta_1 LTDR_{it} + \beta_2 CGI_{it} + \square_{it}$

$TQ_{it} = \beta_0 + \beta_1 LTDR_{it} + \beta_2 CGI_{it} + \beta_3 LTDR*CGI_{it} + \square_{it}$

4. EMPIRICAL RESULTS AND DISCUSSION

Descriptive Analysis

Table 2: Descriptive Analysis

	TQ	TDR	LTDR	CGI1
Mean	0.936143	0.523634	0.142713	0.769557
Median	0.601000	0.541360	0.092037	0.777953
Maximum	12.10560	0.990006	0.824313	0.868619
Minimum	0.012177	0.005920	0.000000	0.411172
Std. Dev.	1.183495	0.219487	0.152088	0.046995

Table 2 shows the descriptive statistics of the variables of study. The mean value of the total debt ratio and long term debt ratio of the sample firms are 52.36 percent and 14.27 percent. These results indicate that in Pakistan companies are 52 percent financed by debt while only 14 percent of which is contributed by long term debt. Theses average values of total debt ratio showed that Pakistani firms are using comparatively more debt in their capital structure, in comparison to firms of G-7 countries as reported by Rajan and Zingales (1995) and comparative to developing countries. Booth et al. (2001) indicated that Pakistani firms use more debt in their capital structure comparatively firms in UK, Brazil, Canada, Jordan, USA, Malaysia, Turkey, Mexico, Thailand and Zimbabwe and less than firms in Germany, Italy, France, Japan , South Korea and India. Average value of Long term debt ratio shows that Pakistani firms use less long term debt comparative to G-7 countries. Demirguc-Kunt and Maksimovic (1998) found the similar results in their studies that generally lower amounts of long-term debts are used by developing countries. The extensive reliance on short term debt by Pakistani listed firms rather than long term debt could be a result of the absence of an established public debt market, so the only long-term source of financing available to Pakistani listed firms is direct borrowing from banks, but this source is difficult to attained in light of very restrictive debt covenants faced by these firms. The Tobin's Q ratio compares the market value of a company against the company's assets. A higher ratio indicates that the market value of the company is greater than that of its assets while a ratio of less than one indicates that the market value is less than the value of the company's assets. Average value of Tobin's Q is 0.9361 that shows the market valuation of the firm is not very strong. Because it's less than 1. Mean of Corporate Governance index is 0.77.

Correlation Analysis

Table 3: Correlation Analysis

	TDR	LTDR	TQ	CGI
TDR	**1**	**.702****	**.680****	**.484****
LTDR		**1**	**.808****	**.335****
TQ			**1**	**.282****
CGI				**1**

Notes: Pearson correlation coefficient (**= Significant at 1%, *= significant at 5 %)

Pearson's co-efficient of correlation is used to examine the relationship among the variables. It's most reliable technique to determine how much two variables are related to each other. Results shown in above table 3 depicts that total debt ratio is positively and significantly correlated to the Tobin's Q (Q) with a value of 0.680. Long term debt ratio also shows positive and significant correlation of 0.808 with Tobin's Q. CGI and Tobin's Q are also positively and significantly correlated with value of 0.282. Total debt and long term debt ratios are also positively and significantly correlated to the CGI with value of 0.484 and 0.335 respectively. These values of independent variable show no multicollinearity.

Regression Analysis

Impact of Capital Structure on firm performance

Table 4: Regression Analysis

	TQ	TQ
TDR	4.369295***	
LTDR		7.753982***
R-squared	0.712596	912576
Adj. R-square	0.640565	0.890665
St. Error of Regression	0.256463	0.179459
F-statistic	9.892909	41.64954;

(***= Significant at 1%, **= significant at 5 %, * =significant at 10 %)

Regression results in table 3 indicate that there is significant and positive relationship exists between total debt ratio and Tobin's Q and also a significant and positive relationship exists between long term debt ratio and Tobin's Q. The value of adjusted R^2 0.640565 and 0.890665 shows a good statistical health of the model. The high value of R- square and adjusted R-square indicates that capital structure (i.e. both measures long term debt ratio and total debt ratio) explicate the Tobin's Q.

