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TECHNOLOGY, ISLAMABAD



**Macro Level Determinants of
Firm Performance: A Sector
Wise Approach with Evidence
from Pakistan**

by

Barkat Ullah

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degree of Master of Business Administration

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This thesis is dedicated to my beloved parents and respected teachers. Their persistent encouragement and moral support has made the difference in helping me persevere towards the completion of this journey. I pay my deep regard to my beloved parents and respected teachers whose devotion, prayers and guidance has enabled me to achieve this goal. May Allah bless them all.



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Abstract

The objective of this study is to investigate the influence of macroeconomic variables on financial performance of manufacturing and non-manufacturing sector of Pakistan. Since, very little attention has been given to measure the accumulative impact of oil prices, real effective exchange rate, inflation, Gross domestic product and interest rate on sector wise performance and very few studies in Pakistan have contribute toward literature in this context. This study attempts to fill this gap by analyzing financial performance of Cement, Automobile assemblers, Oil refineries, Textile, Oil and Gas marketing, Technology and Communication companies. This study uses five independent variables i.e Crude oil price, real effective exchange rate, inflation (CPI), GDP and real interest rate. The dependent variables include Tobins Q, ROA, ROE, EPS and Capital Gain. The study also includes two control variables which are firm size and age.

The study founds that behavior of macro variables was varying, when measured against financial ratios of different sectors. The magnitude of significance and insignificance varies from one sector to another. Crude oil price has significant impact on Q ratio and gain on share price while insignificant on ROE, EPS and ROA. The impact is relatively stronger on cement sector. In case of REER the impact is significant with Q ratio, ROA and CG with relatively stronger influence on textile sector of Pakistan. CPI on the other hand has strong significant impact on change in share prices. GDP has strong significant relationship with profitability ratios and real interest rate is significant with equity ratios while insignificant with profitability ratios. The objective of study was to investigate the impacts of macroeconomic variables on different sector of Pakistan by using firms financial data. For future researchers, academicians and researchers can conduct study on other developing countries which are more vulnerable to macro variables.

Keywords: Macro variables, Firm Financial performance, Sector, GDP, REER, CPI, Real interest rate, Crude Oil Prices, Tobin's Q.

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Chapter 1

Introduction

1.1 Background of the Study

Macro variables have global impacts which creates chaos across the countries and regions. In such conditions the corporations receive direct impacts and fail to show desire level of resilience due to lack of proactive strategies. Theoretical and empirical studies thus investigate all possible impacts of macro variables on different aspects like financial, human resource and market. The study by Baltazar, Reis, & Amorim, (2020) employs economic models to understand the intensity rate of loan defaults under special economic conditions which create a stress among people and businesses. They employed visualization dashboard, Monte-Carlo stimulations, and back transformations to analyze the defaults rate during 2007-09 recession. The empirical findings of the literature disclosed that defaults increased up to 30%. They emphasize that their study is a significant contribution for regulatory bodies to achieve sustainable economy (Baltazar, Reis, & Amorim, 2020).

Full recovery of firms after macroeconomic shocks is very crucial. Jin, Luo, & Wan, (2018) conducted their quantitative study on firms from 106 countries after recession of 2007-09. The primary focus was to closely understand the financial constraints faced by firms in doing business with full pace after facing recession. Results of study identified slow recovery in firms which faced stronger financial limitations as compared to companies having low financial constraints. Significant

role was played by soft and swift monetary policies by regulatory bodies and convenient financing schemes by banks (Jin, Luo, & Wan, 2018). The primary objective of such studies is to yield accurate forecasting to build strong resilience against macroeconomic variables. Empirical study on Japanese firms GDP revealed that future forecasts are linked with employment, growth, expansion, and investment (Tanaka, Bloom, David, & Koga, 2019). Firms which appear to have lower profitability in subsequent years made error in forecasting by overestimating and underestimating. Study also found that older and large corporations had forecasts closer to actual figures.

Many studies in economics and finance have explored the significant of macroeconomic variables on financial performance of firms. Other than variables discussed above, the significant attention has been given to Gross Domestic Product and interest rate. Economies across globe faced many challenges at national and international level due to sluggish and downside trend of these two variables. Their progress has significant input from competitive performance of firms across the sectors (Egbunike & Okerekeoti, 2018). These firms have to contribute while countering uncontrolled macroeconomic factors like politics, suppliers, technologies, government and financial institutions (Adidu & Olannye, 2006).

Empirical studies on firms financial performance began early in 1940s when the Great Depression happened after Wall Street crisis (Crafts & Fearon, 2010). In their study author established critical argument that title of Great Depression is well deserved for the period lasted immediately after the crisis. Destructive effects of the depression started in the late 1929 and soon it spread across countries affecting manufacturing firms and raw material producers. Keynes & Wright Q., (1931) narrated that 1930s, for modern economies, will be remembered as a major turning point. They argued that in this period the world was surrounded by economic uncertainties and greatest catastrophe. Furthermore, the primary concern or center point for modern scholars will not be the reasons of occurrence behind great depression but its duration and deep negative impacts on world economies (Keynes & Wright Q., 1931).

The key questions that immediately and periodically arose were how the great depression began? Why it had prolonged impact on countries growth? UK and Germany started recovering in late 1931 but US remained depressed until 1933? What were the driving forces that made it an international catastrophe? How to assess the impact of financial crisis on macroeconomic shocks? What was the intensity or magnitude of policies designed to build resilience against economic shocks? Did governing bodies modified economic policies to formulate short running policies? What were the causes behind varying magnitude of impact among countries? The impacts of depression never fully eliminated in 1937-38 because UK and USA faced drastic rise in unemployment due to a slow economy (Crafts & Fearon, 2010).

Understanding of economic behavior of macro-variables took further development through studies conducted on OPEC oil prices shocks in 1973. The very first investigative argument was built by Hamilton, (1983) in his remarkable work *Oil and the Macro-economy since World War II*. This theoretical work summarizes that United State and other countries faced numerous small and large depressions due to WWII but the longest was in 1973 which lasted for four years. This long-lasting impact was due to continuous rise in the crude oil prices over the four years.

The study also built a counter argument that in all recessions from 1948 to 1973 the oil shocks had least proportion of impact when measured against other macroeconomic variables. However, sluggish macroeconomic performance of OPEC nations was the main reason behind lasting global impacts of recession. During 1948-81 the major events that caused oil shocks include slow pace by European countries to increased energy production (1947-1948), movements in favor of Iranian nationalization and global strikes by workers of energy businesses (1952-53), Suez Crisis (1956-57), decline in oil reserves of America (1969), environmental legislations and production cuts by oil producing nations (1970), stagnant production of Oil in US, revolution in Iran and Iran-Iraq war (1973-1981) (Hamilton J. D., 1983). Hence, crude oil prices volatility is not rare, as instability has been observed over the past decades. In year 1997 Asian Tigers faced worse financial crisis when the Thailand

government abandoned fixed exchange rate policy against USD due to lack of foreign reserves. Changes in exchange rate policy had adverse impact on real estate sector and mild effect on financial sector due to proactive measure in financial reforms (Nidhiprabha, 2011). Sectors in many countries including Pakistan could not save themselves from external shocks. As a result, the export collapsed, and sectorial output started contracting. The financial crisis left Asian developments states with no other options but to adopt new political based economic models (Pang, 2000). Changes in political strategies led to adoption of market driven strategies rather than state driven to regulate financial issues (Pang, 2000).

The economic forces are always present outside an organization in form of CPI, GDP, Interest, unemployment, stock market indices and taxes (Bank, 2016) and (Broadstock, Shu, & Xu, 2011). According to Egbunike & Okerekeoti, (2018) these factors can improve and deteriorate the financial performance of firms. Impacts of micro variables can be mitigated but macro economic factors are beyond the control of management (Dioha, Okpanachi, & Amhed, 2018). This statements is supported by evidences from financial crisis in Russia, OPEC countries, East and South Asia, and global crises of 2007 (Issah & Samuel, 2017). Fiscal policies by regulatory bodies affects the cash flows, cost of capital, profits and revenue by disturbing the demand in market (Zeitun, Tian, & Keen, 2007). For instance, increase in nominal interest rate and inflation rate causes failure to repay debts and leads to bankruptcy in swere cases (Wadhwani, 1986). Impact of fluctuation in oil prices on textile sector is evident from prior empirical studies. One such study on Textile sector of Turkey by Ozturk, (2005) reveals that rise in oil prices has negative impact on productivity of overall textile sector including weaving, spinning, knitting and finishing. The case study also agued that to achieve maximum productivity with minimum energy cost and consumption, the whole sector reduced the oil as fuel to 3% only and shifted to natural gas and lignite as primary fuel for machines.

The Great Recession of 2007-09 sparked devastating financial crisis after the great depression, with its long-lasting impact on different sectors around the globe (Tatom, 2013). Study conducted by Ali & Islam, (2010) on the economy of

Bangladesh argued that impact of Great Recession was adverse on agriculture and equity markets, but at the same time it had mild impact on exports and remittances. Their study further found that India, China, and other emerging economies faced worse consequences because they had more exposure in overseas toxic assets, agricultural growth, garments exports and workers remittances sectors. These impacts were linked with inflation as suggested by theories of cost price adjustments which are measured through CPI rate (Ball & Mazumder, 2011). Nature of macroeconomic variables is interdisciplinary. Impact of each external indicator has multiple dimensions and spillover behavior. Such uncontrolled actions of elements in the outer environment make them challenging and quite difficult to handle.

Critical investigation into past recessions is quite important because economic downfall in 1940 after the world war II caused failure of approximately 500,000 businesses in the United States alone (Pearce & Michael, 2006). Even after extensive studies, research and analytical reports, the experts and policy makers are still in process of fully understanding the economic downturns and reason behind their occurrence. One holistic strategy is to have diverse investment portfolios both market and geography wise by developing turnaround plans, productive marketing efforts, and playing vital role for speedy economy recovery (Pearce & Michael, 2006). In developing countries like Pakistan the impact of external variables on businesses are more severe as compared to firms operating in developed nations. In order to avoid unbearable damage, companies in Pakistan must go for less vulnerable markets and customers (Jusko & Mcclenahan, 2003). Managers should always be prepared for economic pressures due to macroeconomic variables. These strategies are recommended prescription to avoid hard hit from recessions. Firms should also play aggressively during slow economic period to boost sales and cash flows beside taking short but effective measures to safeguard investments. All the suggested strategies are not mutually exclusive. It depends on the firm to employ each at one time or all at same time.

