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Financial Reforms and Dynamics of Capital Structure Choice: A Case of Publically Listed Firms of Pakistan

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Abstract

The present paper is an attempt to integrate financial reforms and corporate finance in a dynamic setup. Determinants of capital structure choice are analyzed dynamically using panel data of 374 non-financial firms listed on Karachi Stock Exchange (KSE) of Pakistan for the period 1988-2008. To capture the dynamic nature of capital structure choice the Arellano-Bond Dynamic Panel-Data Estimation technique is used to avoid the problems of endogeneity, heteroscedasticity and autocorrelation which arise due to dynamic panel data estimation.

Reforms, it is found, has a negative impact on leverage of the firm suggesting that with liberalization and strengthening of institutions, there is a massive decrease in leverage; indicating that firms shifted from debt to equity market once the financial constraints are eased out. Lagged leverage, it is found, affects leverage positively, substantiating the fact that capital structure requires costs for adjustment; hence the adjustment process is delayed. The results furthers confirms the use of tangible assets as collateral; tangibility is positively correlated with Leverage which is contrary to Pecking Order Hypothesis but well explained by the trade-off theory of capital structure choice. However, the results substantiate Pecking order Hypothesis for profitability, size and growth. Profitability, size and growth, as espoused by pecking order hypothesis, are negatively correlated with leverage. That is highly profitable firms use equity financing instead of debt financing. Similar is the case with big firms and firms with high growth opportunities. As firms size increase its leverage decreases. Earning volatility confirms the trade off theory of capital structure choice. Moreover, the results reveal that firms owned by government are financed heavily through debt using banks loans as their primary instrument for financing their projects. In addition to these findings, the results suggest that the choice of capital structure varies across different industries.

Keywords: Capital Structure Choice, Financial Reforms

Introduction

The debate on capital structure started with the publication of "Irrelevance Theory" by (Modigliani and Miller, 1958). Irrelevance theory proposes that capital structure choice has nothing to do with a firm's value under certain assumptions. In an attempt to find if there is any optimal capital structure which will maximize a firm's value many new variables such as taxes (Modigliani and Miller, 1963; Miller, 1977) bankruptcy costs (Stiglitz, 1972; Titman, 1984), agency costs (Jensen and Meckling, 1976; Myers, 1977) and information asymmetry (Myers and Majluf, 1984), were incorporated in the original model proposed by Miller and Modigliani.

The inclusion of these new determinants of capital structure choices over time lead to new conclusions. For instance the determination of the optimal capital structure should take into consideration a trade-off between benefits and costs derived from debts. This analysis of trade-off between costs and benefits derived from debts paved the way for Trade-Off Theory.

According to (Myers and Majluf, 1984) firm follows a hierarchy in financing projects. They proposed that firms first choose to finance their projects by their retained earnings followed by debt and, as a last option, turn to equity market. This preferential hierarchy of sources of finances made the basis for the Pecking Order Theory.

Trade-off theory and the Pecking Order theory dominate the debate about capital structure choice. The assumptions of these theories are rigorously tested by researchers. The most important of these empirical studies are the works of (Titman and Wessels, 1988; and of Rajan and Zingales, 1995).

In an excellent survey by (Martin et al., 2005) the authors claim that while assessing the determinants of capital structures, cross sectional analysis and orthodox methods of multiple regression analysis were applied in most of the studies. Thus the dynamic adjustment of the capital structure was altogether ignored. The studies that do have employed dynamic estimation techniques also suffer from limitations according to Gaud et al. 2005. Specifically quoting the works of (Taggart, 1977; Marsh 1982; and jalilvand and Harris 1984), (Gaud et al. 2005) asserts that their results may be biased, as they have used future information about leverage as a proxy of the optimal debt ratio. Furthermore, the target adjustment models lack power, as they often fail to reject target adjustment hypothesis even when financing is generated by Pecking Order Theory only.

