

# Impact of Equity Liquidity on Firm Performance and Investment: Some Evidence from Pakistan



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CERTIFICATE

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***Dedicated***

***To***

***My Mother***

*A strong and gentle soul who taught me to trust in Allah, believe in hard work and that so much could be done with little*

***My Father***

*For earning an honest living for us and for supporting and encouraging me to believe in myself*

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IN THE NAME OF ALLAH, THE MOST GRACIOUS AND THE MOST  
MERCIFUL

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## **List of Abbreviations**

CEO	Chief executive Officer
SBP	State bank of Pakistan
PE	Price earnings ratio
ROA	Return on assets
GDP	Gross domestic product
SME	Small and medium enterprises
M2	Money supply
PSE	Pakistan Stock exchange

## **ABSTRACT**

This study aims to investigate the impact of equity liquidity on firm performance and investment. The first objective of the study is to examine the impact of equity liquidity on the performance and investment decisions of manufacturing firms in Pakistan. Other objectives of the study are to find out the role of financial development in establishing the link between equity liquidity and firm investment. The study is based on panel data from the period of 2001 to 2015. For conducting this study data was gathered from Pakistan Stock Exchange listed companies and from the annual statements of state bank of Pakistan. Estimation technique of the study is random effect because firms and their characteristics are taken randomly so, here random effect is more justified rather than fixed effect. Modified liquidity ratio is used for showing stock liquidity of firms and M2/GDP is used as the proxy of financial market development. Firm size, current ratio, share price, volatility of sales, market value of equity, and cash flow ratio are used as Independent variables. Except all variables the effects of dummy variables with respect to time, sectors and discount rate on firm performance and investment are also included. Empirical results support that more liquidity of firms the more will be better performance. Further it has been found that there is positive relation between investment and financial market development. These findings have significant implications of equity liquidity on firm performance and investment. It appears that in presence of liquid stocks and financial market development the firm performance and investment will improve respectively.

# Chapter 1

## INTRODUCTION

### 1.1 Background of the Study

Understanding interlinks between equity liquidity, firm performance and investment is an important issue in corporate finance. Why equity liquidity is considered important for firms' better performance as well as for their more investment decisions? How liquidity lessens the uncertainty about obtaining funds from equity market in future? How increasing liquidity in market can reduce cost of equity? These questions challenge the researchers as well as financial policy makers, firm managers and stakeholders to investigate that how equity liquidity helps in improving manufacturing sector of Pakistan. Tice et al. (2008) investigate such relationship between equity liquidity and performance by firm. Although some studies have been undertaken but still there is a room for further work.

Equity is defined as the interest of ownership in a corporation in form of preferred stock or common stock. There are several theories regarding equity. Thakor et al. (2007) examine the issuance of security theory in which it is pointed out that at the time of high stock prices the firm issue equity. This theory is based on the idea that the issuance of security decision on how firm investment is affected by this decision and then how this selection has effect on firms' post-investment price of stock. CEOs think that the stock prices are the key factors in security issuance decisions (Harvey et al. (2001)). Firms prefer to issue equity rather than debt at the time of high stock prices (e.g. Asquith and Mullins (1986), Baker and Wargler (2002), Jung, Kim, and Stulz (1996), and Mikkelson and Partch (1986)). In manufacturing industries source of finance was debt but now a days, equity is considered as the most attractive source to finance (Abdul Rashid (2008)).

In finance, liquidity is a basic concept because the cash amount which a company has in hand or can generate quickly shows how healthy the company is financially. If there is high levels of cash available, it indicates that the company can pay off its debts easily at the time of due dates. Liquidity shows the ability to sell an asset quickly without affecting the price of assets. It refers the ability to convert into cash quickly while some items are more liquid than others. Equity market liquidity shows the extent to which a market, like country's stock market permits shares to be bought and sold easily. There are two important features in defining the word easily. First, speed: A liquid stock can be sold quickly. For this, there must always be willing buyers when sellers want to sell. Second, price: liquidity also shows that a stock can be sold without affecting the market price of stock. Baker and Stein (2014) predicted that as liquidity improves the firms issue more equity. The place where shares of public companies are traded is known as equity market. In equity market idle resources of economy are used in productive way so that efficient allocation of capital may take place. Stock markets are most important element of an economy. They provide a platform to seller and buyers to meet up and trade. Investments in turn help the traders to generate more funds to expand their businesses. Stock markets are believed to be the most key source to generate funds by the companies. Liquidity is considered as the main factor which attracts investors to invest their funds in stock markets. Liquid stock markets make firms able to acquire much needed capital quickly (Adjasi and Biekp (2006)). Through liquidity, a firm can meet its short-term obligations immediately.

Cook et al. (2005) examine that firms having more liquid balance sheets face less stock market liquidity risk while firms having less liquid balance sheets experience high shocks of liquidity. Liquidity shows the entity's ability to pay its liabilities in time, as they come outstanding for payment under original payment times. It plays a

significant role in seizing good opportunities. A highly liquid asset trades without any impact on price and a highly illiquid asset cannot be traded at any price. If you have easy access to cash and a good opportunity comes along, then it is easy for you to seize that opportunity. When firms have large amount of cash in hand it is considered a sign of a high liquidity. Active market with large number of buyers and sellers results in a high liquidity level.

Investment indicates the addition of new capital to a firm's capital stock. Stock is calculated at a given point of time and investment is calculated over a time period known as a flow. It means the investment flow increases the capital stock. In present the investment related decisions are made by manufacturing firms. Stock markets are there to put savings into profitable investment decisions. Liquidity of equity is highly depended on the shares in which you have invested. Generally it is observed that the market which has very low cost of transaction is known as liquid market, while the market with high transaction cost is said to be illiquid market. It is not easy to measure transaction costs. The measuring cost depends on several factors like trade size, timings, and trading volume. Information regarding cost of transactions is normally not available. Tice et al. (2008) document that firm having liquid stock can perform better performance as measured by firm market-to-book ratio. However, variety of measures are used to examine liquidity like volume of trade, trading frequency, quote size, bid-ask spread, trade size etc.

In the investigation of Firm-level investment, two aspects are considered. In this one is Tobin's Q theory of investment which points out the relevance of valuation of stock market to investment decisions (Fens Xiao (2000)). Several studies have been conducted to describe the relation between firm characteristics and holding of liquid assets. Firms hold liquid assets to keep investing when cash flow is too low relative to

investment (Williamson et al. (1997)). Firms increase investment in liquid assets when the return on future investment opportunities, uncertainties of future cash flows and cost of external financing increase (Kim Mauer (1998)).

Firm performance is a multidimensional concept that defines the success of a firm as well as its level of achieving firm objectives. Size, sales, efficiency and effectiveness are the various dimensions of firm performance (Civelek et al. (2015)). A firm's performance includes evaluation about its policies and operations in monetary terms. Return on investment, value added, and return on assets are also considered in it (Brito et al. (2012)). In a firm's performance it is noticed that how wisely a firm use its assets from business and generate revenues. Measurement of firm performance is crucial for effective management of any firm Zain et al. (2006). This is so because the betterment in the process is not possible without the measurement of results or outcomes. In firm performance, the process of measuring the actions efficiency and effectiveness is followed (Neely et al. (1995)). Firm's performance is also measured by Profitability. Profitability and illiquidity have negative relationship which suggests that the improvement in liquidity helps to increase in firm performance. In other words, firms with high Profitability are attractive for investors (Chung et al. (2010)). A firm performance can be reviewed from the financial statement reported by the company. Consequently, a good performing firm will motivate management for quality disclosure (Sisnuhadi et al. (2011)). Through performance, the firm's success is basically explained over a specific time period. Firm's performance is very crucial for investors, stakeholders and economy as well. Return on investment is important for investors and a firm which is well performing can proved to be a high and long term returns for their investors (Javed et al. (2013)).

The positive effect of asset liquidity on stock liquidity is beneficial for firms with less growth opportunities. High liquidity of assets lowers uncertainty regarding valuation of assets that increases investment in future. Myers et al. (1995) shed light on the dark side of liquidity. According to them, liquidity of assets is normally considered as a good thing for financial corporations and investors but shows bad sign for non-financial corporations and investors.

Financial market development also plays a significant role in liquidation of stocks. Financial markets provide a direction for firms to raise their finance either by debt or by equity capital or both. Stock market liquidity is important for efficient functioning of financial market. It is a multi-dimensional concept because with the help of liquidity the transactions can be executed at a very low cost and transaction can also be executed immediately. Highly developed stock markets provide liquidity for corporate finance as well as investment. Through active and highly liquid stock market, it is possible to finance their operations cheaply through equity capital (Doku et al. (2011)). A developed financial market is necessary to increase the efficiency of financial elements. In presence of efficient financial market it is easy for firms to issue securities for raising funds. Stock market is expected to enhance economic growth after increasing liquidity of financial assets and promoting wiser decisions regarding investment based on available information (Abdul Rashid (2008)). The amount of information present in the stock price depends on the market liquidity. Conditions of liquidity lead to assess financial market development (M.K. Datar (2000)). Firms having liquid stock can improve information about its stock price and firm performance and then incentives are more provided to insiders to increase worth and owners' interference (Verrecchia et al. (1981) and Gromb et al. (2004)). Tice et al. (2009) explain through empirical analysis that increase in firms' stock liquidity can improve

firms' worth because liquidity activates trade by informed investors that results in more informative prices of stock and better marginal inducement.

Liquidity is considered as the backbone of stock markets. It has important implications for listed firms. Recently a huge amount of study has been done related to liquidity (Arum Kumar Misra (2015)). Liquid stock market increases information about trading that helps in getting information about stock prices (Dow and Gorton (1997), and Titman (2001)). Stock market liquidity helps managers to learn about valuable information from informative stock price and then investments value enhanced (Chen, Goldstein and Jiang (2007)). Liquid stocks provide more information about firm specific information that managers do not know as well as investors and other related persons. Managers get information from prices of stock that helps in corporate decision-making and it leads to firm performance improvements. It is also suggested that firms can reduce the cost of raising capital after making improvements in stock market liquidity (Weston et al. (2005)).

Liquidity positively affects a firm's Profitability which leads to the better firm performance because shares' stocks are traded as currency which control both cash flow and right to control. However the trading of this currency plays a pivotal role in the performance of a firm. Fan et al. (2010), explain the causal relations between firm profitability and stock liquidity. In financial economics there is variety of perspectives regarding the relationship between liquidity and firm performance. When it is said that liquidity has direct impact on firm profitability the reason behind this is the stock shares and currency control cash flow. When currency trade takes place it plays a crucial role in a firm performance. Maug et al. (1998) theory is also included in this situation that tells a relationship.



## **1.2 Identifying Literature Gap**

We find few studies that examine the relationship between stock liquidity and firm performance. There is also not enough literature in which the role of equity liquidity in firms' investment as well as performance. There is hardly to find considerable literature regarding liquidity and firm investment decisions in developing countries like Pakistan. There is very limited empirical evidence on the effect of liquidity on firm performance. It is also seen that the empirical link between liquidity and firm value is conclusive as different studies have documented different results. However, for complete understanding the impact of equity liquidity on firm investment, it would be worthwhile to expose this issue for developing markets. The literature in developing countries is also silent on the role of equity liquidity in establishing the relationship between interest rate and firm investment as well as in the association between cash holding and firm investment. However one can predict that the investment sensitivity to cash holdings would be less for those firms that have liquid stocks as compared to those firms having relatively illiquid stocks. Therefore it would be useful to examine this issue. The existing literature has also provided evidence that financial sector development has also an important role in firm investment decisions like Kazuo Ogawa (2015). They study the impact of financial development on the investment and cash holdings behavior of firms by shedding light on the effects of bank health on cash flow sensitivity of investment and cash holdings. In our study we are taking equity liquidity of Pakistan's manufacturing firms instead of bank's liquidity. Therefore, the empirical evidence on the relationship between financial sector developments, equity liquidity, cash holdings and firm investment policy would definitely increase our understanding about the role of financial market in firm evaluation. So, there is less literature is available in this regard that shows the much work has not been done in Pakistan.

