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An Investigation of Pakistan's Manufacturing Sector Corporate Investment Under Financial Liberalization

ABSTRACT

Previous studies at macro level resultantly favor the financial liberalization and growth of a country. On the other side the studies conducted at the micro level show mixed results and there is a dearth of literature for accepting/rejecting the notion of financial liberalization at the micro level. The present study examines the impact of Financial Sector Reforms on the Investment of Manufacturing Sector listed at Pakistan Stock Exchange. A unique index for measuring the Financial Liberalization is developed obtaining the data from Financial Sector Assessment Progress Review Report (1991-2004) and Economic Survey of Pakistan (2005-2014). The data for manufacturing firms is extracted from Balance Sheet Analysis published by State Bank of Pakistan. The sample includes the companies that remained listed at Pakistan Stock Exchange from 1993 to 2014 in sample. Separate analyses were made on different manufacturing sectors that includes Textiles,

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Food, Chemicals, Other manufacturing, Motor Vehicle, Fuel & Energy, Communication, Refined Petroleum, Paperboard, and Electrical Machinery. The study utilized descriptive analysis and fixed effect model on the panel data of two hundred and ninety four (294) firms in GRATEL. Amongst different industries the investment level of textile sector is increased whereas, food and non metallic minerals do not improve much. Furthermore, upon the basis of results the communication and transport sector require attention towards liquidity, risk, and growth to achieve benefits for improving their investment function.

Keywords: *Financial Liberalization, Firm Level Investment, Profitability, Tangibility, Liquidity, Risk, and Growth.*

Introduction

The growth of an economy relies upon the well functioning of financial system because it assists to mobilize the financial resources, improves managing risks, and allocate financial resources to the efficient projects. The effective financial structure provides mechanism for payment arrangement and encourages trade among participants, which leads to the financial development (Levine, 1997). Bagehot (1873) coined the importance of financial development for the maturation of any economic system. The developments in the financial system are triggered by the financial reforms. Several countries introduced financial reforms in both domestic and international perspective in the last two decades (Hermes & Lansing, 2005).

During 1970's and 1980's government led developments, nationalist policies, and economic subversion were observed

in transition and developing countries. Therefore, the financial system was believed as an instrument of treasuries by the governments for monetary and fiscal policies, interest rates, and distribution of financial resources. The resources were addressed to the favored sectors through various channels in the financial mechanism. The banks were instructed to direct the credit to the favored sectors rather than abiding by the prudential regulations (Guermazi, 2014). The interest rates to depositors were low to maintain the cost of capital low for improving the distribution of cash in hand and generating extra demand for credit (Lenuta, 2012). The capital was not controlled by the governments for national saving in fact; it was to control the interest rates and economic volatility. The dominance of capital was a revenue enhancement for those unwilling to avoid such taxes, which ultimately encouraged corruption (Hanson, 1994). Ultimately changes lead to the repressed financial mechanism. The financial repression is a set of policies, laws, formal regulations and informal control of diverse financial operations of the country. It includes fixing interest rates, prices, exchange rates, and flow of funds within and outside the country. Importantly, financial repression inhibits the operations of the financial intermediaries at their total potential (Denizer et al, 1988).. The political pressure and corruption added to the repressed financial system and the recovery of loans was insufficient. The borrowers treated loan as just a transfer from the financial institutions (Schmukler, 2004).

To break away from the state of repressed financial system and accomplish the financial objectives of a country; the world financial systems are integrated with a series of reforms & policies aiming to liberalize their financial sectors. Financial liberalization reforms consist mainly of the removal

of administrative controls on interest rates and the scaling down of direct credit programs (Leaven, 2003 & Schmukler, 2004).

Financial liberalization is a steady and multifold process that tries to reduce the control on the financial sector of a country. Financial liberalization attempts to attain development and stability through dismantling the restrictions on the domestic interest rate, financial markets, and control of capital flows. Liberalization of financial system comprises of establishing the price control mechanism which works by deregulating credits, interest rates, privatizing domestic financial institutions, diminishing entry barriers for international financial corporations, and supporting foreign financial transactions. It also refers to the measures which aim at reducing the regulatory controls imposed on the institutional structures, official documents and activities of agents in the different segments of the financial sector (Chandrasekhar, 2004 & Ghosh, 2005).

Most by developing countries have initiated financial liberalization process in the past decades. Financial liberalization has been implemented in both domestic and international scopes. The former includes deregulation of interest rates and a reduction of directed credit while the latter involves the opening of equity and bond markets.

The effects of liberalization in financial markets on economic growth have received considerable attention in the literature. McKinnon (1973) and Shaw (1973) propose that liberalization can promote economic growth. More recently, financial endogenous growth models emphasize the role of financial development for growth. Among others, Bekaert, Harvey, and Lundblad (2001) empirically show that equity market opening leads to an increase in economic growth.

The theoretical and empirical studies cover the subject of financial liberalization with respect to both dimensions i.e. negative and positive. It is true that financial liberalization at different levels may malfunction but one should not forget that it may be beneficial on other levels of saving and investment. A large body of literature emphasizes on the positive link between financial markets and the growth of the country. The literature on the arena of financial liberalization focus on the macroeconomic impact of financial market deregulation and test the predictions on the aggregate economic data leaving the empirical research on the effects of such reforms on the firm level data (Gelos & Werner, 2002; Leaven, 2003; Koo & Maeng, 2004; Koo & Shin 2005; Bhaduri, 2005; Kose et al., 2006; Carreira et al., 2010 and Ziad & Gharaibeh, 2011).

In an imperfect market condition, the subject of firm-level investment never dies. Researchers have applied different methodologies to see whether financial reforms helped to improve investment of firms or not? The research work conducted in Indonesia by Harris et al., (1994), Guncavdi et al., (1998) for Turkey, Gelos & Werner (2002) for Mexico, Wang (2003) for Taiwan, Koo & Maeng (2004) for South Korea, Bhaduri (2005) and Ghosh (2006) for India. Broadly, it is observed that liberalization reforms delivered beneficial results. However, the work of Gelos & Warner (2002) and Wang (2003), and Bhaduri (2005) show conflicting results. Gelos & Warner (2002) and Wang (2003) argue that liberalization of financial sector supported small size corporations and large firms did not benefited much from it. Bhaduri (2005) argued that financial liberalization reforms were unfavorable for young and small sized firms in India. However, after the careful review of the literature the general

impression that emerges from the review of literature is that the evidence remains inconclusive.

Due to this differential outcomes and literary support from prior literature it guides the present study to investigate the possible influence of financial liberalization on firm level investment in different manufacturing sectors of Pakistan. For this reason the study utilized sample of 294 firms from 12 different sectors from 1993-2014 that includes Textile, Food, Chemical Products, Other Manufacturing, Non Metallic Minerals, Motor Vehicle, Fuel and Energy, Communication, Refined Petroleum, Paper and Cardboard, Electric Machinery, and others.

Literature Review

Investment of Firms in Imperfect Markets

According to Modigliani & Miller (1958), a firm's investment depends entirely on the profitability of its investment opportunities. A developing body of literature, however, has found that the firms' investment depends on the availability of internal finances. Two streams of literature investigate why investment is sensitive to internal funds in imperfect financial markets. The first focuses on a non-negligible premium for external finance that firms should pay. Myers & Majluf (1984) and Stiglitz & Weiss (1981) prove that the monetary value of external funds is more eminent than that of internal funds because of the asymmetry of information between borrowers and lenders. Firms face a constraint in financial markets because of a wedge between costs of internal and external funds. Under such a financial constraint, firms tend to rely on internal funds to finance investment. The second stream of

literature attributes the importance of internal funds for investment to managerial agency problems. As noted by Jensen & Meckling (1979), managers who are not owners may follow their own interests, not the stockholders' interest. Jensen (1986) argues that managerial discretion is likely to induce managers to spend all available funds on investment projects.