Macroeconomic variables may have devastating impacts on businesses. The magnitude of impact may vary in developed and developing countries. Liu, (2009)

Investigated the businesses failures during 1966-2003 in UK in order to established empirical relationship between macroeconomic variables and poor performance of firms. The primary objective was to deeply study the impacts arising due to changes in monetary policy. The study concluded that failures of many businesses were influenced by the changes in financial and real estate sector. The negative significant impact of monetary policy was found on many small and large businesses especially after 1980 (Leow & Mao, 2017). Downside trend of businesses cause unbearable economic shocks and therefore, it is important to maintain a balance between growth rate of economy and stability of businesses (Zhang, Bessler, & Leatham, 2019). In another study on UK, Issah, Antwi, & McMillan, (2017) emphasize the importance of macroeconomic indicators while preparing projected financial report of corporate firms. Based upon empirical evidence the study reveals that past performance of firms and macroeconomic indicators, will affect the future performance, particularly the ROA. Hence, both macro indicator and financial indicator must be included in study while predicting the future parameters of firm performance (Issah, Antwi, & McMillan, 2017).

Prior studies were influenced by some event which led to development of literature on firms financial performance. The studies have established empirical evidence that Oil prices shocks, Exchange rate, Inflation, GDP and Interest rate have impacts on the financial performance of firms. However, very few studies explored the impacts sparked by these economy indicators on financial performance of various sectors in Pakistan.

1.2 Gap Analysis

Significant literature development has been done on performance of sectors, indices, and firms to investigate magnitude of impact caused by macroeconomic variables. Bagirov & Mateus, (2019) in their work established empirical argument to analyze impact of macro level factors on each sector or industry individually.

Their work on Western Europe has studied impact of oil prices on firm performances with evidence from more than one country. There is also significant literature available on each macroeconomic variable. Work of Al hajj, Al-Mulali, & Solarin, (2018) on Malaysian Nexus is noticeable which implies that oil price shocks have an adverse impact on the stock market returns in most cases regardless whether internationally oil prices have downside or upside trend.

Usman & Siddiqui, (2019) in their study with reference to Pakistan argue that Exchange rate & interest rate have negative significant association with index returns. Oil prices & foreign direct investment have positive relationship with stock market return. In an another perspective Liu, (2009) in his work on business failures concluded that changes in monetary policy triggered several macroeconomic indicators which in turn either halted or caused sluggish performance of businesses in UK. Similar evidence was found by Leow & Mao, (2017) who argued that a balance must be maintained between monetary changes and businesses performance in order to achieve the economic growth.

In the light of above studies, literature have laid down theoretical strategies to deal with macro variables but very little attention has been given to accumulative impact of oil prices, exchange rate, inflation, GDP and Interest rate on sector wise performance evaluation and no study in Pakistan contribute toward literature in this context.

1.3 Problem Statement

Engagement of firms to investigate the behavior of macroeconomic variables is very beneficial for delivering maximum value to their stakeholders. Such investigations are mandatory to device effective strategies. In past many studies have explored the impact of variables on firm's financial performance. These studies have been conducted at macro level and micro level. However, Bagirov & Mateus, (2019) argued that all the previous work on firm performance has been done either at country level or index level but macro level factors do not affect every industry

the same. Therefore, there is a need to identify macro level factors affecting firm's performance for each industry individually.

It is also needed to study the comparative performance of firms under the influence of same macroeconomic variables. In developing countries like Pakistan manufacturing sector is offering consistent products since centuries and is a significant contributor in national GDP. However, due to sluggish innovative measures the old-fashioned businesses model suffers more severely by macroeconomic variables as compared to developed countries. Non-financial service sector is younger as compared to manufacturing and there is need to explore its literature. There is research gap in literature to establish empirical evidence for comparative performance of firms operating in both the sectors. Particularly the performance against unpredictable behavior of macroeconomic variables.

1.4 Research Question

This study aims at answering the following questions:-

1. Is there any sector wise impact of Oil prices on Firms' Financial Performance?
2. Is there any sector wise impact of Exchange Rate on Firms' Financial Performance?
3. Is there any sector wise impact of Inflation on Firms' Financial Performance?
4. Is there any sector wise impact of GDP on Firms' Financial Performance?
5. Is there any sector wise impact of Interest Rate on Firms' Financial Performance?

1.5 Objectives of the Study

The objectives of this study are as follows:

1. To check the sector wise impact of Oil Prices on Firms' Financial Performance.
2. To check the sector wise impact of Real Effective Exchange Rate on Firms' Financial Performance.
3. To check the sector wise impact of Inflation on Firms' Financial Performance.
4. To check the sector wise impact of GDP on Firms' Financial Performance.
5. To check the sector wise impact of Real Interest Rate on Firms' Financial Performance.

1.6 Significance of the Study

This work is pioneer to explore relationship between sector wise financial performance and macroeconomic variables in Pakistan with its empirical contribution toward literature. This study will establish argument that which sectors in Pakistan receives more impact from Oil prices, exchange rate and inflation. The study contributes toward literature on performance of different sectors in Pakistan.

First, it explores that impact of macroeconomic variables on each sector. Second, empirical evidence of the study will contribute toward emerging literature on financial performance of manufacturing and non-manufacturing sectors in Pakistan. Third, it is a comparative study of the sectors and it will build baseline for future studies in developing countries like Pakistan. In Asian nations very little comparative studies have been done on manufacturing and non-manufacturing sectors. Fourth, this is first study which employs Tobin Q as proxy to measure the performance of firms. Studies have explored one sector in each study but very less work is done on sector comparison.

The empirical evidence from study will be an input for investors interested in Pakistani market. The results will lead to formulate sound investment strategies while formulating portfolios. Analysis of sector wise financial performance, their

comparison and reaction toward changing macro variables, will be a new prospective for portfolio management. Furthermore, this study will summarize the 13 years data covering financials of key Pakistani economic sectors and macro indicators. All these outputs of study will contribute significantly for strengthening the policies related to corporate engagement. In addition to above significance, this study will also highlight several sectorial aspects and provide guidelines to top management, strategic business divisions, academicians, field experts and portfolio managers.

Study also analyzes the impact of GDP and interest rate on performance of firms. GDP is a key economic indicator which measures growth in terms of fixed assets in a specific region. Interest rate fluctuations in Pakistan is a challenge to both manufacturing and non-manufacturing firms. Its instability and continuous upward trend have led to an uncontrolled increase in prices of basic commodities to life. It will further explore that which of these variables have strong or weak relationship with various sectors. Empirical results will help top management in formulating proactive strategies to mitigate anticipated downfall which can be caused by any of these variables. Governing bodies can formulate sound policies to help corporate sectors in achieving sustainable growth.

1.7 Plan of the Study

This thesis comprises five chapters. The first chapter discusses background of the study, problem statement, gap analysis, significance, research questions and objectives of the study. Second chapter enlightens past studies by establishing critical literature review and hypothesis development. Third chapter is based on methodology, data description and sample descriptions. Fourth chapter discusses the results of the study. Finally, the fifth chapter includes conclusion, recommendations and directions for future studies.

Chapter 2

Literature Review

Prior studies have established empirical understanding of firm performance and its level of sensitiveness with various macroeconomic variables. It is evident from the emergence of various macro-economic behavioral theories like supply and cost push theories, monetary theories, saving and investment theories (Perrow, 1986). These theories when studied in conjunction with corporate world, led to emergence of interdependent relationship among economic triggers and financial indicators of firms (Hansen & Wernerfelt, 1989). Such economic influence on organizations led to proposition of Neoclassical theory which established understanding on price-guided resource allocation rather than management guided (Demsetz, 1997). This study established investigative argument on evolution of firms in an economic environment and their strategic moves in response to consumption and spending patterns.

In contrast to price as single economic indicator, the World Bank, (2019) in its development review of 2020 has highlighted large number of variables, having impact on countries in general and firms in specific. However, practitioners and academicians with supporting empirical evidences have argued that firms respond toward selective variables when operating in a specific industry and region(World Bank, 2019). The study conducted by Chughtai & Aftab, (2015) argued that macroeconomic variables which influence the firm growth varies in developing and developed

nations. With reference to Pakistan, their study concluded that inflation and interest rates fluctuation is negatively associated with production whereas exchange rate shows the positive impact.

Sustainable performance of firms plays vital role in establishing long lasting profitable relationship between an organization and its stakeholders (Raju & Roy, 2000). This perspective of firm performance has led to significant literature development in multiple dimensions by researchers, practitioners, and institutions. The work of Qian, Lee, Ji, & Qian, (2008) is noticeable which measures linear and curveliner effects of firm performance with respect to regional diversification. They argue that firms from developed nations achieve significant growth when they go borderless specially in developing regions.

Bilson, Hooperb, & Brailsford, (2001) argued that local factors have major impact on equity return variations in emerging markets as compared to global factors. The study found evidence which supports commonality in the factors that cause variations in returns across emerging markets. Little evidence of common sensitivity is found when emerging markets are considered as one unit and such behavior is similar to considerable commonality which is found at the regional level (Geert & Harvey, 2002). Empirical evidences of firm performance from developing regions, Malaysia being one of them, suggests that there exists longrun relationship between these local factors and the Capital gains (Ibrahim & Aziz, 2003).

Globalization of firms led to emergence to new perspective in theoretical and empirical studies. One such study on Turkish firms by Kandir, (2008) explains the impact of macroeconomic factors on capital gain. The study found that exchange rate, interest rate and world market return effect all of the portfolio returns, while inflation rate is significant for only three of the twelve portfolios. On the other hand, industrial production, money supply and oil prices do not appear to have any significant affect on capital gain (Kandir, 2008). Recent study on stock returns of Western Europe firms revealed that reaction of sectors is different toward changing crude oil prices (Bagirov & Mateus, 2019). They also worked on the research gap of studying sector wise performance because businesses reacts in a uniuie manner against macroeconomic variables.

Gregorio J., (2012) in a study published by IMF economic review, found evidences that countries which had lower inflation before, experienced steep climb in after the financial crisis. This study minimizes study gape between rising inflation and growth patterns of several firms with respect of demand and supply mechanism. One perspective of resource based theory states that in developing markets, the ability of firms to counter macro variables is determined by optimum size of business and resource sufficiency Viner, (1952) and (Penrose, 1959). This model on size and resources, enlightens importance of endogenous variables which play vital role in growth of firms (Geroski & Gregg, 1996). On the other hand financial recessions triggers macro variables which negatively effects the purchasing power of individuals and ultimately pushes out firms from their optimal size (Coad & Alex, 2007). The resource based theory also highlights the importance of internal factors like labour, capital, skill, value added products and brand strength. Size and growth of the firms is greatly dependent on these internal factors and they produce maximum resilience against macro variables during recession period (Coad & Alex, 2007).