### **1.3 Objectives of the Study**

Keeping in view the above-mentioned gap in the existing literature, this study aims to answer the following questions. This relationship will be examined by setting our sample data. What are the determinants of firm performance as well as firm investment? To what extent firm performance is effect by equity liquidity? How liquidity affects firms' investment? Whether equity market liquidity affects the relationship between interest rate, cash holdings and firm investment? What is the role of financial development in establishing the equity liquidity effects on firm value and investment decisions? Specifically the study has the following objectives.

1. To examine the impact of equity liquidity on the performance of manufacturing firms in Pakistan.
2. To investigate the effect of equity liquidity on firms' investment decisions.
3. To examine whether financial sector development and equity market liquidity affects the investment sensitivity.

### **1.4 Research Questions**

To achieve the objectives, this study focuses on the following questions.

1. What is the effect of equity liquidity on firms' investment decisions?
2. What is the impact of equity liquidity on firms' performance?
3. Does financial sector development affect the investment sensitivity?

### **1.5 Significance of the Study**

When we explore studies regarding our work we find sufficient work has been done on liquidity, firm's performance and investment. Some work has been found about the liquidity impact on firm's value but we found equity liquidity is an important

aspect in this area. It attracts our attention towards manufacturing sector of Pakistan. In this regard we contribute in following manner. This study reflects the importance for investors, managers, public and government. For investors it shows great significance in this sense that by showing impact of liquidity on firm performance they will easily decide whether to invest or not or in which liquidity stage the investment will be beneficial or they should be restrained. Stakeholders will also be benefited by our study when we highlight the relations of liquidity with performance, and investment of firms. After pointing out the liquidity of stock, managers will be informed about price of stock and it will help in decision making that leads to good firms' performance. This study also contributes to help the government and public in clearing the picture of industry of developing countries like Pakistan. So, this study will contribute much in Pakistan's manufacturing sector especially main sectors like textile, cement, and automobile as it is an all-inclusive analysis about all firms. Firms' policy makers will use this study for financial decision-making.

## **1.6 Plan of the Study**

This study is organized as follows. It is started with introduction by explaining the background of the study, literature gap, objectives and research questions and significance of the study. In Chapter 2 discussion is made on the overview of Pakistan's manufacturing sector with facts and figures. Literature review is presented in Chapter 3. After the discussion of data and methodology the estimation techniques and results are interpreted with the explanation of all variables in the model are shown then limitations and conclusion is discussed. At the end summary, conclusion, policy implications and limitations of the study, references and tables are shown.

## **CHAPTER 2**

### **AN OVERVIEW OF PAKISTAN'S ECONOMY IN CONTEXT OF MANUFACTURING SECTOR**

In 1947, manufacturing industry of Pakistan was in very miserable condition. With very low share of industry, Pakistan had to start from zero. However, Pakistan still has a very small manufacturing sector. The textile sector is considered the backbone of Economy of Pakistan. It contributes a major share in GDP by exporting and by providing employment opportunities. Due to non-availability of adequate power, poor infrastructure, and poor management of resources the manufacturing firms are suffering a lot. Along with the textile sector other manufacturing sectors also contributes a lot in Pakistan's economy by generating revenues. Manufacturing sector of Pakistan has a promising future if proper attention is given to improve its performance.

#### **2.1 Overview of Pakistan's Manufacturing Sectors**

This chapter provides an overview of Pakistan's manufacturing sector. This chapter aims mainly for readers to make familiar them with Pakistan's manufacturing sector. The comprehensive review of this is related to our study in broader context since our data relates to Pakistan's manufacturing sector and data has been drawn from all manufacturing sectors of Pakistan.

It is thought that industries play a vital role in economic development and growth of a county. Country cannot be considered as developed without industrialization. Countries like Taiwan, South Korea, and East Asian endorsed the view of industrialization. In 1950s and 1960s it was assumed that Pakistan would be one of the developed countries of the world but due to separation of East Pakistan,

many inequalities restricted its development process. Manufacturing sector plays a key role in economy with multidimensional activities in various sub sectors. It has many impacts through value additions on growth. At the time of growth, there are more jobs and exports. This sector deals with government policies, foreign direct investment, research and development, innovation and supply of energy. Manufacturing is the third largest sector of Pakistan's economy having 18.5 percent contribution in GDP and 13 percent in employment. Industrial sector of Pakistan was supposed to grow up to 7.7 percent during the fiscal year 2016-2017.

There are two sub sectors in the manufacturing sector which includes small scale manufacturing and large scale manufacturing sector. Large scale industries are registered under factories act 1937 and small scale industries cover all manufacturing establishments. Normally, there is an overall view that large scale industries only represent the manufacturing sector. Small-scale industries also play a significant role in development of an economy and it provides employment opportunities to a large number of people. Khalid Navid shows the feature of small scale manufacturing sector in his study. He argues that if we take small manufacturing sector into consideration it will contribute in generating employment opportunities and efficient allocation of capital. Khalid Aftab and Eric Rahim discuss in their study that during the period of 1960s the government of Pakistan did not consider the role of small scale industries for the development process in economy. Small scale industries were not able to get benefits from government.

After 1971 Pakistan became a new country in many aspects due to economic and industrial policies of 1971 and 1977. The role of public sector had increased the economic stability. The structural adjustment program launched by IMF and World Bank determined the policies in industrial sector of Pakistan. During the era of General

Zia-ul-Haq, it is witnessed that the high growth rate returns and role of private sector had increased. Many policies were made and implemented in the regime of Zia. The initial step by the Zia government was to denationalize the agro-based industries. The steps taken by Zia led to significant results in manufacturing sector in Pakistan. Nawab Haider Naqvi and Khawaja Sarmad believe that in 1978 and 1986 there was a high growth rate of GDP which has average 7 percent per annum due to strong expansion in manufacturing sector.

The financial markets in Pakistan are not in good condition due to firms' reliance on undistributed profits to fulfill investment and working capital needs. In financial markets banks and trade credit are not more considered but firms rely on internal credit. Credit rationing is a major financial constraint in the development course of Pakistan's manufacturing sector. A study is conducted by LUMS (2006) highlights the constraints in development process in SMEs. Major constraint is considered a financial constraint because SMEs cannot access credit due to lack of security or high cost of credit. At the result, these types of limitations lead the firms to inefficient productivity and unavailability of modern technology that results in low potential of growth. Large firms also have to face problems in Pakistan but these firms consider less risky as compare to small firms. Large firms also avail economies of scale and have high financial ratios. In our study we take firms from all manufacturing sectors of Pakistan.

When we talk about manufacturing sector in Pakistan, the sector which comes immediately in mind is textile sector because it is the most prominent and good sector in Pakistan. Textile sector is the most dynamic sector of manufacturing sector. This sector is providing a wide variety of products. Pakistan has high status as important producer in various industries at international level. Pakistan's textile sector is the 8<sup>th</sup>

largest in Asia. This sector is known as the largest manufacturing sector is Pakistan. It is providing 9.5 percent share in total GDP and 15 million workers are employed by this sector. In production of raw cotton and cotton yarn it is at 4<sup>th</sup> in Asia. In spinning capacity the country is contributing about 5 percent in GDP. In Pakistan the Punjab province has largest share in production. Textile sector also produce several products like towels, carpets, bed sheets, rugs, and knitwear. Above mentioned products has significant part of Pakistan's exports with the high demand by US. As the time passes the performance of this sector improves by increasing exports and it is earning a huge amount of foreign exchange. The textile sector is growing at a faster rate. Textile sector has a very good position in economy of Pakistan because it contributes a lot in employment and value-added. Due to this sector the exports have also been increased and Pakistan is able to earn foreign exchange. Textile sector contributes 26 percent in value added of manufacturing sector. Food sector is contributing 18 percent which has second number. Cotton textile contributes 30 percent. Cotton yarn earns 20 percent of foreign exchange. In 1960s and 1970s the textile industry of Pakistan had a prominent position and now it has less than 2 percent contribution of the whole market.

Pakistan is one of the largest exporters of cotton in the world in quality term and its value has only 5 percent of the export market. Huge investment was made in this sector till 2008 but 2009 was a dismal period and it is not growing as before. In this sector woolen, canvas and jute industries are also included. Although Pakistan is a largest exporter of textile products in the world market however, this is not only the part of manufacturing sector due to which country is growing. During the last couple of years, Pakistan has several industries as well. Now we are going to show the exports of Pakistan textiles in a table. In the below table we have shown the contribution of textile sector from the period of 2007 to 2015. It is obvious from the table that the

major contribution is of cotton and cotton textiles and in 2015 there is high share by textile sector after the share in 2007 and 2012.

**Table 1: Export of Pakistan Textile US \$ Dollars**

	2007- 2008	2008- 2009	2009- 2010	2010- 2011	2011- 2012	2012- 2013	2013- 2014	2014- 2015
Cotton & Cotton Textiles	10,071	9,308	9,754	13,147	11,778	12,652	13,143	9,785
Synthetic Textiles	490	319	446	608	546	406	383	274.292
Wool & Woolen Textiles	216	145	137	132	121	122	125	92.902
Total Textiles	10,777	9,772	10,337	13,887	12,445	13,180	13,857	10294.1
Total Exports	19,224	17,782	19,290	24,810	23,624	24,515	25,131	17930.8
Textiles As % Of Exports	56	55	54	56	53	54	53	57

Source: Ministry of Textile

The textile policy 2014-19 show the plans that can be implemented to lead textile sector competitive and stable. Government will make benefits possible of textile policy 2014-19 after spreading it at national level. It has also a positive effect on small and medium organizations through different steps include development. The basic purpose of the present policy is to increase dependence on effect factors which give comparative advantage and to introduce new techniques in order to improve competition within entire chain of textiles. The vision of this policy is to make Pakistan a leading country in export of value-added textile products. The mission is to develop and implement a textile policy to ensure the Pakistan is a reliable country in exports of high quality textile products.

· Automobile sector includes the production of all sub sectors excluding buses and two/three wheelers during the span of July-March 2014-2015. Cars and jeeps are



included in this. Automotive industries in which the potential demand for vehicles in the economy maintains a promising future for the industry and slowdown may not be forever. Good performance by this sector would correspond to the macroeconomic stability and consequent betterment in other sectors. We have summarized all the latest information regarding production capacity and the production units from the period of 2013 to 2015. It has been noticed that the installed capacity of producing cars in Pakistan is more than others and tractors production capacity is on second number. The production of tractors is more than cars and other automobiles as has 54 percent change from the year of 2013 to 2015.

**Table 2: Production of Automotive Industry No. of Units Produced**

Category	Installed Capacity	2013-14	2014-15	% Change
Car	240,000	85,681	105,267	23
LCVs	43,900	13,355	17,521	31
Jeeps	5,000	830	868	4.5
Buses	5,000	445	410	-8.0
Trucks	28,500	1,807	2,781	54
Tractors	65,000	24,714	35,753	44.6
Two/Three Wheelers	2,500,000	586,580	544,864	-7.0

Source: Pakistan Automotive Manufacturer Association

The development program of auto industry (AIDP) was expired on 30<sup>th</sup> June 2012. The new policy has been prepared and is waiting for approval which has following objectives. These objectives include making possible more investment in order to generate better quality products of latest technology and to balance the tariffs and growth of industry. Other objectives include the policy to provide welfare, quality, safety, and choice to consumers. It includes also ensuring research and development in this sector to produce quality and latest products.