A great body of literature has empirically examined whether imperfections in financial markets influence firms' investments. Most studies interpret the cash-flow effect on investment as resulting from financial constraints. Fazzari et al., (1988) initially show that, utilizing the dividend–payout ratio as a measure of the financial constraints faced by firms, investments of more financially constrained firms are more sensitive to changes in cash flow. The existing empirical studies have used various segmenting variables to identify unobservable degree of financial constraints, for example: group affiliation in Hoshi et al., (1991); firm size and age in Devereux & Schiantarelli (1990); issuing commercial paper and bond ratings in Whited (1992); exchange listing in Oliner & Rudebusch (1992); ownership structure and country characteristics in Bond et al., (2003).

The studies argue that financial liberalization causes the variations over time in the responsiveness of investment. Financial liberalization influences asymmetric information and agency conflicts between managers and shareholders. In particular, various liberalization policies play the role in reducing asymmetric information problems in financial markets. The managerial agency problems are attenuated because financial institutions tend to monitor managers' behaviour more intensively.

Developments in security markets and financial market opening also result in a reduction of the cost of external

financing. The financial liberalization reduces the wedge between the costs of external and internal funds and thereby decreases the cash-flow effect on investment of financially constrained firms. Although an increased availability of credit with the financial liberalization should have led to a reduction of liquidity constraints, there's no cause to believe that informational and enforcement problems that motivate the usage of collateral diminished after the liberalization of the financial sector.

There is, yet, mixed empirical evidence for the consequence of financial liberalization on firms' investment. Examining panel data of firms Laeven (2003) concludes that financial liberalization relaxes financing constraints on firms, specially small ones. Various studies report that financial reform made a decrease in financial constraints using an individual country data, for instance: Harris et al., (1994) for Indonesia; Gelos & Werner (2002) for Mexico; Guncavdiet al., (1998) for Turkey; and Koo & Shin (2005) for Korea. Forbes (2003) demonstrates that the Chilean capital controls increased financial constraints for small firms. Jaramillo et al., (1996), nevertheless, neglect to offer evidence that fiscal reform in Ecuador served to ease financial constraints on small firms. Using Chilean data, Hermes & Lansing (1998) also describe that the reforms did not improve access of small and young firms to external finance. In light of mixed empirical findings, it is important to further look into the issue of financial liberalization on firms' capital structure and investment.

These reforms were directed toward institutional development to advance the economic growth in the country (Waliullah & Nishat. (2008). Several researchers (Myers & Majluf, 1984; Love, 2000; Laeven, 2000; Harris, et al, 1994; Gelos & Werner, 2002; Guncavdi, et al, 1998) have shown that

financial development eases out financial constraints thus providing the firms with the opportunity to easily access funds. So reform is required to experience mixed relationship with leverage and investment of the firm (Ziad & Gharaibeh, 2011; Koo & Shin, 2005; Galindo et al, 2007; Carreira et al., 2010; Yan et al., 2011; and Guermazi, 2014).

Firm Investment Under Financial Liberalization

Many studies argue that financial liberalization causes the variations over time in the responsiveness of investment to internal fund. Financial liberalization influence asymmetric information and agency conflicts between managers and stockholders. In particular, various liberalization policies play the role of reducing asymmetric information problems in financial markets by improving banks' screening ability. Also, managerial agency problems are attenuated because financial institutions tend to monitor managers' behavior more intensively. Developments in security markets and financial market opening also result in a reduction of the cost of external financing. We thus expect that financial liberalization reduces the wedge between the costs of external and internal funds and thereby decreases the cash-flow effect on investment of financially constrained firms.

There are, however, mixed empirical evidence for the effect of financial liberalization on firms' investment. Examining panel data of a large number of firms in 13 developing countries, Laeven (2003) concludes that financial liberalization relaxes financing constraints on firms, especially small ones. Several studies report that financial reform caused a reduction in financial constraints using an individual country data, for instance: Harris, Schiantarelli, and Siregar

(1994) for Indonesia; Gelos and Werner (2002) for Mexico; Guncavdi, Bleaney, and McKay (1998) for Turkey; and Koo and Shin (2004) for Korea. Forbes (2003) recently shows that the Chilean capital controls increased financial constraints for small firms. Jaramillo, Schiantarelli, and Weiss (1996), however, fail to provide evidence that financial reform in Equador served to ease financial constraints on small firms. Using Chilean data, Hermes and Lensink (1998) also report that reforms did not improve access of small and young firms to outside finance. In light of mixed empirical findings, we need to further investigate the effect of financial liberalization on firms' investment.

Firm Specific Factors and Investment under Financial Liberalization

Firm enhance their production by investing in fixed assets like plant, machinery, motor vehicles, land and building. It is inevitable for organization to sustain without investment in fixed assets. A firm can achieve long term profitability by investing in long term assets. In determining profit ratio efficiency assets play pivotal role. The future is unpredictable by the companies and it has possible implications on the investment decisions. Investment includes purchase of equipment of production with durable life like machines and production equipment. Fixed assets expenditure attained the attention of researchers' worldwide (Dayaratne et al., 2015).

Firm size may be determined by various techniques. Previous literature sheds light to utilize log of assets, revenues, and employees working in the organization. However, the measurement of firm size depends upon the available information from authentic sources. Size is an important

determinant of a firm's investment and previous studies managed to find out the possible association and identified inverse relationship between size and investment level of firms Bokpin & Onumah (2009). Contradictory results were mentioned in the studies of Adelegan and Ariyo (2008), Jangili and Kumar (2010), Li et al. (2010), and Porras and Lopez (2011) that there is a positive relationship among size of the firm and level of investment. Because large companies have better information and access to external sources of capital that small firms and hold consistent cash flows. On the basis of above discussion the size of the firm is expected to have mix relationship with the dependent variable, investment.

The overall objective of the firm is to increase the profitability. Profitability is simply the capacity to make a profit, and a profit is what is left over from income earned after you have deducted all costs and expenses related to earning. Profitability is measured as return on equity and return on assets. Theoretically, increase in profitability leads to increase in fixed assets investment. Deepankar and Das (2015) find out positive relationship between profitability and investment.

Firms with more tangibility are able to sustain more and gain financing from external environment. One of the important reasons that tangibility helps to mitigate contractibility problem and increases the value of the firm which can be recaptured in case of default (Xu et al., 2013). However, study show that investment sensitivity is increasing with the increase in firm asset tangibility. On the basis of this assumption an empirical analysis is important for the Pakistani manufacturing firms. Earlier studies attempt to capture the financing friction and investment of corporate sector listed firms under various financial regimes. Corporation that invest

more in tangible assets tend to have more borrowing capacity and the change is level of investment is proportionally enhanced. The possible argument could be that credited multiplier is expected to be higher due to greater tangibility. Therefore, theory suggested that tangibility increases investment (Sheikh & Wang, 2011).