Core competency of a firm is the best input for protecting and maintaining the growth level and it is achieved only when there is optimum combination of internal factors (Coad & Alex, 2007). This argument is related to the macro variables affecting the proactive strategies of firms, as defined by Gibrat's Law "in addition to the internal factors, there are many environmental variables which directly effect the growth of firms" (Carrizosa, 2007). Continuous decline in demand for some time period due to macro variables, decreases the firms capability to maintain employment level but the magnitude of impact varies among companies. One parameter to measure such magnitude is firm size. Small and old firms reacts quickly but the pace of reaction is far less in firms doing exports or have foreign ownership (Burger, Damijan, Kostevc, & Rojec, 2017). Impact of macro economic variables varies across developed, developing and underdeveloped economies. Crude oil prices is a major factor among such macro variables and its impact on productivity is far more severe in developing countries while moderate in developed

nations (Hesary, Yoshino, Abadi, & Farboudmanesh, 2016). Reasons behind moderate impact are the alternate sources of energy and other energy efficient measure taken by Governments. Such proactive strategies protect developed countries from severe oil shocks which emerge globally.

2.1 Theoretical Framework

2.1.1 Stakeholder Theory

Stakeholder theory was first proposed and argued by Freeman D., (2010) in its landmark book published in 1984. In the latest version of 2010, he argued that 21st Century is one of “Managing for Stakeholders.” The task of executives is to create as much value as possible for stakeholders without resorting to tradeoffs. Great companies endure because they manage to get stakeholder interests aligned in the same direction. Financial performance of firms is very important for all stakeholders but Freeman R., (1984) argue that firm should serve multiple stakeholders each having different interests. In perspective of stakeholder theory, the firm performance is defined as net value created by a firm over a financial year is equal to the sum of all values created for each stakeholder (Philips, Freeman, & Wicks, 2003).

Freeman R., (1984) also argue that stakeholders are all such individual or groups who can have an impact or get effected by the goals of an organization. Stakeholder theory encompasses all such factors covered during analytical and empirical analysis performed by firms. It also includes the operating environment in which the firm is operating and its strategic business units at various geographical locations. The primary objective of stakeholder theory is that customers, employees, creditors, regulatory bodies, Government, local and international communities, all have either direct or indirect interest in the performance of firms. This theory was first employed by Ansof, (1965) who used several principals to analyze the goals and objectives achieved by an organization. Freeman R., (1984) on contrary bridges the gap between stakeholders and corporate decisions. He elaborates the

interventions by different type of stakeholders when firms formulate several strategic decisions of long-term nature. In this study also we are intended to analyze the impact of several macro or external economic variables on the financial performance of different sectors of Pakistan. Corporations must be proactive against such variables to yield maximum benefits to stakeholders. Further literature developments in stakeholder theory led to the emergence of two branches namely ethical or moral and managerial or positive branch (Deegan, Cooper, & Shelly, 2006). The first branch, moral or ethical is concerned with behavior of managers and board of directors. It states that all stakeholders including internal and external, should be treated well and organization must strive to protect their interests.

Managers are responsible to ensure transparent and accurate information flows down to each type of stakeholder. It is the moral duty of top management which holds executive power, that the information must pass on to stakeholders on regular intervals or within specified time frame as implemented by the Law. The second branch of stakeholders theory by Deegan, Cooper, & Shelly, (2006) states that information must be disclosed to stakeholders having major share holdings. It is because not all stakeholders take equal level of interest in company's information. Hence, managers must disclose information to those holding power over resources of the organization.

2.1.2 Resource Based Theory

Resource based theory is very important for managers to make corporate decisions for enhancing internal capabilities to achieve sustainable competitive advantage based on internal resources. It is a strategic tool for performing analysis of an organization to understand and estimate its capabilities (Mclover, Wall, Humphreys, & Mckittrick, 2009). According to Barney, (1999) organizations must meet certain criteria in order to achieve superior capabilities as compared to suppliers and other competitors. The main elements of the criterial include worth, scarcity, imitability, and organizational culture. Our study will analyze internal capabilities measure through financial ratios like ROA, ROE, EPS, Tobins'Q and capital gain or loss. The stronger organizations in such ratios are capable to push strong

resilience against macro variables. Hence, the theory has significant role in our theoretical framework. Mclover, Wall, Humphreys, & Mckittrick, (2009) further argue that organizational resources are only considered worthy if they have capability to counter future threats and fully exploit the opportunities for a better cause. Therefore, theoretical understanding of this theory is quite important to fully address the factors which are critical to success in a competitive environment. Penrose, (1959) in a study established a theoretical argument on growth drivers by mentioning idle managerial skills which many leader posses but they never realize using them. He stated that such internal skills are essential for growth and further literature by Rubin, (1973) highlighted significance of such skills while making strategies for diversification and expansion.

2.1.3 Systems Theory

A system as defined by Nwachukwu (2006), consist of interconnected and interrelated variables or elements which are connected in a defined manner to produce a single working unit. Kuhn (1974) defined system as a pattern of elements arranged in such an order that it seeks attention. The theoretical development defines system theory as “interdisciplinary study of systems” (Kegan & Bertalanffy, 1968). The study was further explored by the experts from different disciplines and it has many variants like systems theory of management, systems theory of organization and many other. Kegan & Bertalanffy, (1968) recommends that systems theory should be used as regulative tool in different fields of science. The theory further clarified that whole pattern which is based on knowledge where one part supports the other. System is of two basic type i.e. controlled and uncontrolled. A controlled or bounded system composed of detector, selector, and effector. According to Kuhn, (1974), a detector senses the information which is shared with selector to apply certain rules so that effector can execute a transaction or communication within the system. The primary objective of communication and transaction is to achieve an equilibrium within the system (Kuhn, 1974). The theory further classified system as open ended and close ended. In a close-ended system, elements

cannot interact outside whereas in an open-ended system the elements can interact both internally and outside the system. Our study's objective is to determine performance of sample sectors operating in a system which is influenced by many variables both internal and external. Hence, this theory is very relative to our theoretical framework.

2.2 Oil Price and Firm Performance

Corporate investments and expansions are significantly negatively affected by the uncertainty of crude oil prices (Phan, Tran, & Nguyen, 2018). This study concludes the results from 54 countries and more than 33,000 firms for a period of 1984-2015. Phan, Tran, & Nguyen, (2018) also reveal that intensity of effect depends upon the characteristic of the market. They further found strong impact in oil consuming countries as compared to exporting countries. However, the intensity of effect is not strong during the financial crisis. Crude oil prices is one of the significant cost used by the firms as input and any uncertainty in prices of crude oil effects the investment decisions or make them more difficult (Henriques & Sadorsky, 2011).

Empirical studies also reveal that current changes in crude oil prices cause similar uncertainty in future and this behavior makes investment decisions more difficult and ultimately halts the performance (Pindyck, 1991). Firms' financial performance is deteriorated due to uncertainty in crude oil prices and this decrease is either through supply or demand channel (Edelstein & Kilian, 2007). In manufacturing sector, the crude oil is a significant cost and in supply channel any rise in prices increases the marginal cost which results a rise in commodity prices. on the contrary in demand channel, uncertainty in oil prices decreases the purchasing power of consumers and it caused downward trend in domestic and international demand (Hamilton J., 2009). In both cases the performance of firm is negatively affected. Decisions at state level are affected by the volatility of crude oil prices. Central banks make changes in interest rate which is mainly influenced by deflationary or inflationary volatile behavior of crude oil price (Ferderer, 1996). Such

decisions negatively affect the firms' investment decisions related to future cash flows or discounts to customers (Sadorsky, 1999).

A large volume of empirical studies has analyzed fluctuation of oil prices and their short to long run impact on performance of different industries. A study on North American oil firms by Dayanandan & Donker, (2011) analyzed oil prices impact on firm performances for the period 1990-2008. The study concluded that performance of North American energy and petroleum corporations was significantly positively effected by increase in oil prices. In the same empirical work Dayanandan & Donker, (2011) also found the financial crisis of 2007-08 had negative impact on financial performance of North American energy and petroleum companies. Their findings concluded that rise in commodity prices negatively influenced the accounting performance of resource based organizations, such as, oil and gas companies. To further analyzed these findings, Gupta K., (2016) conducted study on 70 countries by using monthly data to analyzed impact of relationship btween oil prices, competition and country level determinants and oil and gas equity returns. His study concluded that firm performance receives negative impact from macroeconomic variables and is positively effected by fluctuation of oil prices. Oil and gas companies operating in in oil rich countries are more sensitive to petroleum prices shocks and market stress as compared to firms doing business in countires with lower oil production (Gupta K., 2016). Furthermore, oil firms facing less competition are relatively low sensitive to oil shocks . A large volume of literature exists which explains the relationship of firm performance with several macro-economic factors. One such study has recently been conducted by Miramir & Cesario , (2019) who argue that crude oil prices impact the performance of listed oil and gas firms positively in Western Europe, however, in case of unlisted firms the results indicated existence of other factors which have an impact on their performance. Prior to this work Malik & Umar, (2019) identified the existence of circular relationship between oil prices and exchange rate and their impact on performance of stock returns.

Impact of fluctuation in oil prices on textile sector is evident from prior empirical studies. One such study on Textile sector of Turkey by Ozturk, (2005) reveals

that rise in oil prices has negative impact on productivity of overall textile sector including weaving, spinning, knitting and finishing. The case study also agreed that to achieve maximum productivity with minimum energy cost and consumption, the whole sector reduced the oil as fuel to 3% only and shifted to natural gas and lignite as primary fuel for machines.

Rodriguez, (2008) conducted study on six Organization for Economic Cooperation and Development (OECD) countries to analyze the impact of oil prices shocks on performance of different firms. The findings showed that strong positive correlation exists between firms' financial performance and oil shocks in US, UK and Italy, whereas negative correlation was found in textile and oil prices in case of Germany. Empirical evidences from study shows that textile, leather and wearing apparel industries were the least affected by oil prices and the trend was different across the six OECD countries.

The impact of oil prices at industrial level have also been analyzed. Lee & Ni, (2002) in their study on oil prices shocks, determined sensitivity of both demand and supply side after a change in oil price. A shock in oil prices on supply side is evident from deteriorating performance of industries which take oil as main source of input, for example, oil refineries, chemical industries etc. On demand side the most affected industry is automobile due to uncertain prices causing weakening demand of range of products offered by automobile assemblers and manufacturers. Long lasting impacts of oil shocks on automobile industry result in falling demand of full size cars affecting buyers due to continuous revision of prices by producers (Lee & Ni, 2002). The effects are more severe on returns for US producers due to less production of full size cars in response to their foreign competitors in international markets.