There is another industry named as fertilizer industry in which positive trend has been noticed during the year under review. Fertilizer industry is an important source of providing inputs for production of crops which contributes from 30 to 50 percent in crop production. There are nine urea plants in Pakistan including three NP, one DAP, two CAN, three SSP, and one NPKs. In 2014-2015, it was expected that the production of fertilizers would reach to 65,000 tons. The fertilizer sector can perform better if the gas supply is to be provided smoothly.

Cement industry also plays an important role in the uptrend of manufacturing sector during the financial year 2015-16. Pakistan is in the top 20 cements producers in the world and at 5<sup>th</sup> in the exporters of cement. Domestic demand and a high export demand from neighboring countries are the main contributors to its high growth. We have shown the production capacity and export of cement during the last nine years in the table.

**Table 3: Cement Production and Exports Million Tons**

Years	Production Capacity	Exports
2008-09	42.28	10.98
2009-10	45.34	10.65
2010-11	42.37	9.43
2011-12	44.64	8.57
2012-13	44.64	8.37
2013-14	44.64	6.69
2014-15	45.62	6.08

Source: All Pakistan Cement Manufacturing Association (APCMA)

As we came to know that with the passage of time the production capacity has been increased but the exports show the downward trend. There is negative relation between production capacity and exports of cement. In 2008 its exports was 10.98 but in 2015 the exports fell to 6.08 which shows the decrease in foreign exchange.

Sugar industry is another important part of Pakistan's manufacturing sector, there are 82 sugar mills in Pakistan out of which 45, 32, 5 are in Punjab, Sindh and Khyber Pakhtonkhwa respectively. The production capacity is about 600,000 tons per day. Pakistan's steel industry has also a vital role in contributing in GDP. But in this industry the unprecedented melt down started in the year 2008 which cause crash of steel products world market. The domestic consumption of steel products is around 6-7 mtpy. Pakistan steel is considering execution of its expansion plan in two stages which are expected to be completed in next 3 to 5 years. There are many other industries in the Pakistan manufacturing sector like pharmaceutical industry, mineral production, mining and quarrying, chemical and energy industry.

At the end we are going to show the overall performance of recent years by manufacturing sector of Pakistan. In table it is obvious that some sectors are showing positive change in their growth while some are showing negative change in their production level. Textile sector brought less change as compare to last year but it has positive change from 1.45 to 0.50. Food and beverages which is at second number in production shows the negative change in 2015 by 1.03 percent. Majority of sectors have positive change in their production level in 2015 except paper and wood sector. Pharmaceuticals sector has brought high growth in 2015 by 6.38 percent as it is only showing figure -0.37 percent.

**Table 4: Group Wise Growth for the Period of 2014-2015 Vs. 2013-2014.**

Sr. No.	Groups	% Change 2013-14	% Change 2014-15
1	Textile	1.45	0.50
2	Food, Beverages & Tobacco	8.24	-1.03
3	Coke & Petroleum Products	7.49	4.73
4	Pharmaceuticals	-0.37	6.38
5	Chemicals	6.74	5.94
6	Automobiles	0.35	17.02
7	Iron & Steel Products	3.38	35.63
8	Fertilizers	21.64	0.95
9	Electronics	7.02	8.21
10	Leather Products	12.70	9.62
11	Paper & Board	9.30	-7.26
12	Engineering Products	-20.15	-10.68
13	Rubber Products	9.41	-0.56
14	Non-Metallic Mineral Products	0.19	2.56
15	Wood Products	-8.91	-78.46

Source: Pakistan Bureau of Statistics (PBS)

## 2.2 Capital Markets

Capital market is one of the important aspects of every financial market. It includes several financial instruments which can be used for transactions. It facilitates the investors by providing equity finance and long term debt. A stable and dynamic capital market can contribute in the economic development and growth of economy. There are three stock exchanges which covers the Pakistan's whole equity market. These stock exchanges include Pakistan Stock Exchange (PSE), Lahore Stock Exchange (LSE), and Islamabad Stock Exchange (ISE). PSE is considered as the oldest and highly liquid stock exchange in Pakistan. Stock exchange helps stock brokers in trading securities and stocks of companies. A stock must be listed on an exchange for selling or buying. Thus, it is a place where buyers and sellers of stock meet. The

international business magazine “Business Week” on the basis of annual percentage rate of return for investors announced PSE as the best performing stock market in the world in 2002. At that time PSE had attracted much foreign investment inflow. The basic feature of security markets is to make easy the funds flow in order to have surplus liquidity over deficits. The more the efficiency of such funds the more will be the equity liquidity which will have the strong impact on firm performance and investment positively. Pakistani companies that are equity based have been very low ranging between 25%-30% of assets.

The equity market is famous part of the capital market. Equity market plays a vital role in the economy of a country. Equity market provides a channel for businesses to increase capital after issuance of stock. This market provides long term and short term capital. In primary equity market the capital is provided and in secondary equity market the capital is traded. Stock market provides secondary market to investors and mobilization of capital. It is helpful in measuring the growth and efficiency of financial market. Equity market liquidity plays a vital role on the performance of listed firms. When there is good flow of trading stocks, more financing could be expected by attracting more investors in the market. If equity markets function efficiently the liquidity of capital stock increases which improves the rate of return by reducing the transaction costs. The more availability of liquid funds serves as a motivation to invest in firms.

## **Chapter 3**

### **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

In the literature there has been considerable discussion about stock market liquidity and firm investment. Liquidity and performances of firms are also discussed separately.

#### **3.1 Literature on Equity Liquidity and Financial Market Development**

Amihud was the first person to initiate the research concept of equity liquidity. After this initiative a lot of research has been done on equity liquidity. Amihud and Mendelson (1986) explore the relationship between returns from stock and market liquidity. It is observed that the more liquidity of equity shows the ability of organization to pay off its obligations in time and it also be considered a good sign for firms value. They also explored the relationship between cost of equity and equity liquidity and concluded that high liquid stock markets attract a large number of investors because there is free exit from ownership of firms. This in turn decrease the opportunity cost of capital. But Mayers et al. (1995) focuses on the dark side of liquidity. According to them increase in liquidity reduces the borrowers' ability to take specific action. They also examine the differences in asset and debt liquidity and present another theory of financial intermediation and disintermediation. According to Ready et al. (1996) that liquidity is an important aspect of trading equities. While small equity is normally traded inside the quoted price and large equity is traded often done on face prices. M.K. Datar (2000) investigates the measurement of stock market liquidity. He also discusses the merits of liquidity measurements like turnover ratio, volume etc.

Wurgler et al. (2002) study that prices of stock strongly effect the firm's investment that are equity dependent, firms which are in need of external finance for equity investment. They use equity dependence index, which is based on Kaplan, and Zingales work. It is observed that firm in top quintile rank of KZ index have three times sensitive to stock prices investment as compared to firms in bottom quintile. Corporate investment and stock market are directly correlating each other in time series and cross section. It is explained as; this relationship exists because stock prices show the marginal product of capital. This also reflects the investments and Tobin's Q relation shown by Tobin's Q and Von Furstenberg.

Madhavan et al. (2002) examine the relationship between cost, liquidity and volatility and also their determinants. They analyze the relationship between equity trading costs and volatility and also examine the impact of above variables on returns of equity. They also describe the practical importance of equity trading cost for policy makers and investors. Amihud (2002) suggests a simple and starting measure of liquidity, which can be, explained as absolute daily stock return divided by daily trading volume. Acharya and Pedersen also use the proxy suggested by Amihud. Hodrick, et al. (2002) develop the measure of liquidity, impact of price which examines the stock price change relates with trading volume. Crowin (2003) finds that liquidity reduces the magnitude of seasoned equity offerings low pricing. He elaborates the low pricing in SEO's are on average and a low pricing portion is negatively related to some measures of market liquidity. Viswanathan et al. (2004) explored that when market declines, it create market liquidity and existence of supply effects in equity markets.

Weyson et al. (2005) and Whited et al. (2005) examined that equity liquidity of firm make easy the external financing because it reduces the cost of issuing equity. Butler et al. (2005) show raising external capital is determined by stock market

liquidity. They examine the link between firm equity cost and liquidity. They find that by keeping other things same, firms with highly liquid stock bear low investment bank's fees. Their findings suggest that by increasing stock liquidity the cost of capital can be reduced. Spindt et al. (2005) provide a relation between dividend policy of firm and liquidity of stock market. According to them in the cross section, more liquid common stock holders have fewer chances to receive cash dividends. They consider size of firm, growth opportunities and profitability in their analysis. David et al. (2006) studied the stock market liquidity of Japan. In measuring the liquidity of stock market they considered the measure of US stock market used by Pastor and Stambaugh's (2003). Due to equity liquidity managers can be benefited by information for enhancing investment as (well Jiang (2007)). Thokar et al. (2007) test a security issuance theory in which it is believed that firm issue equity at the time of high stock prices. Several researchers of equity market have shown different outcomes as Fang et al. (2009) indicated that how equity market liquidity effect the firm performance and they also investigated the relationship between equity liquidity and firm performance. Similarly, Kanasro et al. (2009) explored the situation of equity market liquidity on Pakistan Stock Exchange (PSE) for the period of 10 years from 1985 to 2006. They found that less equity liquidity attracts fewer investors and causes small size of financial market. Firms having less equity liquidity face high issuance Lee et al. (2011) test the capital asset pricing model of liquidity-adjusted by Acharya and Pedersen in market of US after using several liquidity measures. In their study they test LCAPM using liquidity proxies from related literature. In their study eight measures are used for liquidity.

Manso et al. (2011) examine that liquid stock market is beneficial for corporate managers to play a governance role in case when block shareholders gives threats to exit in time of interfering corporate business because losing such shareholders. Doku et



al. (2011) examine the relationship between financial market development and choice between equity and debt of listed firms in a framework of panel data. This study finds that stock market development has direct effect on the decisions of capital structure of listed firms. Their results emphasize on the important role of equity markets in developing countries play in structure of capital of listed firms.

Bogdan et al. (2012) empirically test and find out the variables that play a vital role in making decisions regarding investment in stocks. The purpose of their study to find out the key variables that make up some stocks attractive for investors. In this liquidity is measured with Amihud's liquidity ratio. They find that the firm's size and number of issued stocks have effect on liquidity ratio. Zhang et al. (2013) address the role of stock market in corporate finance. They examine the stock liquidity effect on firm value. They show that there is direct relationship between firm value stock liquidity. Their findings show that when the investor is protected and there is financial reporting the importance of stock liquidity to value increases. Stulz et al. (2014) explored the relationship between issuance of equity and stock market liquidity. In this it was shown that issuance of equity is significantly and directly related to lagged innovations in local market liquidity. In their study they used liquidity as the explanatory variable for equity issuance. They also used the market-wide Amihud (2002) proxy which was defined by Lee et al. (2012) for 36 countries in their sample. This measure was designed to capture the marginal effect of a trading volume unit on the stock price.

### **3.2 Firm Performance and Investment**

Many empirical studies also focused on the liquidity of stock market and firms' performance. Mulford et al. (1986) test in their study the percentage criterion for equity method application, which has influence decisions regarding firm investment. Many

investment models based on the assumption that firm response to prices that are set in stock markets through capital cost. Petersen et al. (1987) have done research on imperfections in equity and debt markets. Amihud and Mendelson (1988) discuss that when there is increase in liquidity of stock, it will be directly related to value of firm. The reasons behind those assets, which are in place, are discounted at lower capital cost at the time of improved stock liquidity. Hansen et al. (1989) construct and test several models of firm performance in economic and organizational perspectives. In their study accounting rates of return are used to measure firm performance. Blundell et al. (1990) estimated the Q model of investment by using unbalanced panel data of UK firms. In this paper the importance of Tobin's Q in investment decisions determination has been examined. It has been found that Q is the significant determinant of investment with small coefficient. In this study it is also observed that cash flow is also a variable which influence investment. Holmstrom et al. (1993) study the stock market value as a monitor of performance of firms. They show that the price of stock covers the performance information. Kim Mauer (1998) points out that when there is increase in cost of external financing, return on future investment opportunities and future cash flows uncertainties the firms starts increasing investment in liquid assets. Stulz (1999) argues that globalization decreases the cost of equity capital because both save investors form risk and from falling of agency costs.