Liquidity of the firm maintains relationship with various other factors like financing patterns and performance of the firm. It is also observed that liquidity creates a positive relationship with investment (Manova et al., 2015) because higher liquidity helps to improve the financing for investment. Studies have shown that firms with financial constraints are more sensitive to the available liquidity. The relationship gets stronger in firms with greater opportunities for investment. Past literature also sheds considerable light and provides evidences that investment opportunities are sensitive to the liquidity position of the firm and market conditions (Jorion and Zhang, 2007). So liquidity of the firm should help as a catalyst for making investment decisions. The results show that the effect of liquidity is higher in firms with greater investment opportunities, which was tested including interaction between liquidity and a dummy that identifies whether the firm has greater investment opportunities.

Risk and investment decisions at firm level have been analyzed in several economic and financial literatures. The irreversible investment model is off the notion that increased uncertainty reduces investment of the firm (McDonald & Siegel, 1986; Pindyck, 1988; Dixit & Pindyck, 1994). Firm pertains the capacity to wait for the uncertain situation to be resolved and then invest. Informational asymmetries between borrowers and

lenders may create financing constraints for certain types of borrowers (Greenwald et al., 1984; Myres and Majluf, 1984 and Greenwald & Stiglitz, 1990). Increased uncertainty about future profitability increases the risk of bankruptcy, and hence, implies that some firms may have to rely on internal funds for investment activities, whereas others may have access to efficient external financing. Resulting in low investment practices due to increased risk to external constraints of financing. According to Hartman (1972), firms with more risk averse behavior tend to invest low. The model of asset pricing (CAPM) explains that a covariance is observed between the increase in risk (uncertainty) and returns on the investment project due to market returns. Whereas, previous studies in the field provide inconclusive results and tend to tilt on the negative relationship of the variables. For example, the findings of Leahy and Whited (1996), Minton and Schrand (1999), Ghosal and Loungani (2000), and Bulan (2001) lend support to a negative relation between uncertainty and investment.

Since the important contribution of Kuh (1963) towards the investment determinants in business environment much of the work is published in theoretical and empirical dimension. A few years ago the major issues seemed resolved, concerning both the relative importance of explanatory variables and the time pattern of investment. The growth of a firm is measured as annual percentage change in total sales (Fazzari et al., 1988). Bilsborrow (1977) examined the determinants of fixed investment of Colombian firms and included sales growth as an explanatory variable. The results provide evidence that growth has positive relationship with investment of firm. The

findings were further supported by Lang et al., (1996). Therefore, the present study hypothesizes:

H$_1$ = Financial Liberalization has significant affect on the Investment of the firms.

H$_{1.1}$ = The interaction of Firm Size with Financial Liberalization has significant positive effect on the Investment of the manufacturing firms.

H$_{1.2}$ = The interaction of Firm Profitability with Financial Liberalization has significant positive effect on the Investment of the manufacturing firms.

H$_{1.3}$ = The interaction of Asset Tangibility with Financial Liberalization has significant positive effect on the Investment of the manufacturing firms

H$_{1.4}$ = The interaction of Firm Liquidity with Financial Liberalization has significant negative effect on the Investment of the manufacturing firms

H$_{1.5}$ = The interaction of Financial Risk with Financial Liberalization has significant negative effect on the Investment of the manufacturing firms

H$_{1.6}$ = The interaction of Firm Growth with Financial Liberalization has significant positive effect on the Investment of the manufacturing firms.

Financial Reforms in Pakistan

In Pakistan, State bank and commercial banks were nationalized in 1974 aimed to achieve socio economic benefits; however it could not achieve the desired results (Mujahid, Hashmi, & Abbas, 2014). Multifarious financial deficiencies like wretched private investment, low range of financial products in the money and capital market, insufficient financing options,

high risk exposure to investor, holding of financial assets by state owned institutions, deficient liquidity, limited arbitrage options, high transaction cost, low response to monetary and fiscal incentives, and vulnerable stock market capitalization were encountered by the financial markets in Pakistan (Goyal, 2014). The economic growth was slowed due to these deficiencies. Consistent and efficient financial mechanism is important for reducing the distortion in financial markets that shall amplify economic growth.

Therefore to overcome the financial sector deficiencies Government of Pakistan initiated diverse financial reform in early 1990s under structural adjustment programs (SAP). During initial phase notable reforms include privatization of state owned banks, recovery of bank loans, and implementation of international accounting standards. Afterwards from several reforms related to financial markets for instance minimum capital requirements for the banks, permission to start subsidiaries (mutual funds), venture capitalist financing, foreign exchange and asset management firms, etc. Consumer financing was also introduced in the same time period to support middle and lower level income sector (Munir, et al., 2013).

The process of financial liberalization commenced in year 1990 in Pakistan under manifolds. The reforms from 1990-2014 are categorized by State Bank of Pakistan as Privatization Reforms, Institutional Strengthening, Nonperforming Loan, Debt Management, Monetary Management Measures, Exchange Payment, Capital Market Reforms, Banking Reforms, and Prudential Regulations.

The aim of implementing financial reforms was to widen and deepen the financial sector of the country. Few policy measures were targeted to increase the competition in the

country and some focused for improving the efficiency of the financial sector (Amel et al., 2004). Such as removal of entry barrier for foreign banks and restructuring of state owned banks. The reforms also include the interest rate deregulation and reserve requirement of banks. Similarly introduction to prudential regulations and strengthening the capital markets were the target of financial reforms. The target of these policy measures was to strengthen financial markets for attaining efficiency and stability in the country (Ataullah, Cockerill, & Le, 2004). The present study incorporates the categorization by the State Bank of Pakistan regarding data of financial reforms for the period (1990-2014) for development of financial liberalization index for Pakistan.

Data, Methodology and Financial Liberalization Index

Financial Liberalization Index

Financial Liberalization Index was constructed in order to study the degree of financial liberalization process in Pakistan over the time. Financial liberalization is a procedure that includes various changes, amendments on existing policies related to financial matters and launching of new policies to support various sectors of the economic system. The present study implies principal component method as proposed by Bandiea et al. (2000), Leaven (2003), Laurenceson and Chai (2003), Shrestha (2005), and Amaira & Amaira (2014).

This study used the major policy components of financial liberalization, which could influence the capital structure, investment, and the cost of debt of the manufacturing firms

in Pakistan. The present study included Privatization (PRV), Institutional Strengthening (IS), Non Performing Loans (NPL), Debt Management Reforms (DMR), Monetary Management Measures (MMM), Exchange and Payment Reforms (EPR), Capital Market Reforms (CMR), Banking Reforms (BR), and Prudential Regulations (PR) nine (09) components having about three hundred and fifty one (351) reforms in the above mentioned categories for the construction of financial liberalization index (FLI) using principal component method. The following equation is used to measure the financial liberalization index (FLI$_t$) for the time (t):

$$FLI_t = W_1PRV_t + W_2IS_t + W_3NPL_t + W_4DMR_t \\ + W_5MMM_t + W_6EPR_t + W_7CMR_t + W_8BR_t \\ + W_9PR_t$$

Where, t= 1991, 1992........... 2014 and W$_t$ is the calculated weight of each component. The financial liberalization index for each year is obtained by summing up all the individual indices for a respective period as indicated in equation.