Results of this study that positive and significant relationship exist between capital structure and firm performance are in line with the results of previous studies, Hadlock and James (2002); Ghosh et al. (2000); Khatab et al. (2011); O'Connelly et al. (2012) ; Salim ad Yadav (2012); Javed et al., 2014). While contaray to some studies Gleason et al. (2000); Hassan et al. (2014);,Zeitun & Tian (2007) and Sadeghian et al. (2012).

Interaction analysis

Table 5: Interaction Analysis

Variables	adjR2	ΔR2	ΔF	B
(A)Total debt ratio(TDR)	.461	.461	427.686	.712***
CGI	.463	.002	215.868	.123***
Moderator1(zTDR*zCGI)	.536	.073	193.314	.330***
(B)				
Long term debt ratio(LTDR)	**.825**	**.825**	**2352.813**	**.818*****
CGI	.826	.001	1178.469	.080***
Moderator2(zLTDR*zCGI)	.864	.039	1053.927	.229***

****p<0.001, **p<.01, *p<.05, °p < .10*
ΔR2 Net variance explained by that particular variable
β Standardized β

Results of the above interaction analysis are significant and positive which depict that corporate governance moderate the relation between capital structure and firm performance. Hsu et al. (2012) examined the moderating and mediating effect of corporate governance on firm performance. No moderation was found in their study while mediation was significant. So our results are unique and contradictory to previous study, because in our results moderation is significant and no previous study has empirically tested this relation before.

5. CONCLUSION

This empirical study was conducted to examine the impact of capital structure on firm performance of non-financial firms. Other objective of the study was to examine the moderating role of corporate governance on firm performance.

Positive and significant moderating role of corporate governance found in this study, corporate governance was significant in results which demonstrate that corporate governance is an important part for the better performance of the Pakistani firms. Corporate governance act as enhancer on this relation which showed that it play significant role in the firms' performance. This contradicts the common view point that good governance values are not contributing too much in firm value and performance. Companies only follow the corporate governance regulations to fulfill the regulation requirements not for the improvement of the company performance particularly.

This study has provided a base by illuminating the significant links between moderating role of corporate governance on relation between capital structure and firm performance.

These results are important in two perspectives, empirically it provides base for the researchers to find the moderating role of corporate governance on performance of the firm, also the use of index provides more comprehensive measure that need to be used in further studies.

Practical implementation of corporate governance will help the managers, to get access to the financial markets, to get capital at low cost and lowers the transaction cost, it reduces the risk of the firm thus increases the investors' confidence as well. Agency problems (conflict of interest) will be tackled by appropriate application of the corporate governance. Managers will be fully compensated, due to absence of conflicts. Mangers concentrate on shareholder's wealth maximization; ultimately firm performance will get better.

Future researcher should include large number of cross section (companies) in their study to get better results that are more generalizable. Researcher has used only single measure of firm performance future researcher should include other proxy measures of firm performance to get more comprehensive view. More proxy measure of capital structure can also be used to determine its impact.

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APPENDIX-A

Table 4.2: Selection of companies for Data Analysis

Sr.	Sector	X1	X2	X3	X4	X5
1	Automobile and Parts	13	X	1	1	11
2	Beverages	3	1	0	1	1
3	Chemicals	34	4	3	13	15
4	Construction and Materials (Cement)	33	7	8	10	8
5	Electricity	17	3	5	2	7
6	Electronic and Electrical Goods	3	1	1	1	0
7	Engineering	9	X	2	2	5
8	Fixed Line Telecommunication	5	1	1	X	3
9	Food Producers	47	10	10	20	7
10	Forestry (Paper and Board)	3	1	1	1	0
11	General Industrials	11	X	4	5	4
12	Health Care Equipment and Services	1	X	X	1	0
13	Household Goods	9	3	3	3	0
14	Industrial Metals and Mining	8	2	2	2	2
15	Industrial Transportation	3	X	1	1	1
16	Leisure Goods (Miscellaneous)	1	1	0	0	0
17	Media	2	X	0	0	0
18	Multiutilities (Gas and Water)	2	X	0	0	2
19	Oil and Gas	14	X	1	2	11
20	Personal Goods (Textile)	141	77	14	35	15
21	Pharma and Biotech	9	X	X	3	6
22	Real Estate Investment And Services	2	2	0	0	0
23	Software and Computer Services	1	0	0	0	1
24	Support Services	1	X	0	1	0
25	Technology Hardware and Equipment	2	X	0	2	0
26	Tobacco	3	2	0	0	1
27	Travel and Leisure	5	X	X	5	0
Total		382	111	63	108	100