They concluded from their analysis that liquidity of stock market improves performance. Investment by firms is said to be directly related to financial factors. Sean Cleary (1999) focuses on the contrast of investment liquidity sensitivities among different firms' groups. It shows the improvement than previous studies whose conclusions only based on primarily level of significance of liquidity. It is found that investment decisions by all firms are very sensitive to firm liquidity. Fend Xiao (2000)

empirically investigated the stock market of China in which firm-level investment is tested. In this study two aspects are discussed which includes Tobin's Q theory of investment and present-value framework. Pual et al. (2006) investigate the liquidity scenario from different perspectives. In their analysis firstly they confirm the betterment in liquidity. Test is also applied on hypothesis that increasing stock liquidity can increase investment chances. It strongly supports the KZ findings. Brito et al. (2012) test a model of measurement for performance of firm, which is based on subjective indicators. In various studies, single indicator measures firm performance and studies also show this as one-dimensional concept even after admitting it as a multidimensional. Javed et al. (2013) investigate the relationship between firm financial performance, corporate governance and capital structure. In this study firm performance determinants are tested in developing countries like Pakistan.

Arian et al. (2014) showed relationship between stock liquidity and market value of companies is studied by using Tobin's Q measure. Tobin's Q is used as dependent variable while stock market liquidity as independent variable. Their study investigates the mechanism, which improves firm performance by liquidity after testing various causative theories. Results show that there is no significant relationship between gap of demand supply index and Tobin's Q as measure of stock liquidity. Dalvi and Baghi (2014) investigated the link between stock liquidity and firm performance. They analyzed this relationship on the firms listed at Tehran Stock Exchange and concluded that there is positive relation between stock liquidity and firm performance. Cheung et al. (2015) investigate the impact on corporate governance of firms' stock liquidity in US. Tobin's Q ratio and cash flow are used to measure firm's performance. Conclusion supports the extensive understanding that highly liquid financial markets can make strong governance mechanism and firm performance and it

also provides important practical implications. Sharma et al. (2015) investigate interlinks between firm performance and stock liquidity. According to them, stock liquidity plays an important role in improving performance of listed firms. At the time of high equity liquidity, firms attract more investors. In their study they use Tobin's Q as proxy of firm performance. They found that the equity market liquidity is positively correlated with firm performance.

There are a number of theories to analyze our study.

### **3.3 Liquidity Measures, Macroeconomic and Financial Variables**

Liquidity is not directly observable factor. It has many aspects that cannot be determined in a single measure; to address above discussed issue several liquidity proxies are used. In our study our focus is to examine the impact of equity liquidity on firm performance and investment. Therefore, literature regarding all variables included in the study will be discussed here.

Here we will discuss the relation between stock liquidity with interest rate. The relation between stock market and interest rate has been focused in considerable amount for research. Normally, there is an indirect relation between equity market and changes in interest rate. Moreover, we are going to discuss the relationships of all variables with firm performance and investment. It has been noticed that whenever there is any increase in rate of interest, it put effect on stock market. There is direct relation between interest rate and stock market liquidity Saeed et al. (2010). High level of liquidity and low level of interest rate will support stock market within a time period (Prashat Mahesh (2016)).

Abor's (2005) and Amidu's (2007) revealed an inverse relation between firm's profitability and leverage of firms in Ghana. There is negative relation between liquid equity and leverage (Mortal et al. (2010) and Martel et al. (2006)). According to them,

firm with more equity liquidity carry less proportion of debt because firms having more stock liquidity will prefer equity than debt. Anderson (2002) found a direct relation between equity liquidity and leverage after conducting a research on British companies. Thomas et al. (2014) explored the effect of firm size, profitability and liquidity on capital structure. In their study, panel data of 34 listed firms is used from the period of 2006-12 of Nairobi Securities Exchange. Pearson correlation and multiple regression models are employed to test the linear relationship and hypothesis respectively. It is found that there is negative but significant relationship between liquidity and profitability that relates to capital structure. The firm size is significant but positively correlated on capital structure. So, their study suggests that capital structure is a significant decision and firm has to consider the profitability and liquidity relationship. Pecking order theory also consistent with the results that the capital structure is also influenced by profitability of firms which is measured by return on assets.

## **CHAPTER 4**

### **MODEL AND METHODOLOGY**

In this chapter firstly it will explain all the variables which this study is going to use in models. After that the methodology will be discussed and then empirical models of firm performance and investment are elaborated. Afterwards data description and sources from which is collected will be discussed. Then the detailed discussion is made on estimation and its interpretation and methodology for impact of equity liquidity on firm performance and investment.

#### **4.1 Explanation of Firm Performance and Investment Equation Variables**

Now the explanation of all the variables included in our firm performance and investment models is given.

##### **4.1.1 Dependent Variables**

The value of dependent variable is observed by the researcher after an experiment. It is also known as “measured variable”, the “responding variable”, the “explained variable”. In firm performance model we take profitability as a dependent variable and in firm investment model the investment is dependent variable these are explained below.

##### **4.1.2 Profitability**

Every firm is conscious about its profitability. In financial ratios, profitability is frequently used ratio. Profitability is the primary objective of any organization. It simply means the capacity to make profit. Profit is what we have after deducting all expenses from income. Profitability is also known as economic profit. In firm performance model we have taken profitability as a dependent variable. It is used as the proxy of firm performance which will show whether it is affected by independent variables or not or whether those variables have positive effect or negative effect on it.

We measured profitability through several ratios. In our study we are taking measure of return on assets as profitability proxy. Return on assets is a ratio of net income and total assets. Net income is taken from income statement and total assets are presented in balance sheet. It is an important ratio to determine profitability due to its measurement about efficiency of managing assets in order to generate profit. Return on assets is shown in percentage form. Higher percentage, the better, because high percentage shows that firm is managing its assets in good manner to generate sales.

#### **4.1.3 Investment**

Investment is our dependent variable in firm investment model. Investment refers the purchase of a financial item and it is expected that it will give favorable future returns. It also shows the hope of making profits by using money. It includes the buying of bonds and stocks with capital risk. In our model we take various variables like cash flow, cash, capital stock etc which are going to effect the investment. Blundell et al. (1990) investigated that cash flow is the variable which have impact on investment and their study also shows the influence of Q ratio on investment sensitivity with low coefficient.

#### **4.1.4 Independent Variables**

Independent variables are those in which researchers believe to change the value of dependent variable. It has effect on dependent variable. These variables are also known as “explanatory variables”, “manipulated variables” or “controlled variables”. Independent variables are those variables in which you have interest to test to see to which extent it affects the output. The value of independent variables can be changed in model or equation. It acts as an input in order to change the output. Moreover its value is unaffected by the other variables. In our performance model we have taken several independent variables like Volatility of sales, illiquidity, Modified

turnover, modified liquidity ratio, firm size, M2/GDP, cash holdings, book leverage and growth to check their effect on Profitability. In investment model we will take cash, market value of equity, size, and cash flow Ratio, modified liquidity ratio, M2/GDP.

#### **4.1.5 M2/GDP Ratio**

The whole currency stock and financial liquid instruments, circulating in a country within a specific time period is known as money supply. There are various kinds of money in money supply. Types of money supply include M0, M1, M2 and M3. If there is increase in money supply the interest rate will be lowered and then investment rate will be increased. As we know M2 is the type of money supply which includes all components of M1 as well as “near money”. Gross domestic product (GDP) is widely used measure to examine the economic activity of a country. GDP is a macroeconomic variable which includes market value of all finished goods and services produced in an economy during a period. It is calculated by adding consumption, Government spending, investment and net exports within a country. In our investment model M2/GDP is used as the proxy of financial development. Loayza et al. (2000) also uses M2/GDP ratio as the proxy of financial development which will help in explaining equity liquidity as well.

#### **4.1.6 Firm Size**

Firm size has been used extensively as a control variable in the study of corporate finance and it usually shows the significant results. If we consider the business organizations, there are a lot of firms having different sizes. There are several reasons behind increasing the size of firms. Due to large size the economies of scale can be obtained. But there are many advantages of small size firms. Small size firms get more help from government because it is observed that small scale firms are a good source of providing employment and innovations in manufacturing sectors. In our data



we take all the firms including small and large size firms. Firm size is obtained by taking natural log of total assets of the firm. Size of an average firm varies from firm to firm. Entrepreneur skills, managerial ability, finance availability, labor availability, nature of business and extent of the market are the major determinants of firm size. We will also see the effect of size on firm performance and investment in order to check the impact of equity liquidity on firm performance and investment.

#### **4.1.7 Cash Flow Ratio**

Cash flow consists of cash and cash equivalents which move in and out of a firm. Cash flow only includes liquid assets. Positive cash flow refers the firm's liquid assets are increasing and it is able to meet its obligations and reinvest in business. If there is negative cash flow it shows the decrease in liquid assets. Cash flow is used to assess the firm's income through which the extent of liquidity is considered to indicate the solvent position of firm. Cash flow ratio measures the ability of cash flow to cover current liabilities of a firm. It indicates the short term liquidity of a firm. The higher amount of cash flow ratio shows that firm can cover its current liabilities in a very short period of time, which is considered a good sign for firm. So, firms having high cash flow ratios are considered healthy in financial world. We used cash flow ratio in our investment model which will help in explaining the liquidity of a firm through which effect on investment will be elaborated.

#### **4.1.8 Cash Holdings**

Every organization holds cash. Cash is the most liquid asset that a firm owns. It refers the money that a person has in hand. Cash holding is our explanatory variable in investment equation which also shows the liquidity impact as well. Firms hold cash to meet its short term and long term transactions. In economics, John Maynard Keynes discussed the three main motives of holding cash that include transaction motive,

precautionary motive and speculative motive. Cash holdings play an important role in making portfolio of investors.

#### **4.1.9 Modified Liquidity Ratio**

There are various ratios to measure equity liquidity. Mainly stock liquidity is evaluated from three factors like trading cost, price impact and immediacy. In trading cost, time weighted quoted spread and zero return measure is considered. In price impact the Amihud illiquidity estimate and modified liquidity ratio is included. Immediacy includes turnover adjusted zero daily volumes and trading volume. In our study we take Modified liquidity ratio to measure equity liquidity and this is our variable of interest. We include this in our both models of performance and investment in order to check its impacts. Modified liquidity ratio is the ratio of number of traded shares to total number of outstanding dividend of shares divided by the earnings volatility. Jiraporn et al. (2011) used this measure in his study to measure stock liquidity.

#### **4.1.10 Leverage Ratio**

Leverage ratio is used to examine the debt levels of a company. Basically, two leverage ratios are used like debt ratio and debt to equity ratio. Debt ratio is simply evaluated by taking the ratio of total debt to total assets. In finance, leverage is determined by components of debt in the company's capital structure. We take debt ratio in our study. It is presented in decimal or in percentage form. Its interpretation shows the ability of debt to finance assets. High leverage ratio shows the great risk associated with manufacturing process of firm. Low leverage ratio shows the low level of risk with less financing. Our investment model has leverage variable in order to show the effect of debt ratio on firms' investment.

#### **4.1.11 Market Value of Equity**

Market value of equity is defined as the total market value of all the outstanding shares of a company. The market value and book value are different from each other because book value accounts the growth opportunities of the company. Market value of equity is calculated by multiplying the outstanding shares of a company with the price of stock at which it is sold. Market value of equity is also known as market capitalization. By knowing the price per share, we can calculate market value of equity. We consider market value of equity in investment equation which will help in showing the equity value in order to explain the relation between equity liquidity and firm investment.