The weight of each component is calculated by applying the principal component method. The following equation is used to measure the financial liberalization index (**FLI$_t$**) for the time (t):

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Where, t= 1990, 1992........... 2014 and W$_t$ is the calculated weight of each component. The financial liberalization index for each year is obtained by summing up all the individual indices for a respective period as indicated in equation. The study takes into account the first principal component which

accounts for 76 percent of total variance of in all dimensions of financial liberalization. The weight for each financial reform dimension is captured. The weight of each policy dimension is multiplied with the respective value of the reform in each year. The weight of each financial reform dimension is entered in equation no (i).

$$FLI_t = 0.0883\ PRV_t + 0.0811\ IS_t + 0.1469\ NPL_t \\ + 0.0455\ DMR_t + 0.3259\ MMM_t \\ + 0.5791\ EPR_t + 0.0455\ CMR_t \\ + 0.4231\ BR_t + 0.5765\ PR_t$$

Data

The present study covers all large scale manufacturing companies listed at Pakistan stock exchange. The research included the data of the companies that survived from 1993 to 2014. The firms that did not survived for the mention period or are new entrants were not included in the data set. Therefore, two hundred and ninety four (294) firms remained to be included in final analysis as sample.

The present study includes large scale manufacturing companies in the analysis for the period twenty one years (21) spanning 1993 – 2014. The data for in depth analysis is extracted from various sources. The data for the large scale manufacturing firms was extracted from the balance sheet analysis published by State Bank of Pakistan. The balance sheet analysis of large scale manufacturing firms from 1991 to 2013 consists upon four volumes. Three volumes are available on line and one volume was made available in hard form.

Balance sheet analysis volume from 1991 to 1998 was in hard form, 1999 to 2004, 2005 to 2008, and 2008 to 2013 were in soft form. Balance sheet analysis from 1991 to 1998 contains information about 514 listed firms. Whereas, Balance sheet analysis from 1999 to 2004, 2005 to 2008, and 2008 to 2013 contains data of 451, 436, and 396 listed firms respectively. Hard form data was transformed in soft form. Data from all the balance sheet analysis was extracted using MS Excel.

The data for all the sectors was segregated under each industry head based on the categories mentioned in Balance sheet analysis volume 2008 to 2013. The data of the companies that sustained throughout the analysis period i.e., 1993 to 2014 was extracted cautiously. However, the data for the year 2014 was not available in Balance sheet analysis of State Bank of Pakistan therefore the data for year 2014 was extracted from the website of individual company.

Measurement of Variables

The aim of the present study is to investigate the possible influence of financial liberalization on firm level investment in different manufacturing sectors of Pakistan. For this reason the study also included firm size, profitability, tangibility, liquidity, risk, and growth. The investment is defined as the purchase of an asset or item with the hope that it will generate income or appreciate cash flows in the future. Firms make investment in different type of assets. Table 3.1 explains the measures of variables with literature support:

Table: Measurements of Variables

Name of Variable	Measurement	Literature Support
Firm Investment(INV)	Investment $_t$ = (K_t*− K_{t-1} + Depreciation$_t$) *Capital (K_t) = Tangible fixed assets at the period t	Guermazi, 2014; Yan, 2011; and Ghosh, 2005
Size (SZ)	Ln of book value of total assets	Mao & Gu (2008) Wu (2006) Kallkan et al., (2011)
Profitability (PRF)	$$Profitability = \frac{Earning\ Before\ Interest\ \&\ Taxes}{Total\ Assets}$$	Gungoraydinoglu & Oztekin (2011) Sheikh & Wang (2011)
Growth (GR)	$$GR = \frac{Sales_t}{Sales_{t-1}} - 1$$	Majumdar (1997) Mao & Gu (2008)
Tangibility (TAN)	$$Tangibility = \frac{Total\ Fixed\ Assets}{Total\ Assets}$$	Gungoraydinoglu & Oztekin , 2011; Sheikh & Wang , 2011, and Degryse et al, 2012
Liquidity (LIQ)	$$Liquidity = \frac{Total\ Current\ Assets}{Total\ Current\ Liabilities}$$	Gungoraydinoglu & Oztekin , 2011; Sheikh & Wang , 2011, and Degryse et al, 2012
Risk (RSK)	$$Risk = \frac{Earning\ Before\ Interest\ \&\ Taxes}{Financial\ Expense}$$	Nazir et al., (2012)

Empirical Specifications

The magnitude of the relationship of the dependent and explanatory variables is tested by applying the regression analysis. To test the moderation effect of financial liberalization by creating the interaction terms the study used lagged values of the variables and financial liberalization index. For example if the dependent variable is of year 1994 the independent variables with the interaction of financial liberalization are of year 1993. One of the important reasons to use the lagged values is that the effect of financial reform may take approximately one year. Therefore, on the basis of the above given references the basic regression models are developed as follows:

$$INV_{it} = \alpha_i + \beta_1 SZE_{it} + \beta_2 PRF_{it} + \beta_3 TAN_{it} + \beta_4 LIQ_{it} \\ + \beta_5 RISK_{it} + \beta_6 GRW_{it} + \varepsilon_{it}$$

$$INV_{it} = \alpha_i + \beta_1 SZE_{it-1} + \beta_2 PRF_{it-1} + \beta_3 TAN_{it-1} \\ + \beta_4 LIQ_{it-1} + \beta_5 RISK_{it-1} + \beta_6 GRW_{it-1} \\ + \beta_7 SZE_{it-1} * FLI_{it-1} + \beta_8 PRF_{it-1} * FLI_{it-1} \\ + \beta_9 TAN_{it-1} * FLI_{it-1} + \beta_{10} LIQ_{it-1} * FLI_{it-1} \\ + \beta_{11} RISK_{it-1} * FLI_{it-1} \\ + \beta_{12} GRW_{it-1} * FLI_{it-1} + \varepsilon_{it}$$

The Subscript "i" is used for the each cross section unit or firm in the sample data set. Another subscript "t" denotes the time period for the variables. α_i is the constant of the regression equation, which explains the change in the dependent variable. $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ *and* β_6 are the regression coefficients of size (SZE), profitability (PRF), tangibility (TAN), liquidity (LIQ), risk (RSK), and growth (GRW), respectively. Where as in the second model lagged values of all explanatory variables including the interaction

terms with financial liberalization index are regressed on the investment of firms.

Data Analysis Technique

For the data analysis purpose, different techniques are used in this study including the Descriptive statistics, Correlation analysis and Regression Analysis etc. Panel data is used for the analysis purposes in this study which contains n units (firms) each of them includes T observations at 1 through t time period. So the total numbers of observations in panel data are calculated as nT. That panel data which contains many units (firms) and small time period is known as *short panel data*. But if there are less firms and large time periods, it is known as *long panel data* (Cameron & Trivedi, 2005). Several type of models may be used to analyze the panel or longitudinal data, which include the; Pooled OLS, Fixed Effect Model and Random Effect Model.

Results and Discussion

The results and discussion section explains the descriptive stats of the data. It further elucidates the relationship among the explanatory and dependent variable using correlation analysis. Essentially this section highlights the results of regression models on the each manufacturing sector of Pakistan.

Descriptive Statistics

Descriptive statistics are implied to observe the behavior of the data. It can be viewed by calculating the mean, median, standard deviation, range, minimum and maximum value of

the variable. The present study includes seven variables for which the data is collected. The total sample size was of twenty two (22) years, however final data after transforming for analysis remained for twenty one (21) years. Total number of counts for each variable is 6174 and numbers of companies were 294. Therefore, total numbers of observation used in the present study are 43218 excluding the observations and data used for developing the financial liberalization index of Pakistan. Table 4.1 below presents the descriptive statistics of the data.