Cameron & Schnusenberg, (2009) found inverse relationship between increasing oil prices and stock returns of car manufacturers focusing on production of SUVs and other full size cars. Their study drove no result about automobile manufacturers producing passenger cars. Oil prices fluctuation have significant impact on performance of banking sector, as rise in crude oil prices triggers reduction in banks performance by negatively affecting liquidity, capitalization, earning power and

management efficiency (Lee & Lee, 2019). They also found the adverse effects of oil prices are mitigated when sustainable and stable political and economic conditions prevail in a country for a longer period. Another empirical results with reference from Turkey, concluded that profitability of banks is negatively effected by oil prices and the impact is direct in nature (Katircioglu, Ozatac, & Taspinar, 2018). The study further investigate the intensity of unidirectional relationship from oil prices to inflation and inflation to banking sector.

(Mohanty, Nandha, & Bota, 2010) investigated the impact of crude oil prices on oil and gas sector of CEE countries and the results indicated no significant relationship during the period of 1998-2010. However, on annual basis researchers found impact of oil prices on firms but the magnitude varied across the companies. They further attributed such oil price shocks as systematic risk arising both at international and domestic level. (Usman & Siddiqui, 2019) analyzed the performance of stock markets under the pressure of oil prices fluctuation in Pakistan. Their study revealed that oil prices has not suppressed the stock return and there exist positive correlation between the crude oil prices and stock market performance. After reviewing above literature we hypothesize that:

H₁: *Oil prices have positive relationship with financial performance of different sectors in Pakistan*

2.3 Exchange Rate and Firm Performance

Many developing economies around the globe have started opting modified sustainable strategies to boost economic growth. Such strategies are providing opportunity for Pakistan to revisit its exchange rate measures and volatility which halts the economic growth. It is quite sensitive because any change in prevailing strategies may results a rise in both real and nominal exchange rate (Caporale & Pittis, 1995). With reference to Pakistan, excessive volatility in exchange rate is positively correlated with manufacturing sector but the results are insignificant and empirical evidence using GARCH model reveal that impulse response is strong but in long run the abrupt changes in exchange rate has no significant impact on

manufacturing products (Azid, Jamil, Kousar, & Kemal, 2005). Their study is contrary to the observations of Caporale & Pittis (1995) which argue the volatility has pronounce impact on performance of economic growth through manufacturing goods.

The macroeconomic factors do affect the performance of firms and exchange rate is one of the major economic factors impacting the company's financial standings. As confirmed by an empirical study conducted by Mohammad Nagahisarchoghaei, (2018) that there lies a significant relationship between the changes in the exchange rate and the firms performance. The researcher analyzed 242 top companies operating in India through multivariate regression model and it was concluded that the growth, profitability, stock performance and other factors related to firm's performance are significantly affected by exchange rate fluctuations. Lee M., (2017) analyzed the relationship among the exchange rate and the performance of firms involving import and export channels. It was inferred that appreciation in the exchange rate does not impact the performance of firms negatively while there might be other factors such as interest rates or size of the firms causing the performance to decline while in another study LI Zhigang, (2018) examined the exchange rate shocks and its impact on the firms where it was concluded that exchange rate changes cause significant impact on the revenues and profitability of the firms especially the indirect exporters since the currency rate shock are mostly transferred from main exporters to the indirect exporters. It was further inferred that the exchange rate fluctuations must be minimized and stabilized to maintain the performance of small and medium enterprises specifically since these firms are more prone of financial deterioration in response to variations in macroeconomic factors (LI Zhigang, 2018).

China's emergence as global economic power has resulted in new directions for economic research and evolved unexpected behavior of many economic indicators which in many cases are in contrary to proposed hypotheses. One such dilemma is with real exchange rate of China during 1996-2006 which did not appreciate even though it achieved relative higher gains from productivity (Tyres & Golley,

2008). This trend of productivity is consistent with the Balassa Samuelson hypothesis which argue that economic growth is linked with higher productivity and it causes a rise in non-traded prices. This puzzle reveals that China has effectively utilized various trade reforms and the only indicator which determined real exchange rate is financial outflows (Tyres & Golley, 2008). In same context (Cai & Wang, 2006) argued that one significant factor behind such response from China is demographic dividend. Mostly workers during 1996-2006 were aged people working on low real wage and it contributed as one-quarte of per capita in China's GDP. This dilemma is found significant in keeping real wage rate low in China's export-oriented manufacturing sector and ultimately low real exchange rate. Such behavior is in consistent with argument that individuals and firms possess varying attitude toward economic policies effecting the stability and volatility of exchange rate. Across developed and developing countries firms having export businesses are more internationally vulnerable and prefer stable real effective exchange rate (Broz, Frieden, & Weymouth, 2008). The attitude of exporters toward attaining competitive advantage and stable exchange rate is heavily dependent upon the hedging against currency, sensitive consumer prices etc. Further, manufacturing and trading firms closely watch the movement of currencies when exchange rate has significant impact on primary imported inputs (Campa & Goldberg, 2005). The summary to this argument has two key dimensions. Firs, fixed or stable exchange rate is top most priority for international firms both trading and manufacturing and second, firms producing tradable goods like energy, agriculture, livestock and metal prefer depreciated exchange rate (Devereux & Engel, 2002). Empirical investigation of Pakistani Rupee against major trading currencies using GMM on quarterly data reveal that volatility in exchange rate causes variability in the performance of both manufacturing and service firms (Zakaria & Ahmad, 2009).

The impact of exchange rate in Pakistan's firms was studied for a time span of 1982 till 2013 using correlation and regression analysis where it was concluded by Muhammad Bilawal, (2014) there exist a significant positive relationship of exchange rate and investments in the firms operating in Pakistan leading to the a

stable macroeconomic performance. Exchange rate fluctuation and currency depreciation was experienced in Taiwan during financial crisis of East Asia. This financial crisis in Taiwan led to further studies regarding the impact of exchange rate changes and its impact on the performance of the firms. In a study listed firms of Taiwan Stock exchange were studied for a period of 1992 till 2000 and it concluded that the depreciation in the Taiwan dollar due to exchange rate fluctuations led to an increase in the overall exports. It further improved the performance of firms by increasing the overall sales, exports and firm's productivity (Loretta Funga, 2009). Another study conducted on the Canadian firms on appreciation of dollar and a study was conducted on 10 years' data to inquire the impact of exchange rate fluctuation and its effect on the performance of the firms operating in Canada. The study concluded that a negative relationship exists between appreciation in the Canadian dollar and the revenues, profitability and the survival of the firms (Mair, 2005). It also inferred that the survival and better performance of the firms is linked to the productivity of the companies rather the appreciation or depreciation in the currencies.

Another paper investigate d the volatility in the exchange rate and its impact on the performance of Peruvian firms where financial indicators of 163 companies were analyzed. It concluded that the exchange rate depreciation negatively impact the financial performance of the firms especially where the firms have dollar denominated debts leading to currency mismatch and ultimately impacts the investments decisions of the firms leading to decline in their overall financial performance. Another reason of this negative impact is the decrease in domestic demand and less developed export sector (Luis J Carranzaab, December 2003). The empirical study by Chia-Lin Changa, (2013) for Taiwan Services industry confirms that a negative correlation exists between the exchange rate fluctuations and performance of small sized firms operating in Taiwan in terms of stock returns. The paper further added that the managers of small firms must be vigilant about the impact of macroeconomic factors on small sized firm. They must devise ample strategies to manage the portfolio in such a way that curb the negative impacts of exchange rate fluctuations and other macroeconomic variables on the firms.

Hence, we hypothesize that

H₂: *Real Effective Exchange Rate has positive relationship with financial performance of different sectors in Pakistan*

2.4 Inflation and Firm Performance

Sustainable performance of the firms has direct impact on economic growth and this argument is favored by conventional macroeconomic view but with conditional low inflation which truly is main ingredient for economic growth (Munir, Mansur, & Furuoka, 2009). Authors in their empirical work for period 1970-2005 using TAR model for Malaysia found that maximum threshold for inflation rate is 3.89% and inflation above this threshold causes distortion in economic growth. Central banks should pay special attention toward inflation during presentation of monetary policy as performance of firms improves during low or sustainable inflation in country (Munir, Mansur, & Furuoka, 2009).

The impact of inflation on firm's performance has been studied by various research scholars analyzing the data from different industries across the globe. A study conducted by Zulfiqar & Din, (2015) on Pakistan's Textile industry confirms that inflation has an insignificant impact upon the firm's performance. This study further concluded that however it doesn't affect the performance, but inflation will result in decreased return on equity of the firms. Imran Sharif Chaudhry, (2013) empirically analyzed how does inflation affects the growth & performance of several manufacturing & services sectors operating in Pakistan. Time series data was studied from a period of 1972 till 2010 and the findings deduce that inflation negatively impacts the manufacturing sector of Pakistan while the services sector depicts growth due to inflation in the economy leading to substantially different output of inflation on manufacturing & services sectors of Pakistan. It was further concluded that single digit inflation in economy can help sustain the firm's performance in terms of manufacturing & non-Manufacturing sectors (Katircioglu, Ozatac, & Taspinar, 2018).

Another study conducted by Duncan, (1980) studies the short term and long run impacts of inflation on firm's performance. The study concludes that in the short run, inflation increases the variability in incomes & reduces the liquidity of the firm. On the other hand, in the longer run, only those firms can survive the impact of inflation, which adjust towards dealing with inflation and understand to capture the growth opportunities caused by the inflation. A study conducted by Saeed, (2014) investigates the macro-economic factors affecting the performance & profitability of banks. The author studied 73 commercial banks based in UK for a period of 2006 to 2012 and concluded the fact that the profitability of banks is negatively impacted by the inflation rate and thus banks can improve the performance and gain competitive advantage when the economic growth is positive & inflation rate in the economy. The study gave new insights to the investors, government and other stakeholders to understand the impact of inflation on firm's performance and managing the performance accordingly while another investigation undertaken by Bourke, (1989) also reported a negative relationship between the firm's performance & inflation. He also discussed that inflation does pose a negative impact on the performance, however in case where the firms anticipate the inflation rate and formulate the proper strategies to cope up with inflation, the performance can be managed and macroeconomic factors can actually benefit the firms eventually.

The study conducted by Aftab, (2015) investigated the influence caused by macroeconomic variables upon the firm's performance for a period of 1981 to 2013. The variables included interest rate, inflation rate and exchange rate. The researcher applied the multiple linear regression models to learn the impact and concluded that the inflation rate and interest rates have a negative impact of growth of firms in Pakistan's economy while contrary to this; the exchange rate tends to have a positive significant impact on firms operating in Pakistan. Author also argued that these macroeconomic factors have a comparative less significant impact on the firm's growth in overall economy while other factors such as instability in political matters, energy crisis, shortage of energy sources and increase of foreign debts ultimately post a substantial impact upon the performance of firms in a developing

economy like Pakistan leading to a deteriorated performance of firms in terms of profitability and growth (Muhammad Bilawal, 2014).