#### **4.1.12 Tangibility**

Ability to be touched, felt, and seen by human is known as tangibility. Cash, commodities, building etc are examples of tangible assets. In accounting, accounts receivables are also included in tangible assets. We take tangibility variable to see its effect on investment. Tangibility will show the extent of investment on tangibility or on intangibility.

#### **4.1.13 Interest Rate (Discount Rate)**

Amount charged as a percentage of principal amounts by the lender for the use of assets is defined as interest rate. It is usually charged on annual basis. Borrowed assets include cash, consumer goods etc. It is measured by dividing the interest amount to principal amount. Nominal and real interest rates are the main examples of interest rate. Rise in interest rate cause a fall in profitability of firms, private investment and consumption. We use discount rate as the proxy of interest rate. As we know, discount rate is the interest rate which is charged from commercial banks from the Federal Reserve banks. We use interest rate as variable in our model because it has relation

with stock liquidity too. Like other sectors of economy, investors of stock market also stay informed regarding present and predicted rates of interest. Normally the interest rate is the discount rate of state bank's (SBP) which is applied to investors. Interest rate is defined as the cost of borrowing money from the state bank of Pakistan. Interest rate is charged to achieve some economic goals after controlling inflation. When the discount rate is increased by SBP it has no direct or immediate effect on stock market. It eventually affects the stock market after creating surplus liquid funds invested in stock. These funds become surplus due to increase in discount rate which makes debt financing costly and it increases the bank's liquidity which leads to surplus liquid funds invested in stocks. In our models we included interest rate after its interaction with dummy variable to capture its effects on financial data.

#### **4.1.14 Dummy Variable**

Dummy variable represents the numerical variable that we use at the time of regression analysis to show the subgroups of sample study. In research, dummy variable is normally added to differentiate several groups. We often use 0 and 1 as dummy variable. This variable is considered useful because it enables simple regression to represent multiple groups. Dummy variable indicates the absence and presence of something. In our model we use dummy variable to represent the changes in financial data due to rise and fall in interest rate. We take 1 from the period of 2000 to 2004 and take 0 from the period of 2005 to 2010 and then take again 1 from the period of 2011 to 2015. We have made interaction the dummy variable with discount rate. Actually, we do this in order to capture the effects of contraction and expansion of monetary policy on financial data. We also use simple dummy variable in our data without interaction in our both models of performance and investment. Sectoral dummies of textile sector, automobile sector and cement sector are also used in our both models.

#### **4.1.15 Current Ratio**

It is the most liberal ratio that shows the ability to pay current liability from current assets. It quickly measures the liquidity of a firm. This is used as the proxy of liquidity to show the impact of equity liquidity on firm performance. This ratio also indicates the efficiency of company's operating cycle or its ability to convert its goods into cash. This is also known as working capital ratio. In this ratio all current assets and current liabilities are considered. It is interpreted as if the ratio is higher the financial position of the company will be better. If the value is less it means the firm is facing difficulty in meeting its current obligations.

#### **4.1.16 Volatility of Sales**

Volatility shows the extent of variations in something. We take volatility of sales in our performance model. Volatility of sales shows the changes or variations in sales of a firm. Sales vary in different time periods. High variations in sales are not considered as a good thing for a firm because it brings fluctuations in revenues. Low sales volatility shows a good thing for a firm because it indicates the consistency in revenues which cause smooth functioning by a firm. In our study, volatility of sales is used for the purpose of showing the stability of revenues generated by firms so that performance can be evaluated accurately.

#### **4.1.17 Share Price**

Cost which is paid at the time of buying a share from a stock exchange is known as share or stock price. Share price can be influenced by a number of factors which includes variations in market, present conditions of economy, and goodwill of a firm. Share price is calculated through PE ratio. The share prices of different organizations vary from each other. Share price is desired to be high due to selling small amount of shares to raise desired money. Through share price, investors come to know about the

financial health of an organization. There is relation among share price and financial health of an organization. Share price also show the willingness to invest in stock at that point of time. Falling price of shares indicates the low confidence from the side of investors and rising price is the sign of attraction by the investors. Stock becomes attractive for investors because at that time high dividend announcement cause the rise in share prices. We use share price as independent variable in our performance model because share price also plays a significant role in determining the performance by a firm.

## **4.2 Methodology**

Study is taking panel data for analysis of 350 Pakistan's manufacturing firms. Data is collected for the span of fifteen years from 2001 to 2015. Before explaining the methodology, first of all panel data is discussed. Panel data is derived from the observations over given time period on a large number of cross sections. It is the most preferable data to be used in applied economics. Panel data is also named as longitudinal data. It can be called as the cross-sectional time series data because it contains the mixture of time series and cross-section data. It is denoted as "it" in which "i" is used to represent cross sections and "t" is used to show time series data. In panel data, there are two levels of data: micro panel data and macro panel data. In micro panel data, the time is considered less important than the cross sections. In macro panel data, the time and cross sections get equal importance. There are other two types of panel data which includes balanced panel data and unbalanced panel data. Balanced panel data contains the equal number of time periods and cross sections. Unbalanced panel data has equal number of time periods and cross sections. There are several merits of panel data as discussed by Hsiao et al. (2003) and Wooldrigh et al. (2001). Panel data make it possible to obtain large number of observations and then it provides

the more degrees of freedom which reduced the chances of collinearity. Panel data is useful at that time when independent variables are not observable and dependent variables have to correlate with observed independent variables. In such case, panel data continuously estimate the effect of observed independent variables if omitted variables remain constant over a time period. In our data the time period consists of fifteen years and cross sections include different characteristics of Pakistan's manufacturing firms like firm size, cash holdings, current ratio, cash flow ratio, leverage ratio, and shares price. Economic variable is also included in our cross sections with financial variables.

In panel data analysis, two types of models are estimated which include the fixed effect model and random effect model. Fixed effect models are used to control the effects of those variables which are time-invariant. In other words, when we want to analyze the impact of variable that changes with time then fixed effect models are used. There are some assumptions of fixed effect models. In fixed effect it is assumed that there is correlation between error term and independent variables. By using fixed effect, we can remove the effect of time-invariant feature. After removing the above discussed effect, we can approach the net effect of independent variables on the dependent variables. Fixed effect also assumed that time-invariant features are not correlated with individual features. Each organization is different from other so that the error term and intercept are not correlated. In case of correlation among error term and intercept, fixed effect is not considered suitable and you have to go with random-effect model.

In random effect model the changes in organizations are supposed to be random and there is no correlation between independent variables and variations across organizations. When you are sure that variations in organizations influence the predictors then random effects should be used. In fixed effect the time invariant

variables are observed by the constant but in random effect, these variables can be included. Unlike fixed effects, random effect assumes that error term is uncorrelated to independent variables.

Huasman test is used to make decision regarding the use of fixed effect model or fixed effect model. Its null hypothesis prefers the random effect model and the alternative hypoyhesis suggests the usage of fixed effects. We also use the hausman test to check whether we should go with random effect or with fixed effect. Results of hausman test suggest that random effect will be used and its results are also show great significance. There is another justification of using random effect that we are taking firms and their characteristics randomly so that random effect is used rather than fixed effect because we do not specify the firms and their characteristics.

**4.3 Empirical Model**

Following Kazuo Ogawa (2013) and Kmiayama (2010), we model the equity liquidity and investment behavior of firms to evaluate empirically the equity liquidity impact on Firm’s investment. Our baseline investment equation is specified below. Firm performance model is also mentioned below by following Al Manseer et al. (2012), Heenetigala and Armstrong (2011).

**4.3.1 Performance Models**

Here the firm performance models are presented. In first model of performance, DD is included by multiplying the discount rate and dummy variable.

$$Prof_{it} = \alpha_0 + \alpha_1MLR_{it} + \alpha_2SZ_{it} + \alpha_3VS_{it} + \alpha_4SP_{it} + \alpha_5CR_{it} + \alpha_6DD_{it} + \varepsilon_{it} \dots\dots\dots (1)$$

In second model, time dummy variable is considered to check the effect of this on the firm performance.

$$Prof_{it} = \alpha_0 + \alpha_1MLR_{it} + \alpha_2SZ_{it} + \alpha_3VS_{it} + \alpha_4SP_{it} + \alpha_5CR_{it} + \alpha_6D_{it} + \varepsilon_{it} \dots\dots\dots (2)$$



In third model, dummies of textile sector and automobile sector are included.

$$\begin{aligned} Pr of_{it} = & \alpha_0 + \alpha_1 MLR_{it} + \alpha_2 SZ_{it} + \alpha_3 VS_{it} + \alpha_4 SP_{it} + \alpha_5 CR_{it} + \alpha_6 DD_{it} \\ & + \alpha_7 DT_{it} + \alpha_8 DA_{it} + \varepsilon_{it} \end{aligned} \dots\dots\dots(3)$$

In Which

Prof: Indicates the return on assets of i-th firm in t-period.

MLr: Modified liquidity ratio of i-th firm in t-period.

SZ: Size of i-th firm in t-period.

Vol. Sales: Volatility of sales of i-th firm in t-period.

SP: Share price of i-th firm in t-period.

CR: Current ratio of i-th firm in t-period.

DD: Discount rate is interacted with dummy.

D: Time Dummy Variable

DT: Textile sector dummy

DA: Cement sector dummy

#### 4.2.2 Investment Models

Here are the investment models. In first model of investment, DD is considered by multiplying the discount rate and dummy variable.

$$\begin{aligned} INV_{it} = & \beta_0 + \beta_1 MLR_{it} + \beta_2 BL_{it} + \beta_3 CH_{it} + \beta_4 ME_{it} + \\ & \beta_5 CFR_{it} + \beta_6 TANG_{it} + \beta_7 DD_{it} + \beta_8 M2 / GDP_{it} + \varepsilon_{it} \end{aligned} \dots\dots\dots(4)$$

In second model, simple time dummy variable is taken to check the effect of this on the investment of firm.

$$INV_{it} = \beta_0 + \beta_1 MLR_{it} + \beta_2 BL_{it} + \beta_3 CH_{it} + \beta_4 ME_{it} + \beta_5 CFR_{it} + \beta_6 TANG_{it} + \beta_7 D_{it} + \beta_8 M2/GDP_{it} + \varepsilon_{it} \dots\dots\dots (5)$$

In third equation of firm investment the sectoral dummies of textile sector and automobile sector are included.

$$INV_{it} = \beta_0 + \beta_1 MLR_{it} + \beta_2 BL_{it} + \beta_3 CH_{it} + \beta_4 ME_{it} + \beta_5 CFR_{it} + \beta_6 TANG_{it} + \beta_7 DD_{it} + \beta_8 M2/GDP_{it} + \beta_9 DT_{it} + \beta_{10} DC_{it} + \varepsilon_{it} \dots\dots\dots (6)$$

In Which

Inv: Investment of i-th firm in t-period.

MLr: Modified liquidity ratio of i-th firm in t-period.

BL: Book leverage

CH: Cash Holdings

M2/GDP: M2/GDP ratio

ME: Market value of equity

CFR: Cash flow ratio

Tang: Tangibility

DD: Discount rate is interacted with dummy.

D: Time Dummy Variable

DT: Textile sector dummy

DC: Cement sector dummy

### **4.2.3 Data Description and Sources**

This study uses financial data of Pakistani manufacturing firms which are listed on the Pakistan Stock Exchange for a period of fifteen years from 2001-2015. The final sample includes 350 firms from different industries after the exclusion of that firms which do not have the data of the whole sample period.

Firm specific data was gathered from financial statements of the firms which are present in State Bank of Pakistan reports. The data consisted of detailed financial statements of the firms, which allow us to calculate the selected financial indicators. In this financial indicators investment, cash flow Ratio, cash holdings, current ratio, Return on assets and Firm size are included. On the other hand the economic variables' data was compiled from the report of state bank of Pakistan. Economic variables include Money Supply (M2) and Gross Domestic Supply (GDP).