Table: Descriptive Statistics

	INV	SZE	PRF	TAN	LIQ	RSK	GRW
Mean	10.3277	6.8691	0.1461	0.1951	1.3302	8.0014	0.0765
Median	10.5966	6.7508	0.0001	0.1262	1.0082	0.0036	0.0820
Standard Deviation	3.3099	1.7498	1.1514	0.2546	1.5686	41.3624	0.5336
Sample Variance	10.9552	3.0618	1.3258	0.0648	2.4605	1710.8460	0.2848
Range	30.2991	12.7583	17.9438	3.4815	20.9609	386.8000	14.6940
Minimum	0.0000	0.0000	-4.9438	0.0000	0.0000	-99.8000	-6.7167
Maximum	30.2991	12.7583	13.0000	3.4815	20.9609	287.0000	7.9773
Count	**6174**	**6174**	**6174**	**6174**	**6174**	**6174**	**6174**

The descriptive stats of the data show the nature of all the variables used in the study. First column shows the descriptive statistics of the investment variable. The range of investment of the companies varies tremendously therefore to cope with the problem of hetroskedesticity log of the observations was taken. Based upon the transformed values the mean of investment is 10.3277 which shows the overall investment level of the non financial listed firms in a given

time period. The standard deviation of the investment is 3.3099 which describe the deviation of the data from mean value. The minimum value is 0.0000 and maximum value is 30.2991 and it shows that there are firm in the sample period that did not make any investment and firms that make large investments.

Size of the firms is proxied by taking the natural log of total assets of the firms in the data. The mean value is 6.8691 which shows the average size of the large scale manufacturing listed firms in a given time period. The standard deviation of the investment is 1.7498 which describes the deviation of the data from mean value. The minimum value is 0.0000 and maximum value is 12.7583.

The profitability of the firm is measure by Return on Assets. The mean value is 14.61% which explains the average accounting performance of the firms. Median explains the central value in the data with a value of 0.0001. The standard deviation of this variable is 1.1514 which shows the deviation from the average value. This variable has − 4.9438 and 13.0000 as minimum and maximum values, respectively. The minimum and maximum values show that in the sample there are all types of firms, which are facing huge losses and those that are enjoying the maximum profit.

Tangibility of the firms is determined by taking the percentage of fixed assets to total assets. The mean value of this variable is 0.1951which shows the percentage of fixed to total assets. The median of this variable is 0.1262 which is the central value in the data. The variation in the data is found 25.46% as described by standard deviation. The minimum and maximum values of this variable are 0.0000 and 3.4815, respectively.

Liquidity is the ability to meet firm's obligations as they come due. In this data set on average firms have 1.3302 times assets available to meet the short term liabilities. The median of the data set of this variable is 1.0082. The standard deviation describes the deviation of the data from its average value by 1.5686. Minimum and maximum values are 0.0000 and 20.9609. The maximum value explains that there are firms in the data which have twenty times more current assets to meet short term obligations.

Risk is measured by dividing the Earnings before Interest and Taxes to financial expenses and its average value 8.0014 describes that companies have eight times more earnings than their financial expenses. The median of this variable is 0.0036 and standard deviation is 41.3624. The minimum value of this variable is -99.8000 and maximum 287.0000. It explains that there are firms which have negative profits and are unable to bear the financial costs. Whereas, some firms are financially sound having 287 times more earnings available to meet their financial obligations.

Growth is denoted in decimal points. The average value of the growth is 0.0765 which describes that the average growth of all firms in sample data is 7.6%. The median value is 0.0820 which is more than the mean and shows that the growth of majority firms is not only high but also the positive growth. The deviation in the data is 0.5336 reported. Minimum value of the growth is -6.716 which shows the negative growth of the firms, that firms are declining gradually instead of growing. The maximum value is 7.9773, which shows that there are some firms which grow drastically by more than seven times.

Correlation Analysis

The purpose of correlation analysis is to determine the relationship among all dependent and independent variables used in the study. The value of correlation lies between -1 to +1, negatives values, describe the negative correlation between the two variables. Positive value means the positive correlation between the two variables. Correlation table serves another purpose, which is the test of multicollinearity. It tells that where the collinearity is found or is not present among the variables. If the value of coefficient correlation is nearly to 1, it leads to multicollinearity between the variables. The following table 4.2 describes the coefficient correlation between the variables of the study.

Table: Results of Correlations Analysis

	INV	SZE	PRF	TAN	LIQ	RSK	GRW
INV	1						
SZE	.298**	1					
PRF	.059**	.071**	1				
TAN	.330**	.076**	.053**	1			
LIQ	-.024*	.024	.040**	-.048**	1		
RSK	-.017*	.085**	.037**	.029*	.111**	1	
GRW	.023**	.048**	.010	.039**	-.049**	.050**	1

*. Correlation is significant at the 0.05 level (2-tailed)
**. Correlation is significant at the 0.01 level (2-tailed).

The coefficients correlations are obtained with the help of econometric software named as Gretl. Gretl software performed the Pearson Coefficient correlation analysis to check the variables relationships and test 2 tailed at 1 % and 5% level of significance. As Table 4.2 shows, there is no high

correlation between any two variables which leads to the problem of multicollinearity. The highest value of the positive correlation is 0.330. Keeping in view the values of coefficient correlation, it may be ensured that there is no multicollinearity in the data. Column 1 of the table explains the relationship between investment and firm specific factors. It explains that all the variables are significantly positively correlated at 1% level other than liquidity and risk, which are significantly negatively correlated at 5% level.

Corporate Investment Under Financial Liberalization in Pakistani Manufacturing Sector

Firm enhance their production by investing in fixed assets like plant, machinery, motor vehicles, land and building. It is inevitable for organization to sustain without investment in fixed assets. A firm can achieve long term profitability by investing in long term assets. In determining profit ratio efficiency assets play pivotal role. Firms are generally uncertain about the future. The uncertainty about the future is likely to affect investment decisions of firms. The study attempts to find the impact of financial liberalization on the investment of Large Scale Manufacturing firms with the following models:

$$INV_{it} = \alpha_i + \beta_1 SZE_{it} + \beta_2 PRF_{it} + \beta_3 TAN_{it} + \beta_4 LIQ_{it} + \beta_5 RISK_{it} + \beta_6 GRW_{it} + \varepsilon_{it}$$

$$INV_{it} = \alpha_i + \beta_1 SZE_{it-1} + \beta_2 PRF_{it-1} + \beta_3 TAN_{it-1} + \beta_4 LIQ_{it-1} + \beta_5 RISK_{it-1} + \beta_6 GRW_{it-1} + \beta_7 SZE_{it-1} * FLI_{it-1} + \beta_8 PRF_{it-1} * FLI_{it-1} + \beta_9 TAN_{it-1} * FLI_{it-1} + \beta_{10} LIQ_{it-1} * FLI_{it-1} + \beta_{11} RISK_{it-1} * FLI_{it-1} + \beta_{12} GRW_{it-1} * FLI_{it-1} + \varepsilon_{it}$$

Regression Results of Manufacturing Sector of Pakistan

To find out the effect and magnitude of explanatory variables along with financial liberalization index fixed effect models are applied on the data set of manufacturing firms in different sectors of Pakistan. The following table 4.3a explains the percentage of different industries in the data set and 4.3b shows the results of regression analysis:

Table: Industry Wise Details of Manufacturing Firms

Sector	No of companies
Textiles	38.63%
Food	12.12%
Chemicals, chemical products and Pharmaceuticals	11.11%
Other manufacturing	8.08%
Other non-metallic mineral products	7.07%
Motor vehicles, trailers and auto parts	5.55%
Fuel & Energy	4.80%
Information, Communication & transport	3.28%
Coke and refined petroleum products	2.27%
Paper, paperboard and products	2.27%
Electrical machinery and apparatus	2.08%
Others	2.77%
Total	**100%**