An investigation by Wadhvani, (1986) argues that the macroeconomic factors & monetary policy poses a significant impact on the performance of firms operating in the economy. The paper discussed that an increase in the inflation rate ultimately increases the interest rates leading to decline in cash flows and demand for products which deteriorates the financial standings of the company. The firms are unable to increase the borrowings and face liquidity issues which may impact the performance of firms in the long run.

Hence, we hypothesize that

H₃: *Inflation has negative relationship with financial performance of different sectors in Pakistan*

2.5 GDP and Firm Performance

Growth of firms has significant contribution in national GDP particularly the firms having export businesses Rathore, Shahid , Ali, & Saeed, (2019) and in order to have smooth growth, firms must concentrate exporting to stable economies because they have strong resilience against macroeconomic variables. In another study on GDP growth Rodriguez, Eldrige, Roldan, Millan, & Guiterrez, (2015) argues that costs on innovation, skills and policies are deriving forces to boost productivity through competitiveness. These studies with empirical evidence, prove two different perspective related to productivity and both are linked with macro variables. Rodriguez, Eldrige, Roldan, Millan, & Guiterrez, (2015) in the same context argue that little literature is available on positive effects of growth on small and emerging firms. He therefore builds an empirical evidence that small and emerging firms have better growth rates having financial businesses with foreign banks, whereas large firms concentrated with domestic and government owned banks have relatively poor performance. Possible reason behind such results could be the interest rates policies and other macro variables because global banks have large capital structures and capability to absorb maximum risks.

A research on Chinese SOEs by Xuesong, Xiaosu, & Rujing, (2010) concludes that Government intervenes in investment decisions taken by SOEs to maintain or boost GDP growth. Study further states that Government interventions related to GDP increase in the regions having slow marketization pace and, in such areas, SOEs are directed to opt overinvestment strategies for future growth. The study concludes that Government interventions in investment decision of SOEs to influence GDP is a significant macro variable.

The ownership concentration and performance of Arab equity market concludes that ownership is an endogenous variable which likely to have no impact on firm performance (Omran, Bolbol, & Fatheldin, 2008). However, the market measures under the influence of several macro variables have impact on firm's productivity and it ultimately effects the GDP. The study tried to build up a spill over relationship among macroeconomic factors, market measures and overall growth of equity markets. In a study conducted by Tanaka, Bloom, David, & Koga, (2019), 1000 large Japanese Firms' 25 years data was analyzed to study the relationship between GDP and the performance of these firms. It was inferred that the GDP has a significant positive impact on the performance of Japanese firms in terms of investments and growth.

Another study investigated the impact of macroeconomic variables on the performance of manufacturing firms operating in Nigeria (Egbunike & Okerekeoti, 2018). The paper investigated the impact of changes in exchange rate, inflation, interest rate and GDP on the financial performance of firms in Nigeria. Ex post facto design was applied to deduce the results and it was concluded that there exists a significant relationship among the GDP and financial performance of the firms especially the GDP has a significant impact on Return on Assets. While other macroeconomic variables like exchange rate and interest rate depicts no significant relationship with the performance (Egbunike & Okerekeoti, 2018).

A study on GDP in Pakistan for the period 1960-2008 finds unidirectional impact on GDP due to changes in electricity prices and consumption (Jamil & Ahmad, 2010). Rise in consumption patterns are mainly due to commercial, manufacturing and agricultural activities which in turn have impact on GDP. A rise in growth due

to increase industrial activities is a sign of significant impact on performance of the firms. Another study on GDP in Pakistan on money supply and GDP by Ihsan & Anjum, (2012) finds that excessive liquidity injections to run the country results in higher inflation and interest. Both these macro variables are found significant with GDP but having negative coefficient. It means excessive money supply does not improve productivity of firms and it has adverse effects on the GDP of Pakistan (Ihsan & Anjum, 2012).

Pakistan is an agriculture based economy having significant impact on GDP but the nature of impact varies in sub sectors of agriculture (Chandio, Yusansheng, & Magsi, 2016). They also find that forestry receives minimum attention from Government, and it is found insignificant with GDP, but rest of the sub-sector are strongly significant. GDP reflects the national productivity contributed by both service and manufacturing sectors. A study on service sector of Pakistan argues that in modern era service sector is the primary engine boosting global economies (Rathore, Shahid , Ali, & Saeed, 2019). Authors have used the series data for 1990-2017 and found that services sector's % GDP is affected positively by FDI and trade by services firms while negatively by population growth.

Another paper investigated FDI and economic growth (GDP) of BRICS nations to determine the magnitude of causal relationship between them. The period of the study is 1992-2013 and is destined to explore reasoning behind causal linkage between both indicators. In this study Gupta & Singh, (2016) conclude results are different levels. First, for India, China, and Brazil Johansen cointegration reveals long run relationship between FDI and GDP. Second, results of VECM conclude that unidirectional long run causal relationship exists between FDI and GDP for China, Brazil, and India. In case of South Africa and Russia, FDI and GDP both move independently with no long run or short run causal relationship as determined by standard Granger test (Gupta & Singh, 2016). These results reveal odd behavior of GDP across the countries against same macro variable.

Literature has also investigated the sector wise impact of GDP. A study on economy of Bangladesh explored causal impact of GDP on service, agriculture, and industrial sectors for the period of 1972-2008. In this empirical work Rahman,

Rahman, & Bing, (2011) found bidirectional causal relationship between the sample sectors and GDP. It further reveals that growth of Bangladesh economy by GDP is significantly influenced by the agriculture sector and industrial sector. Finally, the service sector does not influence GDP but GDP effects this sector significantly. The empirical evidence of study will be used as input by policy makers for enhanced economic decisions. The contribution of service sector's GDP is further explored in relationship with revenue from oil companies. The study employs GDP of service sector as dependent and oil revenue as independent variable, and results reveal a positive significant impact with magnitude of variation near to 78% for the period 2000-12 (Hassan & Abdullah, 2015).

The causal relationship between GDP and manufacturing sector of India was investigated for the period 1970-2013. Results of vector error model reveal that manufacturing sector is affected by per capita GDP and the magnitude is stronger in the long run (Singariya & Sinha, 2015). Results also show that agriculture sector has significant impact on GDP and GDP further has strong impact on manufacturing sector of India. Rodrik, (2009) conducted empirical research on manufacturing sector and found significant share of in GDP. His work on post crisis era argues the importance of modern industries particularly the manufacturing firms and their contribution in national GDP. Manufacturing sector holds significance importance in national growth due to its linkages with other industries like service sector (Tregenna, 2007). In his work he emphasizes the importance of GDP and its positive influence on manufacturing sector of South Africa.

H₄: *GDP has positive relationship with financial performance of different sectors in Pakistan.*

2.6 Interest Rate and Firm Performance

Interest rate is the key indicator of monetary policy applied by State Bank of Pakistan as per requirements to stable the economy. A rise and fall in interest rate directly influence the businesses including small, medium and corporate giants, which are relying on short and long-term financing. The impact varies across the

sectors. Empirical studies on textile sector of Pakistan reveal that interest rate has significantly positive impact on profitability ratios of ROA and ROE (Zulfiqar & Din, 2015). The significance level is relatively stronger on ROE. A study in similar aspect was conducted by Afzal, (2012) on 11 years data of textile sector to find link among interest rate, electricity load shedding and growth of textile sector. Study found that growth of textile sector has declined due to increased electricity crises and changes in interest rate. The fluctuations of policy rate have reduced the trust of businesses community in banks and in their various loan schemes (Afzal, 2012).

Another perspective of literature focuses on relationship between interest rate and stock returns. Interest rate fluctuations had significant positive impact on share prices over a period of 1998-2009 (Ahmad, Rehman, & Raoof, 2010). Role of interest rates is quite important for determining the behavior of stock returns. A study on Korean Price Index 200 by N'dri, (2008) for the period 192-1998 using GARCH concluded that interest rates has strong significant and negative relationship with stock returns. He used weekly data to estimate the empirical results while interest rate data remained same for longer time frame. John, Caporale, & Spagnolo, (2009) analyzed the data of financial sectors from 16 different countries including some form Europe. The financial institutions were selected from banking and insurance sector. Using GARCH M Model the study found that interest rate has the same magnitude and coefficient for banking and financial institutions but the relatively weaker impact on insurance companies. A study by Mirza & Javed, (2013) observed the impact of several macroeconomic variables and their impact on the performance of firms listed in Karachi Stock Exchange. The findings of the study reported that the firm's performance is significantly impacted by the interest rate. The study further confirmed that interest rate has a positive and significant impact on the Return on Asset and return on equity of firms operating in Pakistan while interest rates tend to have a positive impact upon the firm's profitability leading to attain better performance, increased profitability and ultimately a competitive edge in the particular sector.

An empirical study by Malawi, (2010) examined the impact of interest rate on the performance of the companies for a period of 15 years. It concluded that the

fluctuations in the interest rate pose a negative impact on the firm's performance thus leading to a decrease in investments while Chinedu Francis Egbunike, (2018) studied the financial performance of the manufacturing firms operating in Nigeria to investigate the relationship among the macroeconomic factors and the financial performance. The macroeconomic factors included the interest rate, inflation rate & exchange rate while the study concluded that the inflation rate has a significant impact on firm's performance & Return on Assets while no significant impact of interest rate and exchange rate was found on the Return on assets and profitability of the manufacturing companies.

Rami Zeitun, (2007) analyzed the relationship between the economic risk factors and performance of firm in emerging market of Jordan. The scholar investigated 167 companies over a time period of 1989-2003 and concluded that any unexpected or unforeseen variation in interest rates prevailing in the economy can cause a significant negative impact on the firm's performance since interest rate hike boost the cost of borrowing for the firms leading to squeezed profits ultimately the Return on Asset is also negatively impacted resulting in declining financial performance.

Impact of interest rates on the performance of corporations has been discussed by Liu, (2006) where he concluded that macroeconomic variables have a significant impact on the performance of corporation in the short run as well as in the long run. Error-correction model has been applied to study the performance of firms in UK over a period of 13 years where it was being confirmed that the interest rate hikes, or variation is one of biggest factors in the corporate failures both in long and short run. The study concluded that apart from interest rate, other macroeconomic factors which impact the firm's performance were reported to be credit profits and variations in prices. Alam & Salah, (2009) performed quantitative study on developed and developing countries to explore the nature of relationship and intensity of significance between interest rates and share prices for the period 1998-2003. Empirical evidence of the research found negative significant impact of interest rate on stock returns. Literature has significant contribution from studies which have explored the impact of monetary policies during monetary regimes for the period 1970-2005.