## **Chapter 5**

### **ESTIMATION AND RESULTS**

In this chapter the estimation results and their analysis has been discussed.

#### **5.1 Descriptive Statistics**

Table 1 shows the summary statistics of all firms' characteristics. The firms which we have taken are all manufacturing firms and data is of 15 years from 2001-2015. Profitability for which we use proxy of return on assets is taken as dependent variable in our firm performance model is calculated by dividing total income to total assets. Its mean is 0.27 which is lower than other variables except cash holding and DD and its standard deviation is higher than that can be brought at normal by taking median. The mean value of investment which is our dependent variable of our firm investment equation is 41.11 which are higher than all the variables excluding cash flow ratio. The SD of investment is 325.50 which show the outliers in the data. If we have look on the cash flow ratio its average value is 46.88 and its SD shows the outliers in the data. The M2/GDP is economic variable which is used to show the financial development. The average value of M2/GDP is 0.80 and its SD is 0.22 which is comparatively less to other variables. The same case is with DD, dummy, cash holdings, and tangibility variable. They all have means and SD less than 1. Market value of equity, volatility of sales and leverage ratio has large mean value but the SD of volatility of sales is showing the normality of data. Hence, it has been observed that the data of some variables show normality of data like tangibility, DD, dummy, M2/GDP but results of some variables show the outliers in data. Cash flow ratio, investment and share price show a lot of deviations from their average value.

**Table 5: Descriptive Statistics**

<b>Variables</b>	<b>Mean</b>	<b>std. dev.</b>
Profitability	0.274	13.69
Investment	41.11	325.5
Cash Flow Ratio	46.88	1378.2
Modified Liquidity Ratio	4.021	3.685
Share Price	60.26	229.6
Volatility of Sales	6.986	0.522
Mv. Equity	397.3	1.037
Tangibility	0.525	0.234
Size	7.063	2.005
B. Leverage	7.532	181.3
Cash Holdings	0.048	0.099
M2/GDP	0.801	0.227
DD	0.055	0.049
Dummy	0.571	0.494

## **5.2 Evaluation of Estimated Models**

Now we will show the empirical outcomes of the impact of equity liquidity on firm performance and investment through firm specific factors that specified in the regression. In firm performance equation the dependent variables is Return on Assets which is used as the proxy of firm performance and Investment is used as dependent variable in firm investment equation. The outcomes are shown in table 2, 3, 4 and 5.

## **5.3 Interpretation of Firm Performance Models**

As outcomes are shown in the table 2 the mostly coefficients are same as discussed in the literature and in theories. Firm size is positively related to profitability

and shows significant results by having p-value 0.000. The coefficient of size is 0.02 which show that if there is one unit increase in firm size then it will increase profitability by 0.02 units. The result of size is consistent with the studies by Al-Sakava (2001) and Kurshev et al. (2005) that firms' size is positively related to equity. Coefficient of modified liquidity ratio shows that if there is 1 unit change takes place in modified liquidity ratio then it causes increase in profitability by 1.72 units. It also shows direct relation with return on assets and significant results by showing 0.038 probabilities. The volatility of sales is also showing positive coefficient which will increase the value of dependent variable by 0.024 units after incremental in volatility of sales. Coefficient of share price tells that it has positive impact on return on assets by increasing its value by 0.00 units. The coefficients of discount rate dummy interacted variable and dummy variable are negative which indicate that if there is increase in dd by 1 unit it will decrease the profitability by 4.77 units and same situation will exist in case of dummy variable. Dummy variable will also have negative effect on return on assets by decreasing its value by 0.006 after having incremental in dummy variable by 1 unit. Dummy variable is negatively related to dependent variable and shows insignificant result. Share price also show significant result. Current ratio and dd shows level of significance at 10 percent confidence interval. Constant also affects the dependent variable value because it is also added in the independent variables which may decrease or increase the value of independent variables. In our model, coefficient of constant is negative which may decrease the value of return on assets. Now we look on the R-sq value which shows the linearity of the model or it shows the explanation of the dependent variable by the independent variables. Finally, the results in the table 2 showed that 0.10 percent variation of firm performance is explained by size, MLR, SP, VL, CR, DD as supported by R-sq = 10%. In other words, return on assets has 10% relation with other variables in the model.

**Table 6: Performance Equations 1, 2**

Variables	Model 1	Model 2
Intercept	-0.113	-0.1135***
	(0.176)	(0.018)
Size	0.022***	0.0220***
	(0.000)	(0.000)
Modified Liquidity Ratio	1.722**	1.754**
	(0.038)	(0.034)
Volatility of Sales	0.0234***	0.024***
	(0.000)	(0.000)
Share Price	0.000***	0.000***
	(0.000)	(0.000)
Current Ratio	-4.77*	-4.85*
	(0.063)	(0.068)
DD	-0.101*	
	(0.073)	
Dummy		-0.006
		(0.189)
R-Sq	10%	10%

Dependent Variable: Profitability

\*, \*\*, \*\*\* means significant at 10%, 5%, and 1% respectively and without asterisk means there is no significance.

Figures in parenthesis are probabilities.

#### **5.4 Interpretation of Performance Model with Sectoral Dummies**

In table 3 the estimated results of performance equation with sectoral dummies are shown. In this model, sectoral dummies of textile sector and cement sector are used. We have also incorporated the dummy for automobiles sector but we are keeping it on intercept in order to avoid the dummy variable trap. In the below table the dependent variable is profitability and the intercept is showing the negative relation with the value of 0.088 but it has significant effect. As we consider the automobile sector as intercept so we compare other sectoral dummies results with it. We set the automobile sector as a benchmark and consider its coefficient as zero and if we compare it with the result of textile sector dummy we can come to know that the textile sector is performing better than the automobile sector because coefficient of textile sector is 0.054 which is higher than zero. The textile sector is also showing the significant result at 1% of significance

level. The coefficient of cement sector dummy is negative but is showing significant results at 10% level of significance. The coefficient of cement sector dummy is showing that automobile sector is better in performance than cement sector. In this model all the variables are significant at different level of significance. R-Sq represents the degree of explanation of dependent variable by independent variable which is 13%.

**Table 7: Performance Equation 3**

<b>Variables</b>	<b>Coefficients</b>	<b>Probabilities</b>
Intercept	-0.088***	0.000
MLR	1.674**	0.043
SZ	0.021***	0.000
VOL Sales	0.025***	0.000
SP	0.000***	0.001
CR	-5.112**	0.050
DT	0.054***	0.000
DC	-0.046*	0.065
R-Sq	13%	13%

Dependent Variable: Profitability

\*, \*\*, \*\*\* means significant at 10%, 5%, and 1% respectively.

### **5.5 Interpretation of Firm Investment Models**

After discussing the estimation and interpretation of firm performance model, we are going to discuss the interpretation of firm investment models. The estimation results are shown in the table 3. As investment is our dependent variable so we will interpret the effects of other variables on the investment variable. The modified liquidity ratio shows the direct but insignificant relationship with the investment of firms. The coefficient of modified liquidity ratio is 1.87 which indicates that there is one unit increase in its value it will increase the value of investment by 1.87 units. If leverage value increases by one unit then there will be an increase in value of investment by 0.61 units. Leverage shows the positive and significant relation with investment. Cash holdings also show the positive and significant relation with investment. Coefficient of cash holdings indicates that one unit increase in cash holdings will bring 0.85 units increase in the value of investment. M2/GDP ratio is the



only economic variable in our model which is showing the positive and insignificant relation with investment in first model but significant relation in second model of investment. If there is one unit increase in the value of above discussed ratio the investment will fall by 0.20 units. Market value of equity shows the positive link with investment with the coefficient value of 0.000 and has significant relation with the dependent variable. Cash flow ratio and tangibility both have positive signs of coefficients but indicates the insignificant relations with investment. Dd and dummy variables both are negatively related to its dependent variable but have significant results. Coefficient of intercept also has vital role in effecting the dependent variable. The intercept results are showing positive and significant link with investment. The Linearity of the model is showed by R-sq and in this model the R-sq is 13%. In means that independent variables are explaining dependent variables 13 percent.

**Table 8: Investment Equations Results**

Variables	Model 1	Model 2
Intercept	1.004***	0.9186***
	(0.000)	(0.000)
Modified Liquidity Ratio	1.87	1.95
	(0.413)	(0.431)
Leverage	0.615***	0.613***
	(0.000)	(0.000)
Cash Holdings	0.852***	0.872***
	(0.000)	(0.000)
M2/GDP	0.2033	0.379***
	(0.116)	(0.005)
Mv. Equity	0.000***	0.000***
	(0.000)	(0.000)
Cash Flow Ratio	1.624	2.047
	(0.886)	(0.857)
Tangibility	0.136	0.135
	(0.272)	(0.274)
DD	-1.7089***	
	(0.000)	
Dummy		-0.122***
		(0.000)
R-Sq	13%	13%

Dependent Variable: Investment

\*, \*\*, \*\*\* means significant at 10%, 5%, and 1% respectively and values without asterisk show insignificance.

Figures in parenthesis are probabilities.

## 5.6 Interpretation of Investment Equation with Sectoral Dummies

In table we summarize the results of the investment model with sectoral dummies of textile and cement sector. We consider automobile sector a benchmark to compare other sectors with it. The coefficient of textile sector is 0.26 that indicates the textile sector is better than automobile sector in context of investment. The textile sector has positive impact and it is significant at 1% level of significance. The coefficient of cement sector is negative with the value 0.06 and is insignificant. So, it shows that the cement sector is less attractive for investment as compare to automobile sector. In this model, all other variables are significant excluding cash flow ratio. The value of R-Sq

is 16% which means that the independent variables are explaining investment variable by 16%.

**Table 9: Estimation of Investment Equation 3**

<b>Variable</b>	<b>Coefficient</b>	<b>Probabilities</b>
INTERCEPT	1.000***	0.000
MLR	1.842	0.439
BLEV	0.630***	0.000
CH	0.805***	0.000
ME	0.000***	0.000
CFR	1.602	0.888
TANG	0.191	0.126
DD	-1.719***	0.000
M2/GDP	-0.204	0.115
DT	0.261***	0.002
DC	-0.064	0.739
R-Sq	16%	16%

Dependent variable is Investment

\*, \*\*, \*\*\* means significant at 10%, 5%, and 1% respectively and absence of asterisk show insignificance.

## **Chapter 6**

### **CONCLUSION**

#### **6.1 Summary and Conclusion**

Amihud introduced the concept of stock liquidity in research in 1986. After that a lot of research has been done in the areas of liquidity, determinants of liquidity and measurements of liquidity. This study has explored various literatures regarding ongoing research in the area of stock market liquidity. This study has estimated the models of firm performance and firm investment to check the impact of equity liquidity on them. In these models the impacts of changes in monetary policy and important manufacturing sectors have been shown. Random effect technique is applied to evaluate the results. It is concluded that equity liquidity has significant impact on firm performance rather than on firm investment. Thus, firms should depend on stock liquidity whenever the improvement in firm performance is desired. Financial market development has direct relationship with firm investment which indicates that with the development in financial markets the investment level will also improve.

#### **6.2. Policy Implications**

This research has some policy implications which are discussed below.

- 1) Present policy agenda should set the market liquidity as a high priority in making policies regarding firm performance because results are showing the positive impact of equity liquidity on firms' performance.
- 2) This study highlights the role of financial market development in improving the investment by firms so that this implication can also have significant role in generating more investment opportunities.

- 3) It has been noted that not only stock market liquidity has impact on firm investment and performance but other factors also affect the performance and investment of firms. Therefore, separate study should be conducted by focusing other factors as well.
- 4) This study provides guidance to managers to improve stock liquidity to increase the performance by the firms. They should implement policies keeping in view the results of this study.
- 5) Investors should prefer to invest at the time of financial market development to get more returns from their investment.