Later on empirical studies came up with Panel Data techniques, which combine cross sections and time series observations. Panel Data estimation has the advantage to capture changing patterns across cross sections and if appropriate can handle time varying patterns. (Miguel and Pindado, 2001, Terra 2002; Gaud et al., 2005 and Martin et al., 2005) have used panel data estimation techniques to analyze the capital structure dynamics for Spanish firms, Latin American Firms, firms of Switzerland and Brazilian Public firms respectively.

Financial Reforms in Pakistan and Capital Structure Choice

The financial markets of developing countries are usually plagued by limited stock-trading

activities. In addition to this, the volume and variety of stocks traded in such markets are low with government often dominant in the financial market (Drake, 1977). These markets have generally been illiquid and repressive and only the risk-lovers in private business initiated to invest in securities (Wai and Patrick, 1973). The demand for securities is limited in developing countries (Maniatis, 1971). In Pakistan as well, pricing decisions were, in the past, heavily regulated and investors were exposed to various risks. The bond and stock markets were constrained by a defective regulatory framework, lack of liquidity, limited arbitrage, high transaction costs and poor response to various concessional and fiscal incentives. More precisely, and realistically stated, bond and equity markets were virtually non-existent (Khan and Qayum, 2005) and companies which could not offer share at above book values have faced restrictions (Mirza, 1993).

These inefficiencies of highly repressive and regulated economies forced developing countries including Pakistan to re-assess their existing policies, which initiated the search for alternatives. As a result, measures were taken to liberalize economies and to make the stock market efficient. To this end, reforms and institutional developments were initiated to remove the inefficiencies and market distortions to support the economic growth (Eatwell, 1996; Nishat, 1999; Nishat, 2008). These measures for financial liberalization and institutional development in Pakistan can broadly be categorized as:

- Privatization,
- Institutional Strengthening,
- Debt Management Reforms,
- Monetary Management Measures,
- Exchange and Payment Reforms.

These reforms were directed towards institutional development to boost economic growth in the country (Nishat, 1999; Nishat, 2008). More specifically, the financial sector in the country was restructured and opened up for competition. Incentives and concessions were given to foreign private investors under the Foreign Private Investment Act 1976, which included remittance of profits, capital appropriation and capital investment, transfer of savings on returns, retaining funds in foreign currency accounts in Pakistan and its use as collateral for local currency loans. The Karachi Stock Exchange (KSE) was linked with an international network through Reuters during this period to facilitate foreign investors. In addition to these measures, provision of an adequate legal framework and security against expropriation was also provided to foreign investors. In the second phase of reforms process, which started from 1997 and were completed in 2001, measures were taken to liberalize and strengthen the banking sector. In this direction, the cost structure of banking sector was restructured. Moreover, the partially privatized banks were fully privatized. National saving schemes were launched to integrate with financial markets. And lastly, State Bank of Pakistan (SBP) was further strengthened to play an effective role as a guardian and regulator of banking sector and to wipe out the directed credit programs.

The implementation of these reforms created a potential for research to reassess the corporate capital structure choice in Pakistan to formulate policy strategies for identifying the determinants that may be helpful to enhance the efficiency of the financial sector in the country. Nevertheless, the existing studies on capital structure choice have generally focused on influencing factors of capital structure choice per se ignoring the impact of financial reforms as a process. The present paper will try to overcome this deficiency by integrating financial liberalization and corporate finance for the emerging economy of Pakistan. To this end a financial liberalization and institutional development index is constructed through principal component method to assess the impact of these reforms on capital structure choice in Pakistan. Thus the line of research to be pursued in this study will be the analysis of the relationship between corporate finance and financial reforms in Pakistan. Moreover, the inclusion of lagged dependent variables in econometric models causes endogeneity and leads to serial correlation problems that result in biased estimates; which is the case with most of the previous empirical work done on capital structure behavior.

The implementation of these reforms created a potential for research to re-assess the capital structure choice in Pakistan to formulate policy strategies for identifying the determinants that may be helpful to enhance the efficiency of the financial sector in the country. Therefore, to address the shortcomings of the previous studies and asses the dynamics of the capital structure choice, the present paper is an attempt to investigate the determinants of capital structure in a dynamic setup using Arellano-Bond Dynamic Panel-Data Estimation technique.