Laopodis, (2010) in his research in similar context investigated S&P 500 and Fed's Federal funds using VAR model. He found that monetary policy in each monetary regime found significant with stock returns. He further added that dynamic nature of relationship was found between interest rates and stock prices in all three monetary regimes. Stock markets of developing countries like Pakistan face enormous number of minor and major shocks from macroeconomic variables. Empirical study on KSE-100 index by Umer, (2016) reveals that interest rate has negative long run impact on the sock return. These results are similar in spirit to the findings that interest rate and inflation negatively influences the goodwill of the market (Pervaiz, Masih, & Jian-Zhou, 2018). Association between economic indicators and stock returns of KSE-100 reveals negative relationship between interest rate and equity returns (Khalid & Khan, 2017).

Ullah, Islam, Alam, & Khan, (2017) conducted a regional study on SAARC using OLS model for the period of 10 years (2005-2015) to investigate impact of macro variables on stock markets. Empirical evidence of the study revealed that interest rate has significant positive impact on equity market of SAARC countries. Changes in US monetary policy has spillover effect over many emerging and developing markets of the worlds (Mackowiak, 2007). Using VAR author classify US monetary policy as external macroeconomic shock for emerging markets and significant impact is laid by interest rates and exchange rates. In aggregate, the US monetary policy changes have lower impact than all other macroeconomic variables combine but the immediate magnitude is apparent in performance of emerging economies (Mackowiak, 2007). Such behavior of monetary policy is also evident at domestic level. In Pakistan tight monetary policy reduces the overall demand, lowers the loan transactions by commercial banks, and ultimately is pushes down the prices of commodities (Agha, Ahmed, Mubarik, & Shah, 2005).

H₅: *Real Interest Rate has negative relationship with financial performance of different sectors in Pakistan*

Chapter 3

Research Methodology

3.1 Research Design

The regression model to be applied in this study is written as below:

3.2 Econometric Model

$$FP_{(j,i,t)} = \beta_0 + \beta_1 OP_{(t)} + \beta_2 EG_{(t)} + \beta_3 CPI_{(t)} + \beta_4 GDP_{(t)} + \beta_5 INT_{(t)} + \text{Dummy Variable}_{(i,t)} + \text{Size}_{(j,i,t)} + \text{Age}_{(j,i,t)} + e_{(i,t)} \dots \dots \dots (3.1)$$

Where:

FP is the sector (j) performance comprising listed firms (i) at time (t), β_0 is Constant, β_1 to β_5 are independent variables, OP is the change in oil price at time (t), EG is real effective exchange rate at time (t), CPI is the consumer price index used as proxy to inflation at time (t), GDP is the gross domestic product at time (t), INT is the real effective interest rate in Pakistan at time (t), Dummy variable represent the sectors comprising firm (i) at time (t).

This study also includes two control variables which are firm size (i) of sector (j) at time t, and firm age (i) of sector (j) at time (t).

Firm age and size are the control variables which are also being used in the previous studies. The size is computed by taking natural log of total assets (fixed and

current) of firm (i) at time (t), which is also evident from past literature (Embong, Mohd-Saleh, & Hassan, 2012) (Lwango, Coeurderoy, Coeurderoy, & Roche, 2017) (Eng & Mak, 2003) (Lone, Ali, & Khan, 2016). Firm age is computed by taking into consideration the number of years since listing at stock exchange (Fort, Haltiwanger, Jarmin, & Miranda, 2013) (Loderer & Waelchli, Firm Age and Performance, 2009) (Shumway, 2001).

3.3 Data Description

The objective of this thesis is to analyze the impact of macroeconomic variables on financial performance of manufacturing and non-manufacturing sectors listed on Pakistan Stock Exchange. The data used in this study is extracted from secondary sources. The data pertaining to firm performance is collected from annual reports of corporations, data portal of Pakistan stock exchange and financial data available at official website of State Bank of Pakistan. The oil price data is sourced from closing prices of crude oil measured in \$/BBL at Date Brent, UK. The crude price is converted to Rs. / Liter using real effective exchange rate in order to achieve. The exchange rate data is routed out from SBP analysis report on Real Effective Exchange Rate (REER) and Nominal Effective Exchange Rate (NEER). The data considered for exchange rate is REER, and the closing rate is picked for analysis. Closing Consumer Price Index on 30th June of every year is taken as a measure of inflation. The secondary data of GDP is extracted from IMG Pakistan country page, whereas the KIBOR is taken as proxy to measure interest rate and the data is extracted from SBP economic data page.

The study investigates manufacturing sector i.e. Cement, Automobile assembler, Oil refineries and Textile companies, and non-manufacturing sector i.e. Oil and Gas marketing, Technology and Communication companies. The financial sector has significant contribution in economy of Pakistan. however, it is excluded in this study due to its high leverage and liquidity as compared to other service and manufacturing sectors of Pakistan. The high leverage and liquidity on financial institutions will create distress in empirical results of the study. The exclusion is

not upon ones discretion but due to logical reasoning. Eugene Fama and Ken French factor-model argue that skewed quantitative data of financial sector may not drive out our results, we exclude banks and other financial firms while having sample from manufacturing and service firms other than financial institutions. Due to time constraints and availability of data the researcher investigated eight sectors of Pakistan.

Total of 183 non-financial companies listed on Pakistan Stock Exchange (PSX) were selected for the study. This study selected 169 companies out of which 12 companies were not considered due to outliers in the data. The study investigates 15 companies from cement sector, 12 from automobile assemblers, 4 Oil refineries, 6 oil and gas marketing companies (OMCs), 7 companies from technology and communication, 38 from textile composite, 67 from textile spinning and 8 from textile weaving sector of Pakistan. The data was collected for a period of 13 years from 2006-2018. The sample data is described in table 3.1.

TABLE 3.1: Sample Classification

Manufacturing Sector		Non-Manufacturing Sector		
Total Firms	Selected	Total Firms	Selected	Data Available
192	154	20	15	157

3.4 Measurement of Variables

3.4.1 Dependent Variables

The dependent variables of this study are discussed as follow:

a) Return on Assets (ROA)

Return on Assets is measured by taking ratio of income after tax over total assets.

$$\text{ROA} = \frac{\text{Net Profit}}{\text{Total Assets}}$$

There exist significant literature which have employed this ratio for measuring firm performance (Andreou, Louca, & Panayides, 2014) (Delen, Kuzey, & Uyar, 2013) (Ertugrul & Hegde, 2009) (Park, Yang, Shi, & Jiang, 2010) (Singal, 2013) and many others.

b) Earnings Per Share (EPS)

Earnings per share is a key profitability ratio measure as a ratio of income tax after tax over total numbers of outstanding shares.

$$\text{EPS} = \frac{\text{Net Profit}}{\text{No.of Outstanding Shares}}$$

This variable is being used in literature as a proxy to measure the firm performance across the industries (Consler, Lepak, & Havranek, 2011) (Wet, 2013) (Young & Yang, 2011) are prominent among others.

c) Return on Equity (ROE)

Return on equity is another profitability ratio which is measured by taking ratio of income after tax and total owners equity.

$$\text{ROE} = \frac{\text{Net Profit}}{\text{Owner's Equity}}$$

Many past studies have used this ratio as proxy to measure firm performance (Alzharani, Che-Ahmad, & Aljaaidi, 2012) (Maran, Arokiasamy, & Ismail, 2009) (Rajput & Joshi, 2014)

d) Tobins Q (Q Ratio)

Tobins Q was first defined and employed by noble prize winner economist James Tobin who used q as theoretical measure of market value (Tobin, 1969). This empirical study measures the Q ratio with modified Tobins Q (Chung & Pruitt, 1994). This modified Tobin's Q is measured by using following ration:

$$\text{Tobin's Q} = \frac{\text{MV}(\text{CS}) + \text{BV}(\text{PS}) + \text{BV}(\text{LTD}) + \text{BV}(\text{INV}) + \text{BV}(\text{CL}) - \text{BV}(\text{CA})}{\text{BV}(\text{TA})}$$

Where BV(TA) is the book value of total assets (Fixed + Current) assets, MV(CS) is the market value of common stock computed as product of share price and outstanding shares, BV (PS) is the book value of preferred stock, BV (LTD) is the book value of long term debt, BV (INV) is the book value of inventory, BV (CL & CA) represents the book value of current assets and liabilities. These accounting measures are divided book value of Total Assets BV (TA).

e) Capital Gain (CG)

In this study capital gain is referred as a change in the share price at the end of every June during the sample years. The positive change results in the capital gain and negative change causes the capital loss. Positive change in the prices of stocks is an attractive income and it classifies the strengths of different stocks which is mainly influenced by the industry in which firm operates. The data is fetched from the daily stock prices available at data portal of Pakistan Stock Exchange. Using stock prices as dependent variable, is also evident from past literature Bagirov & Mateus, (2019), (Dasgupta, Gan, & Gao, 2010), (Andersen, Bollerslev, Diebold, & Ebens, 2001) and from studies in Pakistan Mirza & Javed, (2013), (Zaheer & Rashid, 2014), (Sohail & Hussain, 2009) and (Saeedullah, 2005).

3.4.2 Independent Variables

This study investigates the impact of macroeconomic variables on difference sectors in Pakistan. These variables are thus independent in this study and are discussed as below:

3.4.3 Statistical Measurement of Macroeconomic Variables

Secondary data for independent variables REER, Inflation, GDP and Real Interest rate are extracted from Development Data Group by World Bank. The data

available at Data Bank is documented using statistical methods and conventions applied by central banks, statistical bureaus, and international agencies.

GDP Growth (annual %)

It is calculated by implying weighted average method under aggregation rule. Since the data related to GDP is readily made available by SBP, statistical bureau of Pakistan, and other regional and international agencies, least square growth rate method is applied by world bank due to presence of data in long time series. The regression equation being used is as follow:

$$X_t = X_0(1+r)_t, \text{ which is transformed to logarithmic equation as } \ln(X_t) = a + b_t.$$

Where, t represents Time, $a = \ln(X_0)$, $b = \ln(1+r)$ and X represents the Variable. The end value is multiplied by 100 to calculate the data in percentage.

Real Effective Exchange Rate (REER)

Real effective exchange rate is a strong measure to reflected strength of a currency against selected basket of other currencies. According to Development Data Group of World bank, REER is computed using weighted average nominal exchange rate against a basket of currencies and divided by a price deflator. Accuracy of data is ensured by taking official exchange rates as conversion factor but for few countries alternative conversion factors are used to validate the results measured through Atlas methodology. It happens in case of countries where exchange rate of a country is diverged against large margins of rate applicable to traded and domestically used goods.