### **6.3 Limitations of the Study**

- 1) This study is limited to only one measure of equity liquidity, it is suggested that further research can be conducted by taking other measures into account such as Modified turnover ratio and Amihud illiquidity.
- 2) The only focus of this study is on three sectors of manufacturing firms of Pakistan but all the sectors can be taken into account for further research.

## REFERENCES

- Asquith, P., & Mullins, D. W. (1986). Equity issues and offering dilution. *Journal of financial economics*, 15(1-2), 61-89.
- Amihud, Y., Mendelson, H., & Uno, J. (1999). Number of shareholders and stock prices: Evidence from Japan. *The Journal of finance*, 54(3), 1169-1184.
- Abor, J. (2005). The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *The journal of risk finance*, 6(5), 438-445.
- Aivazian, V. A., Ge, Y., & Qiu, J. (2005). The impact of leverage on firm investment: Canadian evidence. *Journal of corporate finance*, 11(1), 277-291.
- Almeida, H., & Campello, M. (2007). Financial constraints, asset tangibility, and corporate investment. *Review of Financial Studies*, 20(5), 1429-1460.
- Amihud, Y., & Mendelson, H. (2008). Liquidity, the value of the firm, and corporate finance. *Journal of Applied Corporate Finance*, 20(2), 32-45.
- Andrianaivo, M., & Yartey, C. A. (2009). Understanding the growth of African financial markets. *IMF Working Papers*, 1-40.
- Andrianaivo, M., & Yartey, C. A. (2009). Understanding the growth of African financial markets. *IMF Working Papers*, 1-40.
- Aduda, J., Masila, J. M., & Onsongo, E. N. (2012). The determinants of stock market development: The case for the Nairobi Stock Exchange. *International Journal of Humanities and Social Science*, 2(9), 214-230.
- Ali, S., Liu, B., & Su, J. J. (2016). What determines stock liquidity in Australia?. *Applied Economics*, 48(35), 3329-3344.
- Bass, F. M., Cattin, P., & Wittink, D. R. (1978). Firm effects and industry effects in the analysis of market structure and profitability. *Journal of Marketing Research*, 3-10.
- Bean, C. R. (1981). An econometric model of manufacturing investment in the UK. *The Economic Journal*, 91(361), 106-121.

- Bhide, A. (1993). The hidden costs of stock market liquidity. *Journal of financial economics*, 34(1), 31-51.
- Benveniste, L., Capozza, D. R., & Seguin, P. J. (2001). The value of liquidity. *Real Estate Economics*, 29(4), 633-660.
- Boone, J. P., & Raman, K. K. (2001). Off-balance sheet R&D assets and market liquidity. *Journal of accounting and public policy*, 20(2), 97-128.
- Bond, S. R. (2002). Dynamic panel data models: a guide to micro data methods and practice. *Portuguese economic journal*, 1(2), 141-162.
- Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *The journal of finance*, 57(1), 1-32.
- Breen, W. J., Hodrick, L. S., & Korajczyk, R. A. (2002). Predicting equity liquidity. *Management Science* Baker, M., Stein, J. C., & Wurgler, J. (2002). *When does the market matter? Stock prices and the investment of equity-dependent firms* (No. w8750). National Bureau of Economic Research *ience*, 48(4), 470-483.
- Brockman, P., & Chung, D. Y. (2003). Investor protection and firm liquidity. *The journal of finance*, 58(2), 921-938.
- Butler, A. W., Grullon, G., & Weston, J. P. (2005). Stock market liquidity and the cost of issuing equity. *Journal of Financial and Quantitative Analysis*, 40(02), 331-348.
- .Becker-Blease, J. R., & Paul, D. L. (2006). Stock liquidity and investment opportunities: Evidence from index additions. *Financial Management*, 35(3), 35-51.
- Becker-Blease, J. R., & Paul, D. L. (2006). Stock liquidity and investment opportunities: Evidence from index additions. *Financial Management*, 35(3), 35-51.
- Banerjee, S., Gatchev, V. A., & Spindt, P. A. (2007). Stock market liquidity and firm dividend policy. *Journal of Financial and Quantitative Analysis*, 42(02), 369-397.

- Bartels, B. (2008). Beyond "fixed versus random effects": a framework for improving substantive and statistical analysis of panel, time-series cross-sectional, and multilevel data. *The Society for Political Methodology*, 1-43.
- Brunnermeier, M. K., & Pedersen, L. H. (2009). Market liquidity and funding liquidity. *Review of Financial Studies*, 22(6), 2201-2238.
- Blume, M. E., & Keim, D. B. (2012). Institutional investors and stock market liquidity: trends and relationships. Available at SSRN 2147757.
- Cleary, S. (1999). The relationship between firm investment and financial status. *The Journal of Finance*, 54(2), 673-692.
- Comiskey, E. E., & Mulford, C. W. (1986). Investment decisions and the equity accounting standard. *Accounting Review*, 519-525.
- Chirinko, R. S., & Schaller, H. (1995). Why does liquidity matter in investment equations?. *Journal of Money, Credit and Banking*, 27(2), 527-548.
- Chordia, T., Roll, R., & Subrahmanyam, A. (2000). Commonality in liquidity. *Journal of financial economics*, 56(1), 3-28.
- Chordia, T., Sarkar, A., & Subrahmanyam, A. (2005). An empirical analysis of stock and bond market liquidity. *Review of Financial Studies*, 18(1), 85-129.
- Chordia, T., Roll, R., & Subrahmanyam, A. (2008). Liquidity and market efficiency. *Journal of Financial Economics*, 87(2), 249-268.
- Chai, D., Faff, R., & Gharghori, P. (2010). New evidence on the relation between stock liquidity and measures of trading activity. *International Review of Financial Analysis*, 19(3), 181-192.
- Coricelli, F., Driffield, N., Pal, S., & Roland, I. (2011). Optimal leverage and firm performance: An endogenous threshold analysis. Internet access: < [http://people.brunel.ac.uk/~ecstssp/webfiles/EBRD\\_Paper\\_15\\_April\\_2011\\_Final.pdf](http://people.brunel.ac.uk/~ecstssp/webfiles/EBRD_Paper_15_April_2011_Final.pdf)>, [accessed March 12, 2015].
- Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. *The journal of Finance*, 46(4), 1325-1359.



- Denis, D. J. (1994). Investment opportunities and the market reaction to equity offerings. *Journal of Financial and Quantitative Analysis*, 29(02), 159-177.
- Demirgüç-Kunt, A., & Maksimovic, V. (1996). Stock market development and financing choices of firms. *The World Bank Economic Review*, 10(2), 341-369.
- Dryden, N., Nickell, S., & Nicolitsas, D. (1996). What makes firms perform well?.
- Domowitz, I., Glen, J., & Madhavan, A. (2001). Liquidity, volatility and equity trading costs across countries and over time. *International Finance*, 4(2), 221-255.
- Dittmar, A., & Thakor, A. (2007). Why do firms issue equity?. *The Journal of Finance*, 62(1), 1-54.
- Dass, N., Nanda, V., & Xiao, C. (2011). *Do firms choose their stock liquidity? A study of innovative firms and their stock liquidity*. Working Paper, Georgia Institute of Technology.
- Dybvig, P. H., & Warachka, M. (2012). Tobin'sq does not measure firm performance: Theory, empirics, and alternative measures. *SSRN eLibrary*. <http://papers.ssrn.com/sol3/papers.cfm>.
- Dalvi, M. R., & Baghi, E. (2014). Evaluate the relationship between company performance and stock market liquidity. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 4(1), 136-144.
- Elston, J. A. (1996). Dividend policy and investment: Theory and evidence from us panel data. *Managerial and decision economics*, 267-275.
- Frino, A., & Fabre, J. (2004). Commonality in liquidity: evidence from the Australian stock exchange. *Accounting and Finance*, 44, 357-368.
- Frieder, L., & Martell, R. (2006). Capital structure and equity liquidity: A bi-directional relationship. *Unpublished Working Paper, Purdue University*.
- Fang, V. W., Noe, T. H., & Tice, S. (2009). Stock market liquidity and firm value. *Journal of financial Economics*, 94(1), 150-169.

- Fernández-Amador, O., Gächter, M., Larch, M., & Peter, G. (2013). Does monetary policy determine stock market liquidity? New evidence from the euro zone. *Journal of Empirical Finance*, 21, 54-68.
- Fong, K. Y., Holden, C. W., & Trzcinka, C. (2014). What are the best liquidity proxies for global research?. Available at SSRN 1558447.
- Gupta, L. C., & Rohatgi, J. K. (1973). Stock Market Liquidity: How Much? For Whom?. *Economic and Political Weekly*, M85-M96.
- Gaver, J. J., Gaver, K. M., & Battistel, G. P. (1992). The stock market reaction to performance plan adoptions. *Accounting Review*, 172-182.
- Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of financial economics*, 60(2), 187-243.
- Glick, W. H., Washburn, N. T., & Miller, C. C. (2005, August). The myth of firm performance. In *Annual Meeting of the Academy of Management*.
- Gopalan, R., Kadan, O., & Pevzner, M. (2009). Investment decisions, asset liquidity, and stock liquidity. In *Working Paper*.
- Goyenko, R. Y., Holden, C. W., & Trzcinka, C. A. (2009). Do liquidity measures measure liquidity?. *Journal of financial Economics*, 92(2), 153-181.
- Gatsi, J. G., & Akoto, R. K. (2010). Capital structure and profitability in Ghanaian banks. Available at SSRN 1618952.
- Gabrielsen, A., Marzo, M., & Zagaglia, P. (2011). Measuring market liquidity: An introductory survey.
- Gopalan, R., Kadan, O., & Pevzner, M. (2012). Asset liquidity and stock liquidity. *Journal of Financial and Quantitative Analysis*, 47(02), 333-364.
- Garcia-Appendini, E., & Montoriol-Garriga, J. (2013). Firms as liquidity providers: Evidence from the 2007–2008 financial crisis. *Journal of Financial Economics*, 109(1), 272-291.

Hasbrouck, J., & Schwartz, R. A. (1988). Liquidity and execution costs in equity markets. *The Journal of Portfolio Management*, 14(3), 10-16.

Hoshi, T., Kashyap, A., & Scharfstein, D. (1991). Corporate structure, liquidity, and investment: Evidence from Japanese industrial groups. *The Quarterly Journal of Economics*, 33-60.

Huang, T., Wu, F., Yu, J., & Zhang, B. (2013). The value impact of stock liquidity: An international evidence. *Available at SSRN 2208875*.

Hansen, G. S., & Wernerfelt, B. (1989). Determinants of firm performance: The relative importance of economic and organizational factors. *Strategic management journal*, 10(5), 399-411.

Holmström, B., & Tirole, J. (1993). Market liquidity and performance monitoring. *Journal of Political Economy*, 678-709.

Hurwicz, L. (1946). Theory of the Firm and of Investment. *Econometrica, Journal of the Econometric Society*, 109-136.

Hansen, G. S., & Wernerfelt, B. (1989). Determinants of firm performance: The relative importance of economic and organizational factors. *Strategic management journal*, 10(5), 399-411.

Islam, S. S., & Mozumdar, A. (2007). Financial market development and the importance of internal cash: Evidence from international data. *Journal of Banking & Finance*, 31(3), 641-658.

Jung, K., Kim, Y. C., & Stulz, R. (1996). Timing, investment opportunities, managerial discretion, and the security issue decision. *Journal of Financial Economics*, 42(2), 159-186.

Kadapakkam, P. R., Kumar, P. C., & Riddick, L. A. (1998). The impact of cash flows and firm size on investment: The international evidence. *Journal of banking & Finance*, 22(3), 293-320.

Kim, C. S., Mauer, D. C., & Sherman, A. E. (1998). The determinants of corporate liquidity: Theory and evidence. *Journal of financial and quantitative analysis*, 33(03), 335-359.