Aims of the Study

A review of the previous empirical studies about the capital structure choice in developing countries reveals that the prime focus of these studies has been to identify and analyze the determinants of leverage (Mayer, 1988, 1989, and 1990; Glen and Pinto, 1994) ignoring the changes in financing behavior of firms due to financial reforms which were taking place in these countries (Green and Mutenheri, 2002). While some studies (Demirguc-Kunt and Maksimovic, 1996, 1997, and 1998; Singh and Hameed, 1992; Rajan and Zingales, 1995) have considered capital market developments but their period of study was limited and the econometric techniques were usually inappropriate to have captured the dynamics of capital structure.

Starting with 1990 the financial reforms have changed the financing behavior of firms. Therefore it becomes necessary to analyze and understand corporate finance of the firms of developing countries. More specifically a need arises to examine the dynamics of capital structure and its interaction with financial reform process (Green and Mutenheri, 2002)

Very limited attempts have been made to study and empirically determine the factors that influence of capital structure of the developing countries specifically the emerging markets of South-east Asia (Pandey et. al., 2000; Annuar and Shamsher, 1993; Ariff, 1998). One of the important studies of Booth, et al. 2001 has attempted to unveil the patterns of capital structure of 10 developing countries including Pakistan; but this study suffers from the limitation that it included only the firms listed on KSE-100 index. Further its analysis was limited to the

pre-reform period i.e. from 1980 to 1987

As for Pakistan is concerned about, limited research work has been done on the behavior of firms financing. A mentionable study by Shah and Hijazi 2004 is limited to non-financial firms listed on KSE from 1997 to 2005. Recently the work done by (Walliulah and Nishat, 2008) has attempted to address the dynamics of capital structure but this study is seriously flawed in that they have used time-series econometric techniques to analyze the dynamic behavior of capital structure. Naturally the results are biased and inconsistent. Moreover their study is confined to 2005 only. The present paper is an attempt to address all these deficiencies by using more recent data and appropriate econometric technique to capture the dynamic behavior of capital structure of non-financial firms listed on KSE from 1988 to 2008. Moreover the index used for financial reforms is constructed through principal component method[1] which is used for the first time while analyzing the capital structure choice of developing countries.

Rest of the paper is organized as follows: section 2 gives description of the data and measurement of variables. Section 3 presents the discussion on specification of the model. In section 4 discussions of the results from the models used is given and finally section 5 summarize and concludes.

Data and Measurement of Variables

The data set is based on the firms' own financial accounts. It contains corporate financial data of 374 firms that were publicly listed on Karachi Stock Exchange for the period spanning 1988 to 2008. The data used in the analysis has been extracted from the "Balance Sheet Analysis of Joint Stock Companies, listed on the Karachi Stock Exchange", State Bank of Pakistan and annual reports of Karachi Stock Exchange for the relevant years.

Descriptive Statistics and Correlation Matrix of the variables used in the paper are given as Appendix A1 in the end.

We will use industries dummies in order to control for heterogeneity among various industries[2].

Dependent and Independent Variables

Dependent Variable

Variable selection justification rests on definitions and judgment. In the present study leverage of the firm is calculated as the ratio of short term liabilities to total assets. As in Pakistan, firms are generally financed through short term debts as the average size of the firms compared to developed countries is small; thus making it pretty hard for firms to access the equity market. The use of short term financing is higher than long term financing developing countries (Booth et, al. 1999).

[1] Information on which the financial liberalization and institutional development index is based is given as appendix 2.
[2] Classification of the industries is given as appendix A2.

Explanatory Variables and research hypotheses

Hypothesis 1

Tangibility of Assets has positive relationship with leverage

Firms having larger fraction of fixed assets tend to have higher debt financing as they can use their fixed assets as collateral for the underlying risk associated with borrowing. The reason for firms with more fixed assets being financed through debt is that they can borrow at a relatively lower rate of interest. Thus having the incentive of borrowing at lower interest rate these firms tend to borrow more. Thus a positive relationship is expected between tangibility of assets and leverage. Tangibility, in this paper, is measured by the ratio of net fixed assets to total assts.