Table 4.3b: Results of Fixed Effect Models

***a, **b,* c show the significance of results at 1%, 5% and 10% level of significance respectively

Variables	Textile		Food		Chemic & Phar		Non Metallic Mineral		Vehicle-Auto Parts		Fuel & Energy		Comm & Transp		Paper Products		Elec Machine		Refined Petrol		Other Manufacturing	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21	Model 22
SZE	0.052a	0.024a	0.148a	0.110a	0.148a	0.108a	0.350a	0.320a	0.029c	0.110a	0.262a	0.491a	0.054a	0.181a	0.083a	0.140a	0.711a	0.623a	0.023b	0.134b	0.350a	0.320a
	0.023	0.003	0.046	0.023	0.046	0.037	0.055	0.065	0.025	0.031	0.053	0.192	0.016	0.056	0.016	0.008	0.060	0.061	0.011	0.106	0.055	0.065
PRF	0.027	-0.187a	0.241a	0.214a	0.435a	0.453b	-0.300a	-0.480b	-0.264a	-0.267a	0.529a	0.262b	-0.104b	-0.157b	-0.019a	0.002	0.035b	-0.000	-0.412a	-0.220c	-0.300a	-0.480b
	0.088	0.034	0.031	0.029	0.229	0.222	0.115	0.208	0.038	0.037	0.175	0.037	0.0443	0.076	0.003	0.007	0.016	0.049	-0.128	0.327	0.115	0.208
TNG	0.087a	0.011	0.589a	0.423a	-0.092	0.042b	0.290a	0.315a	0.417a	0.494a	0.170c	0.071b	0.064	-0.190a	0.066a	0.041b	0.082a	0.018c	-0.057	0.105	0.290a	0.315a
	0.031	0.01	0.053	0.042	0.037	0.02	0.063	0.072	0.088	0.092	0.041	0.025	0.041	0.061	0.014	0.021	0.029	0.055	0.059	0.152	0.063	0.072
LIQ	-0.093a	0.088a	-0.125a	-0.078b	-0.285a	-0.294a	0.022	0.034	-0.094	-0.047	-0.192a	-0.744a	-0.405a	0.028	-0.161a	0.017	-0.231a	0.045	-0.278a	-0.062b	0.022	0.034
	0.024	0.012	0.044	0.01	0.072	0.07	0.019	0.023	0.08	0.083	0.053	0.210	0.036	0.020	0.031	0.025	0.082	0.089	0.056	0.023	0.019	0.023
RSK	-0.064a	-0.124a	-0.173c	0.088	-0.275b	0.231	-0.01	0.103	0.004	-0.029	-0.061	-0.014	-0.018	-0.186a	-0.015c	-0.014	-0.071	-0.053c	-0.128a	-0.152b	-0.010	0.103
	0.023	0.007	0.151	0.152	0.126	0.159	0.032	0.063	0.022	0.034	0.046	0.103	0.025	0.028	0.056	0.103	0.063	0.021	0.044	0.109	0.032	0.063
GRW	0.020c	-0.005a	0.012c	0.032b	0.042	0.404a	0.030b	0.036c	-0.080a	-0.109a	0.015	0.017	0.150a	-0.066a	0.038a	0.043b	0.045a	0.043c	-0.036	0.094	0.030b	0.036c
	0.011	0.002	0.82	0.015	0.046	0.09	0.014	0.019	0.024	0.033	0.056	0.069	0.021	0.394	0.011	0.062	0.013	0.064	0.072	0.084	0.014	0.019
SZE*FLI		0.386a		0.049c		0.323a		0.263c		0.0589c		0.301a		0.062c		0.112a		0.611a		0.212b		0.263c
		0.034		0.052		0.195		0.241		0.023		0.287		0.037		0.007		0.131		0.233		0.241
PRF*FLI		0.104a		0.155b		0.387a		0.301		0.256c		0.615c		-0.386a		0.022		0.058b		-0.248b		0.301
		0.028		0.07		0.525		0.29		0.145		0.145		0.130		0.046		0.041		0.297		0.290
TNG*FLI		0.010b		0.321b		0.310b		0.243c		0.222a		0.204c		0.031		0.112c		0.108b		0.332a		0.243c
		0.005		0.015		0.217		0.251		0.064		0.064		0.384		0.062		0.039		0.114		0.251
LIQ*FLI		-0.049c		-0.186a		-0.263a		-0.018		-0.031		-0.014		-0.079		-0.279a		-0.473b		-0.436a		-0.018
		0.052		0.034		1.252		0.021		0.287		0.062		0.061		0.032		0.054		0.124		0.021
RSK*FLI		-0.021c		-0.021c		-0.326c		-0.153b		0.047		-0.073		-0.144b		-0.062a		-0.112c		-0.104a		-0.153b
		0.057		0.057		0.185		0.075		0.034		0.134		0.072		0.014		0.062		0.157		0.075
GRW*FLI		-0.004		-0.014		-0.656a		-0.007		0.027		0.042		0.362a		-0.279		0.110a		-0.165		-0.007
		0.003		0.016		0.113		0.023		0.019		0.133		0.035		0.832		0.012		0.151		0.023
Adj. R²	0.261	0.584	0.373	0.408	0.533	0.565	0.5913	0.64	0.611	0.636	0.445	0.674	0.394	0.679	0.824	0.871	0.725	0.777	0.660	0.769	0.591	0.640
F- Statistic	8.116a	3.988a	2.343a	2.4779a	22.120a	21.880a	6.6101a	7.714a	6.995a	6.830a	12.451a	12.281a	5.443a	9.281a	15.921a	6.145a	18.852a	18.075a	27.126a	52.881a	6.610a	7.714a
H-Test	73.447a	71.194a	20.806a	23.080a	16.428a	30.694a	26.4061a	39.456a	20.349a	118.508a	24.587a	38.217a	13.547a	26.217a	34.456a	18.120a	43.965a	48.120a	54.456a	78.145a	26.406a	39.456a

The results in the table 4.3b are based on two model applied on each of the industry. One model is applied only on the explanatory variables, whereas, the second model utilized the interaction terms of explanatory variables and financial liberalization index for Pakistan. The value of the F-Test in all the models describes the acceptance or rejection of the hypothesis of common constant. Significance of F value rejects the null hypothesis that the constants are common and the significance of H-Test Value confirms the validity and application of Fixed Effect Method for this panel data analysis in each of the manufacturing sector in Pakistan.

The analysis reveals that the exogenous variables explain the change in endogenous variable by 0.2615 as described by adjusted R-square in Model no 1 of the Textile sector of Pakistan. Coefficient of size is 0.0522 which describes the positive impact on investment of firms and beta coefficient of interaction term of size and financial liberalization is 0.3861 which means that financial reforms increased the investment as the size of the firm increases. Financial Liberalization has significant positive effect on the investment of the firms at 1% level of significance respectively. Beta coefficients of profitability without financial liberalization index show insignificant results, whereas, the interaction of profitability and index is positive. This shows that after liberalization the profitability of firms help to make investments by firms in the textile sector of Pakistan. The results in the table show 0.0871 for tangibility and the result of interaction of liberalization index with tangibility is 0.0105. It means that financial reforms have reduced the reliance on the asset tangibility for the acquisition of financial resources. Beta coefficient of liquidity is -0.0935 and risk is -0.0649. There is inverse relationship between the independent and dependent variable. It explains that one unit change in these variables will account for 9.35% and 6.49% negatively.