Khurana, Inder K., Xiumin Martin, and Raynolde Pereira. "Financial development and the cash flow sensitivity of cash." *Journal of Financial and Quantitative Analysis* 41.04 (2006): 787-808.

- Kambhu, J. (2006). Trading risk, market liquidity, and convergence trading in the interest rate swap spread. *Economic Policy Review*, 12(1).
- Kang, W., Hameed, A., & Viswanathan, S. (2007). Stock market declines and liquidity. *Journal of Finance*, *Forthcoming*.
- Kothare, M. (1997). The effects of equity issues on ownership structure and stock liquidity: A comparison of rights and public offerings. *Journal of Financial Economics*, 43(1), 131-148.
- Strebulaev, I. A., & Kurshev, A. (2006, March). Firm Size and Capital Structure. In *EFA 2005 Moscow Meetings Paper*.
- Kurshev, A., & Strebulaev, I. A. (2007). Firm size and capital structure. In *AFA 2008 New Orleans Meetings Paper*.
- Lutz, F. A. (1945). The interest rate and investment in a dynamic economy. *The American Economic Review*, 35(5), 811-830.
- Lang, L., Ofek, E., & Stulz, R. (1996). Leverage, investment, and firm growth. *Journal of financial Economics*, 40(1), 3-29.
- Lee, J. (2009). Does size matter in firm performance? Evidence from US public firms. *international Journal of the economics of Business*, 16(2), 189-203.
- Lischewski, J., & Voronkova, S. (2012). Size, value and liquidity. do they really matter on an emerging stock market?. *Emerging Markets Review*, 13(1), 8-25.
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American economic review*, 48(3), 261-297.
- Miller, M. H., & Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *the Journal of Business*, 34(4), 411-433.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of financial economics*, 13(2), 187-221.
- Mikkelson, W. H., & Partch, M. M. (2003). Do persistent large cash reserves hinder performance?. *Journal of Financial and Quantitative Analysis*, 38(02), 275-294.

- Mesquita, J. M. C., & Lara, J. E. (2003). Capital structure and profitability: the Brazilian case.
- Memon, F., Bhutto, N., & Abbas, G. (2012). Capital structure and firm performance: A case of textile sector of Pakistan. *Asian Journal of Business and Management Sciences*, 1(9), 09-15.
- Næs, R. (2004). *Ownership structure and stock market liquidity* (No. 2004/6). Oslo: Norges Bank.
- Næs, R., Skjeltorp, J. A., & Ødegaard, B. A. (2011). Stock market liquidity and the business cycle. *The Journal of Finance*, 66(1), 139-176.
- O'Hara, M. (2004). Liquidity and financial market stability. *National Bank of Belgium Working Paper*, (55).
- Omran, M. M., Bolbol, A., & Fatheldin, A. (2008). Corporate governance and firm performance in Arab equity markets: Does ownership concentration matter?. *International Review of Law and Economics*, 28(1), 32-45.
- Patel, N. M., & Bhatt, V. (2013). Capital Structure and Profitability: Case Of National Stock Exchange. *INDIAN JOURNAL OF APPLIED RESEARCH*, 3(4), 276-260.
- Prasanna, K., & Bansal, B. (2014). Foreign institutional investments and liquidity of stock markets: evidence from India. *International Journal of Economics and Finance*, 6(6), 103.
- Roulstone, D. T. (2003). Analyst following and market liquidity. *Contemporary Accounting Research*, 20(3), 552-578.
- Subrahmanyam, A., & Titman, S. (1999). The going-public decision and the development of financial markets. *The Journal of Finance*, 54(3), 1045-1082.
- Sarr, A., & Lybek, T. (2002). Measuring liquidity in financial markets.
- Stange, S., & Kaserer, C. (2009). Market liquidity risk-an overview.
- Skopljak, V., & Luo, R. (2012). Capital structure and firm performance in the financial sector: Evidence from Australia. *Asian Journal of Finance & Accounting*, 4(1), 278-298.

- Shubita, M. F., & Alsawalhah, J. M. (2012). The relationship between capital structure and profitability. *International Journal of Business and Social Science*, 3(16).
- Saeed, R. B. A., & Badar, R. (2013). Impact of capital structure on performance empirical evidence from sugar sector of Pakistan. *European Journal of Business and Management*, 5(5), 78-86.
- Stulz, R. M., Vagias, D., & Van Dijk, M. A. (2013). *Do firms issue more equity when markets are more liquid?* (No. w19229). National Bureau of Economic Research.
- Sum, V. (2014). Stock market returns and liquidity: Dynamic relationships and causality. *Journal of Trading*, 9(1), 34-40.
- Singh, T., Gupta, M., & Sharma, M. A. (2015). Stock market liquidity and firm performance. *Accounting*, 1(1), 29-36.
- Fang, V. W., Noe, T. H., & Tice, S. (2009). Stock market liquidity and firm value. *Journal of financial Economics*, 94(1), 150-169.
- Tripathy, N. (2011). The relation between price changes and trading volume: A study in Indian stock market. *Interdisciplinary Journal of Research in Business*, 1(7), 81-95.
- Uno, J., & Kamiyama, N. (2010). Ownership structure, liquidity, and firm value. *Unpublished manuscript, Waseda University*.
- Umar, M., Tanveer, Z., Aslam, S., & Sajid, M. (2012). Impact of capital structure on firms' financial performance: Evidence from Pakistan. *Research Journal of Finance and Accounting*, 3(9), 1-12.
- Velnampy, T., & Niresh, J. A. (2012). The relationship between capital structure and profitability.
- Whited, T. M. (1992). Debt, liquidity constraints, and corporate investment: Evidence from panel data. *The Journal of Finance*, 47(4), 1425-1460.
- Welker, M. (1995). Disclosure policy, information asymmetry, and liquidity in equity markets. *Contemporary accounting research*, 11(2), 801-827.

Wurgler, J. (2000). Financial markets and the allocation of capital. *Journal of financial economics*, 58(1), 187-214.

Zheng, X., & Zhang, Z. (2006). Commonality in liquidity in emerging markets: Evidence from the chinese stock market.

## Appendixes

### Correlation Results of Model 1

	Prof	SZ	Mlr	Vol. Sales	Share Price	CR	DD
Prof	1.0000						
SZ	0.2747	1.0000					
Mlr	-0.0007	0.2067	1.0000				
Vol. Sales	0.1229	0.1514	0.0113	1.0000			
Share Price	-0.0036	0.2268	0.0648	0.0026	1.0000		
CR	-0.0035	0.1658	0.0705	-0.0070	0.0167	1.0000	
DD	0.0062	-0.0981	-0.0446	-0.0179	-0.0257	0.0479	1.0000



### Correlation Results of Model 2

	Prof	SZ	Mlr	Vol. Sales	Share Price	CR	Dummy
Prof	1.0000						
SZ	0.2747	1.0000					
Mlr	-0.0007	0.2067	1.0000				
Vol. Sales	0.1229	0.1514	0.0113	1.0000			
Share Price	-0.0036	0.2268	0.0648	0.0026	1.0000		
CR	-0.0035	0.1658	0.0705	-0.0070	0.0167	1.0000	
Dummy	0.0070	-0.1187	-0.0427	-0.0167	-0.0318	0.0300	1.0000

### Correlation Results of Table 3

	Inv.	Mlr	B.lev.	CH	M2/GDP	Mv. Equity	CFR	Tang.	DD
Inv.	1.0000								
Mlr	0.1865	1.0000							
B. Lev.	0.0252	-0.004	1.0000						
CH	0.0939	0.0756	0.3252	1.0000					
M2/G DP	-0.0231	-0.012	0.0345	-0.069	1.0000				
Mv. Equity	0.3533	0.4438	-0.001	0.0232	-0.0136	1.0000			
CFR	-0.0077	0.0105	-0.029	0.0266	0.0110	0.0125	1.0000		
Tang	-0.0604	-0.059	-0.009	-0.397	-0.0056	-0.031	-0.036	1.0000	
DD	-0.1348	-0.044	-0.013	-0.005	0.1126	-0.043	-0.011	0.0240	1.0000

**Correlation Results of Table 4**

	Inv.	Mlr	B. Lev.	CH	M2/GDP	Mv. Equity	CFR	Tang.	Dummy
Inv.	1.0000								
Mlr	0.1865	1.0000							
B. Lev.	0.0252	-0.004	1.0000						
CH	0.0939	0.0756	0.3252	1.0000					
M2/GDP	-0.023	-0.012	0.0345	-0.069	1.0000				
Mv. Equity	0.3533	0.4438	-0.001	0.0232	-0.0136	1.0000			
CFR	-0.007	0.0105	-0.029	0.0266	0.0110	0.0125	1.0000		
Tang.	-0.060	-0.059	-0.009	-0.397	-0.0056	-0.031	-0.036	1.0000	
Dummy	-0.142	-0.042	-0.016	0.0049	-0.0248	-0.046	0.0213	0.0209	1.0000

### Definition and Abbreviations of Variables of Performance Equation

VARIABLES	ABBREVIATION	EXPECTED SIGNS	REFERENCES
<b><u>DEPENDENT VARIABLE</u></b> Return on Assets	ROA		Gary S. Hansen 1989, Mirza & Javed.
<b><u>INDEPENDENT VARIABLES</u></b> Current Ratio	CR	+ve	Gary S. Hansen 1989
Share Price	SP	+ve	
Firms Size	FS	-ve  +ve	Shepherd 1972, Rumert 1982, Porter 1987, Wernerfelt et al. 1988 & 1989. Gary S. Hansen 1989, Muritala et al., Mirza & Javed.
Modified liquidity ratio	MLR	+ve	Jiraporn et al. (2011). Amihud and Mendelson (1986). Sharma et al. (2015).

### Definition and Abbreviations of Variables of Investment Equation

<b>VARIABLES</b>	<b>ABBREVIATION</b>	<b>EXPECTED SIGNS</b>	<b>REFERENCES</b>
<u>Dependent Variable</u> Investment	Inv		
<u>Independent Variable</u> Cash Flow Ratio	CF	+ve	Kazuogawa 2015
Cash Holdings	C	+ve	Kazuogawa 2015
M2/GDP	M2/GDP	+ve	
Tangibility	TANG	+ve	
Leverage	LEV	+ve	Martel et al. (2006)
Mv. Equity	ME	+ve	

**VARIABLES LIST OF PERFORMANCE EQUATION WITH REFERENCES**

<b>VARIABLES</b>	<b>REFERENCES</b>	<b>HOW TO MEASURE</b>
RETURN ON ASSETS	Al Manseer et al. (2012), Domiguez et al. (2012,2009), Dhaya and McConnell (2007), M. Arif khan (2013), Heenetigala and Armstrong (2011), Rudkin et al. (2010), Lam and Lee (2008), Daily and Dalton (1993), Hermain and Weisbach (1991), Lin, Liao, Chang, Bhagat and Bolton (2009), Zhao et al. (2010), Tang et al. (2003), Fung et al. (2006), Juras and Hinsen (2008).	Net Income / Total Assets
CURRENT RATIO	Mirza and Javed (2006)	Current Assets / Current Liabilities
DEBT TO EQUITY RATIO	Rudkin et al. (2010),	
M2/GDP	Doku et al. (2011)	
PROFITABILITY	Dominguez et al. (2009), Dhaya and McConnell (2007), Heenetigala and Armstrong (2011), Rssillaki (2009), Brito et al. (2012), Lam and Lee (2008), Daily and Dalton (1993), Hermain and Weisbach (1991)	Growth Rate of Real Sales
FIRM SIZE	Doku et al. (2011), Wernerfelt et al. (1989), Kam Ming Wan, M. Arif Khan (2013), Rudkin et al. (2010),	Natural Log of Total Assets OR Natural Log of Total Sales