Hypothesis 2

Firm's Growth, Profitability, Earning Volatility, and Size of the firm have negative relationship with its leverage.

The empirical relationship between growth and leverage is controversial. Pecking Order theory implies that a growing firm will use debt for their financing needs as internally generated funds are not enough to meet their growth needs. Thus a growing firm will be highly leveraged (Drobetz and Fix 2003). On the contrary agency costs for growing firms will be higher as growing firms have more investment opportunities. The chances of going for risky projects for these firms are higher having more investment opportunities. Thus bondholder will require higher premium for lending to such firms. Thus higher costs of borrowing will force these firms to borrow less. Many empirical studies (Titman and Wessels 1988), Barclay et al. (1995) and (Rajan and Zingales 1995) have found a negative relationship between growth and leverage. Growth is measured differently in various studies. But the limitation of the data available for the firms of Pakistan constrains this study to measure growth by taking natural log of total assets. As the data available from State Bank of Pakistan for these firms doesn't have information on annual stock prices and research and expenditures. Growth, following (Rajan and Zingales 1995), is expected to have negative relationship with leverage.

According to Pecking Order Hypothesis firm use internally generated funds then debt and as lost resort turn to equity market for their financing needs. Thus highly profitable firms will have larger amounts of retained earnings thus they can afford to finance their needs internally. Several empirical works (Myers and Majluf 1984; Titman and Wessels, 1988; Rajan and Zingales, 1995; Michaelas et. al., 1999) confirms pecking order hypothesis and asserts that highly profitable firms are less leveraged.

Earning volatility arises either due to the inherent business risk in the operation of a firm or may be attributed to the inefficient managerial practices. Whatever the case may be, the earning volatility measures financial distress. Thus high volatile firms will have to pay high risk premiums to lenders. Earning volatility is, thus, expected to be negatively correlated with leverage. Both trade-off theory and the pecking order theory suggest a negative relationship

between earning volatility and leverage. Earning volatility is measured as Net profit before tax provision minus net profit before tax provision in the previous year divided by net profit before tax provision in the previous year.

The relationship of size with leverage is conflicting theoretically and empirically. According to arguments presented by (Titman and Wessels 1988) larger fims are highly diversified and so they have lesser chances of bankruptcy. Thus they feel no hesitation in financing their projects through external borrowing. And hence a positive relationship between size and leverage is expected. Contrary to this Rajan and Zingales, 1995 argue that larger firms face lesser asymmetrical information problem which reduces the chances of their new equity issue being undervalued. Hence larger firms generally use equity financing. According to this argument a negative relationship is expected between size and leverage. Size in this study is measured as natural log of total assets. Following Rajan and Zingales, 1995, a negative relationship between size and leverage is expected.

Hypothesis 3

Financial Reforms has a negative impact on leverage

Pakistan, like many other emerging economies, implemented several measures to liberalize and institutionally strengthen its financial markets. These reforms were directed toward institutional development to boost the economic growth in the country (Nishat, 1999; Nishat, 2008). Various researchers (Myers and Majluf, 1984; Love, 2000; Laeven, 2000; Harris, et al, 1994; Gelos and Werner, 2002; Guncavdi, et al, 1998) have demonstrated that financial development eases out financial constraints thus providing the firms with the opportunity to easily access equity market. Therefore reform is expected to have a negative relationship with leverage.

Econometric Methodology and Model

In the present paper the econometric technique used is the Generalized Methods of Moments (GMM) to capture the dynamic nature of the capital structure.

Panel data analysis has various advantages when cross sectional and dynamic effects needs to be addressed. (Terra, 2002; Hsiao, 1986; and Terra 2002) have described three main advantages of panel data models. According to these authors firstly in panel data configuration the observation points increases thus allowing for greater degrees of freedom. Secondly the problem of collinearity between and among variables is reduced to a greater degree. And thirdly panel models overcome the problem of omitted variable bias.