However, the interaction term of liquidity and risk is significant at 10%. It implies that financial liberalization have minimized the risk of investment. The interaction term of growth and index is insignificant.

The results of the fixed effect models no 03 and 04 of the food sector of Pakistan indicates that the exogenous variables explain the change in endogenous variable by 37.38% as described by adjusted R-square. Coefficient of size is 0.1489 which describes the positive impact on investment of firms and beta coefficient of interaction term of size and financial liberalization is 0.0491 which means that financial reforms decreased the investment of food related companies. Beta coefficients of profitability without financial liberalization index is 0.2412, whereas, the interaction of profitability and index is positive. This shows that after liberalization the investment of the firms is reduced on the basis of profitability in the food sector of Pakistan. The results in the table show 0.5895 for tangibility and the result of interaction of liberalization index with tangibility is 0.3218. It means that financial reforms have reduced the reliance on the asset tangibility for the investment in food sector of Pakistan. Beta coefficient of liquidity is -0.1255 and risk is -0.1734. There is inverse relationship between the independent and dependent variable. It explains that one unit change in these variables will account for 12.55% and 17.34% negatively. However, the interaction term of liquidity and risk is significant at 10%. It implies that financial liberalization have minimized the risk of investment. The interaction term of growth and index is insignificant.

The results of chemical and pharmaceutical sector highlight that independent variables bring the change in the investment of the firm by 0.5333 as described by adjusted R-square. Coefficient of size is 0.1489 which describes the positive impact on investment of firms and beta coefficient

of interaction term of size and financial liberalization is 0.3236 which means that financial reforms increased the investment as the size of the firm increases. Financial Liberalization has significant positive effect on the investment of the firms at 1% level of significance respectively. Beta coefficients of profitability without and with financial liberalization index show positive results and the values are 0.4357 and 0.3875. Tangibility is insignificant whereas, the result for tangibility after interaction of liberalization index is 0.3102. It means that financial reforms have increased the requirement of tangible assets for making investments in chemical and pharmaceutical industry of Pakistan. Beta coefficient of liquidity is -0.2853 and risk is -0.2755. There is inverse relationship between the independent and dependent variable. It explains that one unit change in these variables will account for 28.53% and 27.55% negatively. However, the interaction term of liquidity is significant at 1% and risk is significant at 10%. It implies that financial liberalization have minimized the risk of investment. The interaction term of growth and index is significant at 1% level.

The results of fixed effect models of Non Metallic mineral sector foreshadow that all variables will bring about 0.5913 as described by adjusted R-square. Coefficient of size is 0.3506 which describes the positive impact on investment of firms and beta coefficient of interaction term of size and financial liberalization is 0.2630 which means that financial reforms increased the investment as the size of the firm increases. Financial Liberalization has significant positive effect on the investment of the firms at 10% level of significance respectively. Beta coefficients of profitability without financial liberalization index show negative results, whereas, the interaction of profitability and index is insignificant. This shows that after liberalization the

profitability of firms is not the determinant of investment in Non Metallic Manufacturing sector of Pakistan. The results in the table show 0.2904 for tangibility and the result of interaction of liberalization index with tangibility is 0.2439. It means that financial reforms have reduced the reliance on the asset tangibility for the acquisition of financial resources. Beta coefficients of liquidity and risk are insignificant without interaction of liberalization. The beta coefficient of risk and liberalization is -0.1538 which means that after financial liberalization risk of other manufacturing firms have inverse relationship. If risk is higher the investment is reduced by 15.28% in this sector. However, the interaction term of liquidity and risk is insignificant. It implies that financial liberalization have minimized the risk of investment. The interaction term of growth and index is insignificant.

The results of motor vehicle auto parts sector explain the change in endogenous variable by 0.6117 as described by adjusted R-square. Coefficient of size is 0.0290 which describes the positive impact on investment of firms and beta coefficient of interaction term of size and financial liberalization is 0.0589 which means that financial reforms increased the investment as the size of the firm increases. Financial Liberalization has significant positive effect on the investment of the firms at 10% level of significance respectively. Beta coefficients of profitability without financial liberalization index show negative results, whereas, the interaction of profitability and index is positive. This shows that after liberalization the profitability of firms help to make investments by firms in the motor vehicle and auto parts sector of Pakistan. The results in the table show 0.4171 for tangibility and the result of interaction of liberalization index with tangibility is 0.2227. It means that financial reforms have reduced the reliance on the asset tangibility for the investment and firms are investing in financial assets rather

that fixed assets. Beta coefficient of liquidity and risk are insignificant, whereas the interaction terms of both the variables with liberalization index are also insignificant. It means that in motor vehicle and auto parts sector risk and liquidity are not the determinants of investment even after financial liberalization. The interaction term of growth and index is insignificant.

The fuel and energy sector show a change in adjusted R square of 0.4455. It means that all the independent variables will bring about 44 percent change in the investment of the any firm in this sector of Pakistan. Coefficient of size is 0.2625 which describes the positive impact on investment of firms and beta coefficient of interaction term of size and financial liberalization is 0.3011 which means that financial reforms increased the investment as the size of the firm increases. Financial Liberalization has significant positive effect on the investment of the firms at 1% level of significance respectively. Beta coefficient of profitability without financial liberalization index is 0.5291 and is significant at 1% level, whereas, the interaction of profitability and index is positive with beta value 0.6151. This shows that after liberalization the profitability of firms help to make investments by firms in the fuel and energy sector of Pakistan. The results in the table show 0.1702 for tangibility and the result of interaction of liberalization index with tangibility is 0.2042. It means that financial reforms have increased the effect of asset tangibility on the investment of firms in fuel & energy sector. Beta coefficient of liquidity is -0.1921 and risk is insignificant. There is inverse relationship between the liquidity and investment. It explains that one unit change in this variable will account for 19.21% negatively. However, the interaction term of liquidity, risk and growth are insignificant.

However, in communication and transport sector analysis indicates that independent variables explain the change in dependent variable by 39.5% in model 75 whereas Adjusted R-square of model 76 is higher which has the explanatory power 67.93% in explaining the dependent variable. Coefficient of size describes that 1% change in size would cause the change in investment by 5.46% whereas the liberalization lever up this relation to 6.24%. Profitability has the negative impact on the investment which shows that in communication and transport section firms are distributing the major portion of profit among shareholders and not making investment to expand its operation. The coefficients of the tangibility in both models are insignificant. The beta coefficient of liquidity is -.4054 which means that 1% increase in liquidity will bring the negative change in investment by 40.54%, these results describe the tradeoff between liquidity and investment. Risk is insignificant in model 75 whereas the beta coefficient of Risk in Model 76 is -0.1448, which shows that 1% increase in Risk would impact negatively on investment by 14.48%. Financial liberalization pushes up the level of investment in this sector which may be verified from the coefficients of growth. Without interaction term of financial liberalization growth has impact by 15.09% whereas in model 76 this impact is increased to 36.28%.

The analysis indicates that independent variables explain the change in dependent variable by 82.49% in model 15whereas Adjusted R-square of model 16 is higher which has the explanatory power 87.12% in explaining the dependent variable in Paper Products Sector in Pakistan. Coefficient of size describes that 1% change in size would cause the change in investment by 8.32% whereas the liberalization lever up this relation up to 11.25%. Profitability has the negative impact on the investment which shows that in paper product sector firms are distributing the major

portion of profit among shareholders and not making investment to expand its operation. The coefficients of the tangibility in both models are positive and significant. The interaction of tangibility and liberalization index increased the effect of tangibility on investment by 11.28%. The beta coefficient of liquidity is -0.1610 which means that 1% increase in liquidity will bring the negative change in investment by 16.10%, these results describe the tradeoff between liquidity and investment. Risk in both the models is significant at 5% and 1% level of significance, whereas the beta coefficient of Risk and liberalization index is -0.0624, which shows that 1% increase in Risk would impact investment negatively by 6.24%. Financial liberalization did not help to increase the level of investment in this sector which is evident from the values of growth.