Inflation (CPI)

Consumer price index as proxy to inflation is measured by applying GDP deflator (Pt) on official rates of current and the preceding years i.e. t and t-n.

$$r_{t-n} = ((p_t)/p_{t-n})$$

Real Interest Rate

Real interest rate against countries is calculated using official data of lending rate (p) and the inflation rate which is computed using GDP deflator as briefed in CPI.

The formula to compute is

$$RealInterestRate = (i - P)/(1 + P)$$

a) Crude Oil Price (OP)

The spot prices for Brent Crude Oil were obtain from the Energy International Administration which globally represents the oil prices of one index against basket of other indexes. The Brent crude oil marks the prices for extraction in North Sea and two-third of the global supplier quote this index. Further, is used as bench market for EMEA, which include European nations, the Middle East, and all African oil suppliers. Energy International Administration quotes all price in USD (\$) per Barre, we used real effective exchange rate and OGRA notified standard conversion factor to express prices in Rupee per Liter.

For this study, the annual closing price of crude oil is being used for the period June-2006 to June-2018, comprising 13 years. The researchers argue that dynamic nature of oil prices is better analyzed on daily, weekly or monthly basis (Bagirov & Mateus, 2019). However, Arouri, Youssef, N'henni, & Rault, (2012) argue that daily oil price doesnt reflect the true picture as many ongoing events impact rise and fall even on hourly basis. They also argued that due to volatility spillover caused by oil prices, it is not recommended to opt monthly data for the empirical studies. Arouri & Nguyen, (2010) and Arouri, Youssef, N'henni, & Rault, (2012) strongly recommend the use of weekly data for better understanding of relationship between stock market and oil price. Since, it is not possible to employ weekly oil price against annual financial data of firms operating in Pakistan. Therefore, for this study we use annual oil price data to test the impact on financial performance of manufacturing and non-manufacturing firms in Pakistan including oil and gas businesses. Many studies in past has also employed annual crude oil data while

assessing its impact on national economy (Farzanegan & Markwardt, 2009) and (Kuboniwa, 2014).

b) Real Effective Exchange Rate (EG)

In this study we used the real effective exchange rate because CPI, as a proxy for inflation, is also used as independent variable. Since, the nominal effective exchange rate measured alongside inflation, causes problem to result. Therefore, to avoid replicated impact of inflation in one or other economic indication we use real effective exchange rate. Literature supports this reasoning where exchange rate is used along-side inflation as regressor (Asad, Ahmad, & Hussain, 2012), (Leiderman, Maino, & Parrado, 2006).

The annual data of real effective exchange rate is collected from Development Data Group managed and run by World Bank Pakistan country page. This group monitors global statistical strategy in order to keep updated sector, macro-variables and financial databases through coordination and data work. It is also evident from past literature which have cited World Bank as source to collect country economic data (Brewer, Choi, & Walker, 2007) and (Darvas, 2012).

c) Inflation (CPI)

Consumer price index is being used as proxy to measure the inflation. The annual data is taken from Development Data Group, World Bank as discussed in case of REER. According to (Bryan & Cecchetti, 1993) when inflation in a country is zero or near to zero than central bank used CPI as bench mark to measure the inflation because it is focal point in monitory policy. On the basis of empirical evidences the paper also reveals that since 1981 the weighting biases in CPI has been found insignificant (Bryan & Cecchetti, 1993). The past literature from Pakistan and worldwide is consistent with our method to use CPI as proxy of inflation (Hobijn & Lagakos, 2005) (Freeman D., 2010), (Ansar & Asghar, 2013) and (Gudaro, Chhapra, & Sheikh, 2012).

d) Gross Domestic Product (GDP)

GDP is a predominant economic indicator to measure national output which includes both public and private sector. In this study the primary objective would be to determine causal relationship of GDP with each sector of Pakistan. The source for annual GDP data is again the Development Data Group, maintained and coordinated by World Bank. The source is used in past studies (Loayza, Ranciere, Servn, & Ventura, 2007) and it has holistic strategy to coordinate with national statistical systems, international institutions, IMF, and various regional development banks (Darvas, 2012).

e) Real Interest Rate (INT)

Manufacturing and service sector approaches financial sector, mostly banks for loans to meet financial needs which include coverage of fixed costs or expenses during economic recession and budget for business expansion. Their performance is hinder by nominal interest rate, announced by State Bank of Pakistan under monetary policy and is imposed by financial institutions. Since our uses inflation as a regressor, therefore real interest rate is being used as independent variable for determining impact on financial performance of the firms. The data for real interest rate is collected from Data Development Group, World Bank.

3.4.4 Control Variables

Our study also includes two control variable which are firm size and firm age. Firm size is measure by taking natural log of Total Assets which is also used in past studies (Ali, Noor, Khurshid, & Akhtar Mahmood, 2015). Firm age is measured by taking in account the number of listing years which is also used by the past studies (Loderer & Waelchli, Firm Age and Performance, 2010).

Past studies have shown that causal relationship exist between these control variables and the firm performance. The significance and insignificance of relationship however varies across studies. (Gong, Zhou, & Chang, 2013) revealed that firm

size has impact on performance, where the positive impact is strong in small firms and weak in large one. (Michael, George, Emel, David, & Christos, 2014) conducted empirical study on food supply chain in Greek and the results were different for small, growing, medium and micro level firms. Causal relationship of size and performance indicated that small to medium level firm outperform the micro manufacturers and large firms. As moderating role of firm size (Rodriguez, Eldrige, Roldan, Millan, & Guitierrez, 2015) found that it has negative impact on indirect relationship between innovation and organizations unlearning experience of overall performance. The second control variable is the firm age. Aging firm experience decline in their profitability (Loderer & Waelchli, Firm Age and Performance, 2009). This reasoning behind this phenomenon is rising business fixed costs, slow growth, resistive approach, adhering to traditions and reluctant behavior to opt change (Loderer & Waelchli, Firm Age and Performance, 2009). 302 non-financial listed firms on Borsa Stock Exchange, Turkey found a causal relationship between the firm age and profitability (Selcuk, 2016).

3.5 Method

Our study analyzes 157 firms as explained in table 3.1. This include 8 sectors having 15 non-manufacturing, and 154 manufacturing companies listed on Pakistan Stock Exchange. The sample sectors include firms from Cement, automobile, technology and telecommunication, OMCs, Oil refineries, textile weaving, textile spinning and textile composite. The research is conducted on period of 13 years from 2006 to 2018. This is a time series data analysis and panel data estimation technique is being used to run the regression. The selected technique is quite effective in mitigating issue of endogeneity and heterogeneity. The later parts of this section include Hausman test to check whether fixed or random effect model is effective. The panel data estimation is then applied using common and random effect model. The study also include estimation using each sector as dummy variable.

3.5.1 Hausman Test

Hausman Test is vital to determine which model is fit for our study. The empirical results of test will decide whether common, random or fixed model should be selected to perform the regression analysis using least square. Our alternative hypothesis is inconsistent and inefficient when fixed effect model is fit for the study and our null hypothesis will be consistent. In random effect model our alternative hypothesis stands consistent and efficient where null hypothesis is rejected.

3.5.2 Random Effect Model

This model is applicable on time series and cross section data. The usage of model is dependent upon the results of Hausman Test. Random effect model is applicable when probability value is greater than (0.05) and is not significant.

Chapter 4

Results and Discussion

4.1 Descriptive Statistics

This empirical study is intended to find out the impact of macroeconomic variables on manufacturing and non-manufacturing sector of Pakistan. The first part of this chapter interprets the statistical results of study and second discusses those results. The least regression model is performed using EViews Enterprise edition 09.

Table 4.1 highlights the descriptive statistics of dependent, independent and control variables. The data represents manufacturing and non-manufacturing sector of Pakistan comprising 157 listed companies at Pakistan Stock Exchange for the period 2006-2018. Descriptive statistics results are further elaborated below:

The return on assets, earning per share, return on equity, Tobin's q and Capital gains are our dependent variables. They collectively represent the financial performance of firms in this study. The average score of return on assets is 0.0106. The primary factor behind such a low score is deteriorated performance of textile sector yielding consistent annual losses. Maximum ROA is 51.30% and minimum is - 63.08% while standard deviation is 10.5% only. The kurtosis for ROA is greater than 3 which means the skewness of systematic distribution is not normal. The average score for EPS is 0.65% with a maximum value of 16.54% and minimum of - 15.93%. The standard deviation is 2.5% only with a peaked kurtosis of 12.3 which means the distribution is contrary to normal slope. ROE has maximum of

99.87% whereas the minimum value is even less than negative 100%. This scenario is due to few textile and telecommunication companies having MPS even below the par value which is commonly Rs. 10 per share. The average score is thus 4.2% with 26% standard deviation and kurtosis distribution near is 5.7 which is near to normal skewness. Tobin's Q is the financial ratio for measuring firm performance and has mean ratio of 19.8 with a maximum value of 29.9 and minimum value of 10.20. The standard deviation for Tobin's Q is 2.6 which means the values are normally distributed which is also evident from Kurtosis having value of 3.90. The average Capital gain - 0.0021 with maximum value of 3.17 and minimum value of -2.77. Value of kurtosis of CG is greater than 3, which means data is not normally distributed.

The independent variable of the study are crude oil price, real effective exchange rate, inflation, real interest rate and gross domestic product. The descriptive statistics table 4.1 shows oil price has an average value of Rs. 55.31/ Liter as plots data indicate crude oil price surge to Rs 84.42/ Liter in June 2008 and it fell back to Rs. 36.78/ Liter in June 2017. This difference in lowest and highest price results in a standard deviation of 15.14 with kurtosis being lower than 3 showing a relatively flatter slope. In case of real effective exchange rate (PKR against USD) the average value of Rs. 105.92 with lowest value of Rs. 95.75 in 2009 when rupee was strong against USD. However, the rise in inflation led to significant devaluation in PKR and maximum value stands at Rs. 122.06 against 1 USD in June 2017. Kurtosis is lower than 3 which means data is normally distributed having standard deviation of 7.99. Consumer price index is being used as proxy to measure the inflation and it has average score of 8.6%. The lowest value is 3% and maximum CPI stands at 21.5% in June 2008 when world faced with devastating financial crisis with Asian countries receiving the significant impact and Pakistan was no exception. The Kurtosis is 3.9 with standard deviation of 4.9% which indicate relatively normal skewness and mostly value near to slope. The second last independent variable is real GDP growth (% y-o-y basis) which in case of Pakistan was maximum in June 2006 with a value of 5.8% and minimum in June 2009 which is 0.4% only. The average score stands at 4.15% having standard deviation of 1.4% and Kurtosis 4.32

which indicates that skewness is not normally distributed. Real effective Interest rate has an average score of 2.4%, maximum 8.3% and minimum score of - 6.7% in June 2006 with kurtosis being lower than 3 and standard deviation around 4.7%. Real effective interest rate reported in Pakistan for 2016 is 8.3% which is the highest during study period. The calculation of macro variables including real interest, by World Bank are briefed in section 3.2.3 with detailed methodology.