The General Model

$$LRV_{it} = \beta_0 + \beta_1 LRV_{i,t-1} + \beta_2 TNGB_{it} + \beta_3 PROF_{i,t-1} + \beta_4 EV_{it} + \beta_5 GROWTH_{it} +$$

$$\beta_7 SIZE_{it} + \beta_6 FLIDI_{it} + \sum_{j=1}^{11} \gamma_j D_j + \varepsilon_{it} \quad \text{..... (1)}$$

Where

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LRV_{it} = Leverage of the ith firm in time t, defined as debt to equity ratio

$LRV_{i,t-1}$ = Lagged Leverage of the ith firm in time t-1

$TNGB_{it}$ = Tangibility of the ith firm in time t, calculated as Total gross fixed assets/Total Assets

$PROF_{it}$ = Profitability of the ith firm in time t, calculated as Earning before Tax/Total Assets

EV_{it} = Earnings Volatility of the ith firm in time t , [EBT – EBT (-1)]/EBT(-1).

$GROWTH_{it}$ = Growth of the ith firm in time t, calculated as yearly growth of sales

$SIZE_{it}$ = Size of the ith firm in time t, calculated as natural log of total assets.

$FLIDI_t$ = Financial Liberalization and Institutional Index in time t.

$\sum_{j=1}^{11} \gamma_j D_j$ = Dummy Variables for Different industries

ε_{it} = Error Term

Empirical Results and Discussion

Table 2 presents the estimated coefficients and their z-values along with p-values.

Table 2. Arellano-Bond Dynamic Panel-Data Estimation Results

Dependent Variable: Leverage (Total Liabilities/Total Assets)			
Explanatory Variables	**Coefficient**	**Z-Value**	**P-Values**
Lagged Leverage	.9494	7333.89	0.000
Tangibility	.2774	122.27	0.000
Profitability	-149.51	-645.30	0.000
Earning Volatility	-.0155	-3.84	0.000
Size	-3.493	-62.58	0.000
Growth	-.00016	-70.11	0.000
Financial Liberalization and Institutional Development Index(FLIDI)	-1.638	-5.58	0.000
Ownership	21.993	21.07	0.000
Textile	5.779	8.66	0.000
Chemicals	6.811	5.25	0.000
Engineering	2.373	2.38	0.017
Sugar & Allied Industries	4.727	6.33	0.000
Paper & Board	.03837	0.02	0.987
Cement	5.0463	3.36	0.001
Fuel & Energy	-.12322	-0.07	0.944
Transport & Communication	-.2193	-0.12	0.907
Tobacco	11.582	6.39	0.000
Jute	-.32434	-0.21	0.833
Vanaspati & Allied Industries	53.655	-62.58	0.000
Sargan test of over-identifying restrictions: $chi^2(189)$ = 270.34 Prob > chi^2 = 0.0561			
Arellano-Bond test that average autocovariance in residuals of order 1 is 0: H0: no autocorrelation z = -1.18 Pr > z = 0.2389			
Arellano-Bond test that average autocovariance in residuals of order 2 is 0: H0: no autocorrelation z = -0.77 Pr > z = 0.4418			

*The estimates are obtained using Stata version 9.2

Lagged Leverage

The results presented in table 2 reveals that lagged leverage is significantly positively related with current leverage of the firms. The magnitude of the coefficient of the lagged leverage is very large suggesting that the costs of adjustments of the capital structure are very high for firms in Pakistan. This delays the adjustment process. The lower this coefficient the higher the speed of adjustment (Ozkan 2001; and Gaud et, al. 2005). It can be deduced from the results that the speed of adjustment of Pakistani firms is very slow as compared to developed countries; for example for Spain it is .21 (Miguel and Pindado, 2001), in the United States it is .41 (Shyam-Sunder and Myers, 1999) and .72 in the United Kingdom (Ozkan, 2001).