The electrical machinery sector of Pakistan shows that the explanatory variables can bring about 72.59% change in dependent variable without interaction of financial liberalization whereas Adjusted R-square of model 18 is higher which has the explanatory power 77.78% in explaining the dependent variable. Coefficient of size describes that 1% change in size would cause the change in investment by 71.12% whereas the liberalization reduced this relation up to 61.12%. Profitability has the positive impact on the investment which shows that in electrical machinery section firms are retaining the profits for future projects and expansion. The coefficients of the tangibility in both models are significant. Financial liberalization increased the requirement of asset tangibility for investment in this sector which is evident from the beta value 0.1082. The beta coefficient of liquidity is -0.2313 which means that 1% increase in liquidity will bring the negative change in investment by 23.13%, these results describe the tradeoff between liquidity and investment. Risk is insignificant in

model 87 whereas the beta coefficient of Risk in model 88 is -0.1128, which shows that 1% increase in Risk would negatively impact on investment by 11.28%. Financial liberalization pushes up the level of investment in this sector which may be verified from the coefficients of growth. Without interaction term of financial liberalization growth has impact by 4.50% whereas in model 88 this impact is increased up to 11.02%.

The analysis of refined petroleum products show that the exogenous variables explain the change in endogenous variable by 0.6603 as described by adjusted R-square. Coefficient of size is 0.0238which describes the positive impact on investment of firms and beta coefficient of interaction term of size and financial liberalization is 0.2124 which means that financial reforms increased the investment as the size of the firm increases. Financial Liberalization has significant positive effect on the investment of the firms at 5% level of significance. Beta coefficients of profitability without and financial liberalization index show negative results. It means that firm in this sector are not making investments in real assets they may be investing in financial assets. The results in the table show insignificant results for tangibility without interaction of liberalization. However, after interaction of index and tangibility it shows positive relationship with the beta value of 0.3321. Beta coefficient of liquidity is -0.2781 and risk is -0.1289. There is inverse relationship between the independent and dependent variable. It explains that one unit change in these variables will account for 27.81% and 12.89% negatively. However, the interaction term of liquidity and risk is significant at 1%. It implies that financial liberalization have minimized the risk of investment. The interaction term of growth and index is insignificant.

The analysis of other manufacturing sector indicates that the exogenous variables explain the change in endogenous

variable by 0.5913 as described by adjusted R-square. Coefficient of size is 0.3506 which describes the positive impact on investment of firms and beta coefficient of interaction term of size and financial liberalization is 0.2630 which means that financial reforms increased the investment as the size of the firm increases. Financial Liberalization has significant positive effect on the investment of the firms at 10% level of significance respectively. Beta coefficients of profitability without financial liberalization index show negative results, whereas, the interaction of profitability and index is insignificant. This shows that after liberalization the profitability of firms is not the determinant of investment in the other manufacturing sector of Pakistan. The results in the table show 0.2904 for tangibility and the result of interaction of liberalization index with tangibility is 0.2439. It means that financial reforms have reduced the reliance on the asset tangibility for the acquisition of financial resources. Beta coefficients of liquidity and risk are insignificant without interaction of liberalization. The beta coefficient of risk and liberalization is -0.1538 which means that after financial liberalization risk of other manufacturing firms have inverse relationship. If risk is higher the investment is reduced by 15.28% in this sector. However, the interaction term of liquidity and risk is insignificant. It implies that financial liberalization have minimized the risk of investment. The interaction term of growth and index is insignificant.

Discussion

The present research is conducted to find out the impact of financial liberalization reforms along with firm-specific factors (*size, profitability, tangibility, liquidity, risk, and growth*) on the investment of manufacturing listed firms in Pakistan Stock

Exchange. To investigate, the study developed financial liberalization index based on the reforms from 1991 to 2014. The reforms were subdivided into nine categories as per the financial sector progress review report of State Bank of Pakistan. To meet the objectives of the study analyses were brought down to various sectors of manufacturing firms that include Textiles, Food, Chemicals, Other manufacturing, Motor Vehicle, Fuel & Energy, Communication, Refined Petroleum, Paperboard, and Electrical Machinery. Panel data regression analyses were performed and fixed effect models were applied on the data set.

In nutshell, on the basis of firm-level factors and their interaction with liberalization index, the results highlight the favorable impact of financial reforms on the investment of Manufacturing listed in Pakistan Stock Exchange. However, results which have been extracted from the analyses show that there is significantly different impact of financial liberalization on the level of investment among sectors. Results show that textile sector is benefited at the most from the financial liberalization in terms of increase in investment and it is evident from the interaction coefficients of firm specific factors and financial liberalization. The coefficient values of size, profitability, liquidity, and risk favorably affect investment level of the firm after liberalization of the financial system in Pakistan. The coefficient of index and size is 0.3861, profitability is 0.1041, liquidity is -0.0491, and risk is -0.0214. Among other sectors, financial liberalization has also helped to increase the investment in refined petroleum products, electrical machinery, and chemical and pharmaceutical sectors. This is also evident from the analyses

that the interaction of profitability, risk, and tangibility affected favorably on the level of firm investment in these sectors. On the other side, investment level of food, non-metallic minerals, other manufacturing, and paper products did not improve much from financial liberalization reforms in Pakistan. Some sectors provided evidence of mixed results which includes fuel & energy sector and motor vehicle & auto parts sector. The results of this research are in consonance with the work of Koo & Shin (2004), Galindo et al., (2005), Ghosal & Nair (2009) and Onwuka (2014) that financial liberalization has divergent effects on the firm-level investment in listed large scale manufacturing firms.

Policy Implications and Future Research Directions

The results of the present study suggest that there is still room for improvement. On the basis of the findings the following recommendations can be drawn. It is proved that financial liberalization has an impact on the investment of manufacturing sector in Pakistan. Therefore, policy makers should keep an eye on improving financial system so that benefits of financial liberalization become constant phenomena for the manufacturing sector. The results further show that the effect of financial liberalization is not uniform across various sectors. Therefore, sector specific reforms may be introduced in refined petroleum products, non metallic minerals, and food sectors considering their special needs. The study also recommends that Food sector needs focus in terms of investment to get benefit of financial liberalization.

Communication and transport sector requires attention towards liquidity, risk, and growth to achieve benefit in terms of improving their investment function.

Future Research Directors

Research open up avenues to conduct future research and none of the research is ultimate. Future research may be directed to find out more insight of financial liberalization hypothesis by conducting extensive interviews from the financial manager or chief executive officer of the manufacturing sector firms. The interviews may be targeted to know better perceptions of the finance manager/chief financial officer and CEO views about the benefits and drawbacks of three levels of financial liberalization i.e., capital account, stock market, and bank liberalization.

Future research may also segregate the data on the basis of firms having affiliation with large business groups and non business group. The analysis may be conducted to explore, whether firms with business group affiliate have better access to funds or non business group affiliated firms. Another dimension for future research could be to categorize firms on the basis of political connection of CEO/Finance Manager/Senior Management. This may unveil some more truths about the level of firm investment.

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70

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