* Description of symbols is given are as follows:
X1: Total companies listed under each sector
X2: Companies for which financial statements or annual reports were not available
X3: Companies for Which Data was same during whole study period
X4: Companies for which share prices were not available
X5: Companies included in analysis

APPENDIX-B

List of Companies Included in the Sample

Symbol	Company name
ATRL	Attock Refinary ltd
BYCO	Byco. Co
APL	Attock Petroleum ltd
NRL	National Refinary limited
PPL	Pak Petroleum ltd
POL	Pakistan oil Fields ltd
PRL	Pakistan Refinary ltd
PSO	PSO co. ltd
SHELL	Shell Pak ltd
BPL	Burshane LPG Pakistan
JPGL	Japan Power Generation
KEL	Kohinoor Enrgy Limited
KAPCO	Kot Addu power
MGCL	Mari Gas Company limited
NCPL	Nishat Chun power
OGDCL	Oil and Gas Development co
SEL	Sitara Energy limited
SEPCO	Southren Electric Power co
HUBC	Hub Power co
ACPL	Attock Cement
BGL	Bestway Cement limited
LPCL	Lafarge Pakistan Cement
DGK	DGK Cement
LUCK	Lucky Cement
MPLC	Maple Leaf Cement
AGIL	AgriAutos Industries limited
AGTL	Al ghazi Tractor limited
ATBL	Atlas Battery limited
ATLH	Atlas Honda
EXIDE	Exide Pakistan
BWHL	Baluchistan Wheels
GTYR	General Tyre and Rubber co
GHNI	Ghandhara Industries lt

GAIL	Ghani Automobiles
HINO	Hinopak Motors
ATLH	Atlas Honda cars
INDU	Indus Motors co
MIT	Millat Tracto
PSMC	Pak Suzuki
ABOT	Abbot Laboartories pak
BAPL	Bawanyair Product
BRGR	Berger Paints
BIFO	Biafo Industries
BUXL	Buxly Paints ltd
COLG	Colgate Private Pak ltd
DAWH	Dawood Hecules corp. ltd
DOL	Descon Oxychem
DYNO	Dynea Pak
ENGRO	Engro Polymer
FFBL	Fauji Fertilizer bin Qasim
FFC	Fauji Fertilizer co
FEROZ	Ferozsons lab. Ltd
GGL	Ghani Gases ltd
GLAXO	Glaxosmithkline
ICI	ICI Pakistan
ICL	Ittehad Chem ltd
LINDE	Linde Pak ltd
LOTPTA	Lotte Pta
SAPL	Sanofi Aventis ltd
SEARL	Searl Pakistan
SITC	Sitara Chemical
WAHN	Wah-Nobel Chemical
WYETH	Wyeth Pakistan
BATA	Bata Pak
CSAP	Crescent Steel & allied p
DADX	Dadex Etrnit
ECOP	Ecopack ltd
EMCOP	Emco Pak
HSPI	Huffaz Industries
INIL	International Industries
KSB	KSB Pumps
TPF	Tri Pack Films
PTC	Pak Tobacco co
SCL	Sheild Corp co
ZIL	ZIL Limited
NAFT	National Foods Limited
Mitchells	Mitchells Fruits
NESTLE	Netle Pak ltd
UPFL	Unilever Pak FOODS
RAHF	Rahfan Maiz
SHEZ	Shezan Int

NOON	Noon Pakistan
NETSOL	Netsol Tech
PICT	Pak international Container
PTCL	Pak Tele Communication
TELE	Telecard limited
WCCLTFC	World call
ANL	Azgard nine limited
BCML	Babri Coton Mills
AHTML	Ahmad Hassan Textile
CFL	Crescent Fibers
AWTM	Allwasaya Txtiles
DLL	Dawood Laurencepur ltd
BFL	Bilal Fibers ltd
GTM	Gul Ahmed Textiles ltd
DTM	Din Textiles Mills limited
IDM	Indus Dying and manufacturing
NML	Nishat Mills Limited
SFL	SaPhire Fibers Limited
STML	Saphire Textiles Limited