Tangibility

Tangibility as the results reveal is positively correlated with leverage. It is statistically highly significant with a coefficient of .2774. The positive relationship of tangibility with leverage confirms the prediction of (Jensen and Meckling's, 1976 and Myers' version of trade-off theory. Further it suggests that firms with higher fixed assets are prone to use debt financing as the cost of borrowing for them is easy, using fixed assets as collateral. Creditors are more willing to advance loans to firms with high fixed assets as these firms have more fixed assets which can be held as security against debt.

Size

Moreover the results reveal that size is negatively and significantly correlated with leverage thus confirming the theoretical predictions of (Rajan and Zingales, 1995). Firms with big size have easier access to equity market as they are generally less dependent on debt financing.

Growth

The growth variable, as the results reveal, is negatively related to leverage and statistically highly significant. This result confirms the findings of (Titman and Wessels, 1988; Barclay, et al. 1995 and Rajan and Zingales, 1995). Due to more investment opportunities, high growth firm can venture into risky projects thus lenders want high risk premium. This high risk premium raises the cost of debt, thus firms tend to use less debt for their financing.

Profitability

Profitability is negatively related with leverage. The coefficient is highly statistically significant. Confirming the findings of (Myers and Majluf 1984; Kester, 1986; Titman and Wessels, 1988; Rajan and Zingales, 1995; Michaelas et. al., 1999), as proposed by the Pecking order theory firms use internal finance as a first option followed by debt financing and as a last resort use equity financing. As highly profitable firm have larger amounts of retained earnings and thus they can afford to avoid debts and use their internally generated funds instead.

Earnings Volatility

Earning volatility, as revealed by the results, is negatively correlated with leverage and is statistically significant. High magnitude of earning volatility implies greater chances of bankruptcy. Thus investors demand high risk premium for advancing loans to firms with higher volatility. The increased cost of borrowing, thus, forces firms to avoid debts.

Financial Reforms

Financial liberalization and institutional development index (FLIDI) has a negative and highly significant relationship with leverage. This suggests that there is a substantial decrease in leverage after the reforms in financial and corporate sector of 1990s. The secondary market development has a significant effect on firms leverage and financial liberalization has been associated with shift of firms from debt market to equity market. Firms shifted from debt to equity market as financial liberalization and institutional

development lead to relaxing financial constraints as has been proposed by (Myers and Majluf, 1984; Love, 2000; Laeven, 2000; Harris, et al, 1994; Gelos and Werner, 2002; Guncavdi, et al, 1998).

Industries effects

As can be seen from the results, most of the industries enter significantly into the model suggesting that there are differences in capital structure choice among different industries. Most of the coefficients for industries are statistically significant. Three out of twelve industries (Paper & Board, Transport & Communication and Jute industries) do not exhibit any difference in capital structure choice.

Summary and Conclusion

In this paper the determinants of leverage have been analyzed dynamically. Moreover it combined financial reforms with corporate finance. It is seen from the results that the adjustment process of capital structure is very slow in Pakistan as compared to developed countries. Further the results revealed that firms with larger fixed assets are highly levered. Profitability of the firm has been found to be negatively correlated with leverage suggesting that high profitable firms use their internally generated firms for their financing needs. Moreover firm's size, growth and earning volatility is negatively correlated with leverage of the firm. Big firms, as has been revealed by the results, have less asymmetric information problem, thus they are less worried about their new equity issues being undervalued and consequently seeks equity financing then debt financing. Highly growing firms are suspected to be prone to bankruptcy by the investors and thus investors impose penalty of high risk premium on highly growing firms. Hence, faced with high cost of borrowing these firms tend to avoid debt financing. In addition to this, financial reforms, as confirmed by the results, have a strong negative impact on leverage of the firm which is attributed to the easing out of financial constraints. Thus firms can avoid debt financing by having an easy access to equity market. The negative relationship of financial reforms and leverage is strong evidence that firms shifted from debt to equity markets after the reform period. The results have further revealed that there are significant differences in capital structure choices among different industries of Pakistan except for three out of 12 industries.

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Appendix A1

Descriptive Stratistics

	LRV	TNGB	PROF	EV	GROWTH	SIZE	FLIDI
Mean	105.12	1.4018	0.0515	-0.429	126.605	6.2946	3.5331
Median	68.078	0.8786	0.0303	-0.0676	16.571	6.2281	4.1852
Maximum	17583.1	1526.00	25.9857	690.000	535900.	12.1405	4.9799
Minimum	0.3589	-2.0048	-32.685	-2484.50	-100.00	-2.3026	0.000
Std. Dev.	493.231	22.936	1.0256	35.421	6571.21	1.596	1.6747
Skewness	27.858	54.847	7.2728	-50.424	80.922	0.0662	-0.8088
Kurtosis	915.336	3277.64	613.207	3648.17	6595.97	4.69670	2.2522
Observations	6702	6702	6702	6702	6702	6702	6702

Correlation Matrix

	LRV	TNGB	SIZE	GROWTH	PROF	EV	FLIDI
LRV	1.0000						
TNGB	0.0581	1.0000					
SIZE	-0.1843	-0.1162	1.0000				
GROWTH	0.0039	0.0004	-0.0232	1.0000			
PROF	-0.0347	0.0041	-0.0204	0.0034	1.0000		
EV	0.0036	-0.0002	0.0051	0.0002	0.0033	1.0000	
FLIDI	0.0372	0.0195	0.2761	0.0018	0.0173	-0.0050	1.0000

Appendix A2

Industries Classification

S #	Industry	No. of Firms	As a Percentage of Total
1	Textile	166	44.38
2	Chemicals	26	6.95
3	Engineering	36	9.63
4	Sugar & Allied Industries	35	9.36
5	Paper & Board	10	2.67
6	Cement	16	4.28
7	Fuel & Energy	18	4.81
8	Transport & Communication	5	1.34
9	Tobacco	3	0.80
10	Jute	6	1.60
11	Vanaspati & Allied Industries	7	1.87
12	Miscellaneous	46	12.30
	Total	374	100.00

Appendix 2

Financial liberalization and Institutional Development Index (FLIDI) for Pakistan:

In this paper an index for financial liberalization and institutional development in Pakistan is constructed through principal components method using data spanning from 1988 to 2008 (21 years) which shows the degree of financial liberalization and institutional development at a specific time. The financial liberalization and institutional development process started in 1990 in Pakistan. Since then, various liberalization measures have been implemented in order to widen and deepen the financial system. The details of these policy measures are given in the following table:

Table A1. Various Policy Measures taken by the government of Pakistan for institutional development and financial liberalization

S #		S #	Sub Sections		
1	Privatization	1	Privatization of Nationalized Banks	PR	Starting from 1991 major nationalized banks were started to be privatized, this process was continued, In 2001 the process of privatization of Habib bank limited was started followed by other private banks in 2002 and completed in 2004.
		2	Opening of Banks	OB	10 private and 3 foreign banks were granted permission to operate in Pakistan.
2	Institutional Strengthening	1	Restructuring of Banks and DFI's	RBD	reduction of 718 branches of various banks from 1997 to 2000
		2	Strengthening of Prudential Regulations	SPR	SBP issued prudential regulations in 1992 for banks. In 1994 capital adequacy requirements for various banks were 3%. In 1996 all NCBs , foreign banks and NBFIs were instructed to adopt the risk-weighted capital, in line with Basle Accord.
		3	Strengthening of Loan Recovery Process	SRP	Guide lines were issued to commercial banks by SBP for classification of loans in 1992, 1n 1993 banks were asked to set quarterly recovery targets, submit progress reports and improve recovery process. In 1996 government restricted NCBs from new project loans, in 1997 SBP launched a loan recovery drive.
		4	Restructuring of S.B.P	RSBP	In 1990 Securities Department was set up, SBP Act was amended in 1994, further enhanced in 1997.
		5	Consolidation of Regulatory Functions	CRF	In 1997 services of an international consulting firm were acquired for review of banking supervision and monitoring techniques. In 2000 Central Board of SBP approved a Concept Paper outlining future direction of SBP.
		6	Computerization	COM	In 1994 Computer Service Department was created. In 2000 SBP acquired membership of Society for Worldwide Inter-Bank Financial Telecommunication (SWIFT).
		7	Classification of loans	CL	Loans were classified as, substandard, doubtful and loss as per the direction of SBP in 1992
		8	New Loan Recovery Law	NLR	A new comprehensive law, Banking Companies (Recovery of Loans, Credits and Finance) Act, 1997 was passed.
3	Debt Management Reforms	1	Replacement of Tap System with auction based system	RTA	Securities Department was set in 1990 to launch auction system of public debt, 1n 1991 Auction system of treasury bills was introduced. In 1992 system of credit ceiling was replaced with fixing of Credit Deposit Ratio (CDR).
		2	Promotion of Secondary Markets	PSN	A system of approved dealers was launched in 1991, this process was completed in 2000.
4	Monetary Management Measures	1	Reorientation of Monetary Policy Instruments	RMPI	In 1992 rediscount facility was replaced with SBP 3-Day Repo facility. In 1995 CDR's were completely abolished and were replaced with requirement For banks to maintain 1.5 % of their total demand and time liabilities as special Cash deposits

					with SBP.
		2	Rationalization of Subsidized Credit	RSC	starting from 1990 Lending rates on special financing schemes including locally manufactured machinery and export finance Schemes Were gradually raised to eliminate the element of subsidy. This process completed in 2000.
		3	Interest Rate Rationalization	IRR	Caps on maximum lending rates of banks and NBFIs were removed in 1995. Floors on minimum lending rates were abolished in 1997.
		4	Reforms in banking laws and S.B.P act, 1956.	RBL	1n 1991 The Banks (Nationalization) Act was amended, in 1994 SBP, act, 1956 was amended to increase the autonomy of SBP. In 1997 this act was further amended with the insertion of section 46B to prohibit governmental or quasi-governmental bodies from issuing directives to banking companies or other institutions regulated by SBP. This process was completed with the implementation of The Concept Paper approved by the Central Board of SBP.
5	Exchange and Payment Reforms	1	Encouraging Foreign Investment (All Industries)	EFI	In 1991 foreigners were allowed to invest without any prior approval from SBP. They were granted the permission to purchase 100 % of equity of a firm.
		2	Liberalizing Forex Market	LFM	In 1994 the government of Pakistan accepted the obligations of Article VIII, sections 2, 3, and 4 of the IMF Articles of Agreement. Thus paving the way for liberalization of Forex market.
		3	Introduction of Multiple Exchange Rate Regimes	MERR	In 1998 a mix exchange rate mechanism (a. official exchange rate and b. floating inter-bank exchange rate (FIBR)) was introduced. In 1999 the share of FIBR in the mix exchange rate mechanism was increased to 95 %. In 2000 the steps toward market based exchange rate system was completed.
6	Capital Market Reforms	1	Opening of Capital Market to Foreigners	OCF	1n 1991 capital markets of Pakistan were completely opened up for foreign investors. They were provided with various incentives.
		2	Establishment of Securities and Exchange Commission	SEC	SECP (Securities and Exchange Commission) of Pakistan became operational from 1999 through SECP Act, 1997, replacing Corporate Law Authority (CLA).
		3	Automation of all three Stock Exchanges	ASE	to enhance investors' confidence all three stock exchanges (Karachi Stock Exchange, Lahore Stock Exchange, and Islamabad Stock Exchange) were automated in 1997.
		4	Establishment of Credit Rating Agency	CRA	In 1994 Pakistan Credit Rating Agency (PACRA) was set up to improve transparency in the stock market.
		5	Companies (issue of capital) Rules	CCR	Capital Issues Act, 1947 was replaced with Companies (Issues of Capital) Rules in 1996.
		6	Buy Back of Shares	BBS	In 1999 Companies Rules were amended to allow companies to buy back its shares.