Age and Size are our control variables. The average ratio for size is 14.84, maximum is 19.94 and minimum 8.19 with a standard deviation of 1.5 and Kurtosis being near to 3.46. In case of age the average years since listing are 26.30 with oldest firm was listed 65 years ago and some listed in 2018 having age in month and thus reflected as zero in table 4.1. The kurtosis is near to 3 meaning normal distribution curve with standard deviation near of 13.71.

TABLE 4.1: Descriptive Statistics

Variables	Mean	Maximum	Minimum	Std. Dev.	Kurtosis	Observations
ROA	0.0106	0.513	-0.6308	0.1051	7.6138	1,976
EPS	0.0065	0.1654	-0.1593	0.0252	12.7386	1,976
ROE	0.0424	0.9987	-1.0087	0.2622	5.7454	1,976
Q	19.8623	29.9885	10.203	2.6706	3.9027	1,976
CG	-0.0032	3.1706	-2.7724	0.6047	5.1413	1,976
OP	55.3142	84.4279	36.7881	15.1362	1.9353	1,976
EG	105.921	122.0563	95.755	7.9872	2.3106	1,976
CPI	0.0868	0.215	0.032	0.0493	3.9277	1,976
GDP	4.1462	5.8	0.4	1.4007	4.3771	1,976
INT	0.0235	0.0832	-0.0677	0.0471	2.2237	1,976
SIZE	14.9053	19.9493	8.1973	1.7556	3.4655	1,976
AGE	26.33	65	-	13.71	2.64	1,976

The comparative descriptive statistics for sectors is discussed below:

4.2 Comparative Analysis of Descriptive Statistics

The ROA for cement sector has an average of score of 7.1%, EPS is 0.7%, ROE is 11.1%, and Capital gain is 0.03 with Tobin's Q of 22.43. All these indicate that cement sector profitability is not quite attractive during the study period for this

study. The automobile sector has few firm with most having major foreign share holdings. The average score of profitability indicate ROA 7.7%, EPS 2.7 %, ROE 15.13%, CG 11.5% and Q having ratio of 21.93. For cement firms data for ROA, Q and CG are normally distributed and for EPS, ROE the distribution curve is flatter. The oldest listed firm is 56 years and new being listed in 2018 with no age in years. In case of automobile sector Kurtosis is greater than 6 meaning no normal distribution and standard deviation value of 10.4. The distribution for Q and CG is normal where as ROA, EPS and ROE does not have normal distribution as indicated by the value of Kurtosis. The standard deviation is highest for CG that is 62% and lowest for EPS which is 3.6% only. The data for independent variable is same as discussed in table 4.1.

Descriptive statistics for oil and gas marketing companies reveal that oil refineries has ROA with an average return of 0.7% only. the EPS is 1.5%, and ROE is comparatively better having 10.7% and CG is -3.4%. The Q ratio has an average score of 23.16 having maximum 25.48 and minimum ratio of 21.5. For OMCs, the latest being listed is only 1 year old and older is 62 years having average age of 36 years and 3 months. The profitability of OMCs shows ROA has an average score of 6.5% with EPS standing at 1.9% only and ROE at 20.63%. Q ratio is 24.05 and CG has an average value of 5.65%. If we see the standard deviation of oil refineries, it is higher for Q which is 86.57% and lowest for EPS that is 3.34%. The Kurtosis for ROA, ROE is greater than 3 and lower or near to 3 for EPS, Q and CG which is quite good sign as the it reflects normal distribution of data. EPS and Q is normally distributed with Kurtosis lower and equal to 3 for OMCs. The deviation from mean is higher for CG that is 51.8% while EPS has the lowest value of 3% only. Technology and telecommunication has the average value of 0.2% for ROA, EPS is 0.1%, ROE is 6.7%, CG is -8.9% and Q ratio is 21.79. CG has the highest standard deviation of 67.57% and EPS has the lowest value of 0.89%. The kurtosis for EPS is the highest with a score of 19.99. All other dependent variables are either normally distributed or near to it.

Statistical summary of textile composite sector reveals that ROA, EPS, ROE, Tobin's Q and CG. The average return on assets is - 0.1%, EPS is 0.7%, ROE is

3% and CG is 0.5% only. The average score for Tobin's Q is 19.59 with maximum deviation from mean of 2.2 and kurtosis is 2.9 meaning data is normally distributed around the mean. Textile spinning sector on contrary has the largest number of observations as compared to other sectors in this study. The ROA has average value of -1.1%, EPS is 0.1% and ROE is - 0.9%. The Tobin's Q 18.33 whereas the Capital gain is - 3.4% which shows investors are not quite attracted toward textile spinning firms. Textile weaving has comparatively better profitability if compared to other two sectors of textile. The ROA is the only value with a - 0.8%. Average return for EPS is 0.05% and for ROE it is 3.8%. Capital gain is 3.6% and Tobin's Q has average score of 18.78. The standard deviation value for ROA is 9.97%, EPS is 0.06%, ROE is 23.49%, CG is 61.98% and Tobin's Q has standard deviation of 1.2483.

4.3 Correlation and Multicollinearity

This section of the study determines strength of relationship among independent variables. It will further investigate whether there exists any bivariate relationship among independent variables and if the relationship is positive, negative, strong or weak. The issue of multicollinearity exists in study if strong relationship is found among independent variables.

4.3.1 Correlation

The correlation table presents the strength of bivariate relationship among independent and control variables. The table shows that all independent variables are less than 0.7 except for CPI which is 0.76 against oil price and 0.72 against real effective exchange rate. In table below oil price is (- 0.58) which is negative correlated with exchange rate and it's a strong negative relationship. Oil price against GDP is (-0.014), Interest is (0.22), size (-0.029), and against age is(-0.086), which are all negative correlated. The exchange rate is negatively correlated with consumer price index which is (- 0.73). Exchange rate against GDP is (0.33), Interest

(0.63), Size (0.089) and against age is (0.23), which are all positively correlated. The consumer price index is negatively correlated which is (-0.223) against GDP, (-0.46) against interest, (- 0.06) against size and (- 0.16) against age. Interest is positive correlated with control variables Size and age. In case of control variables the size is (0.11) which is less than 0.7 and is positively correlated with age.

TABLE 4.2: Correlation Matrix

Variables	OP	EG	CPI	GDP	INT	SIZE	AGE
OP	1						
EG	-0.4322	1					
CPI	0.6688	-0.7262	1				
GDP	0.0405	0.3363	-0.2345	1			
INT	-0.1021	0.6251	-0.4661	0.2596	1		
SIZE	-0.0063	0.0902	-0.0609	0.009	0.0808	1	
AGE	-0.0451	0.2246	-0.1621	0.0387	0.1821	0.1054	1

4.3.2 Variance Inflation Factor

The correlation results are holistic and shows the multicollinearity of consumer price index with oil price and exchange rate. However, to be more specific about the results, our study also includes variance inflation factor. Being of flexible mind we have considered centered VIF for our study. The table shows that centered VIF is less than 5 which means there is no issue of multicollinearity among independent and control variables.

4.4 Regression Analysis

Our study is to investigate the impact of selected macro-economic variables on financial performance of different sectors in Pakistan. This is a comparative study which is aimed to establish empirical evidences that which sector is sensitive to changes in response to one or more macro variables. The results on which these evidences rely is based on random period effect and time series. As our data is based on these two, we have used panel data analysis and to analyze the impact of macro variables on firm performance we used panel data estimation for equation.

TABLE 4.3: Variance Inflation Factor

Variance Inflation Factors
 Date: 03/11/20 Time: 20:34
 Sample: 1 1976
 Included observations: 1976

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.0032	623.8988	NA
OP	0	31.0988	2.1654
EG	0	514.2402	2.9061
CPI	0.0071	13.7324	3.3477
GDP	0	11.8445	1.2128
INT	0.0042	2.2681	1.8163
SIZE	0	74.4691	1.0184
AGE	0	5.0232	1.0709

Primarily we employed common, random and fixed effect models to conduct the data analysis. With the help of Hausman Test we found random effect model is to be applied on our data. The results of Hausman Test as a whole and sector wise, are further elaborated below:

4.4.1 Hausman Test

Table show the results extracted from Hausman Test. The results indicate that for dependent variables the alternative hypothesis for random effect model of Hausman Test is inconsistent and inefficient. The null hypothesis alternatively is found to be consistent and efficient for random effect model of hausman test. Table represents the results of all sectors and it shows the probability is insignificant which means our alternative hypothesis for random effect model is rejected and null hypothesis is accepted. Each dependent variable is test individually by applying Hausman Test. Return on Assets has a probability of 66.18%, EPS stands at 89.68%, ROE show 90.93%, Q ratio presents 94.32 and CG has the least probability of 34.53 5. All have probability value greater than 5% which means our null hypothesis for random effect model is accepted.

Table below shows the sector wise results of Hausman Test. The alternative hypothesis for random effect model is found consistent and efficient for CG in case of

TABLE 4.4: Hausman Test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test period random effects

	Period	Chi-Sq. Statistic	Chi-Sq. d.f.	Probability
ROA	Random	0.8257	2	0.6618
EPS	Random	0.2178	2	0.8968
ROE	Random	0.1901	2	0.9093
Q	Random	0.1063	2	0.9482
CG	Random	2.1267	2	0.3453

cement and automobile firms. The probability is less than 5% which means that our alternative hypothesis for this specific variable in two sector is consistent and efficient.

4.4.2 Panel Data Estimation

In this section the regression analysis is performed on 157 manufacturing and non-manufacturing firms which are listed on Pakistan Stock Exchange for the period of 12 years from 2006 to 2018. The table 4.5 shows the regression analysis results of all sectors. The R-squared for ROA is 36.29% which shows the strength of other exogenous variables on percentage changes in the variable. The value of Durbin Watson is 2.2980, F-statistics is quite significant with (p) value of 0.0000. The detailed results of ROA against independent and control variables shows that Oil price coefficient is positive 0.0003 and value of (p) is insignificant 0.1545 which means changes in Oil Prices has no impact on ROA of sample firms. The exchange rate coefficient is negative with (p) value of 0.7550 which means exchange rate has no impact on ROA. Inflation has significant impact on ROA with (p) value of 0.0018 and has negative coefficient (t). Interest rate has negative coefficient with (p) value of 0.3945 which means ROA receives no impact from changes in interest rates. In our control variable size of the firm has significant impact on ROA with (p) value of 0.0000 and positive coefficient of 5.9838 whereas the AGE of a firm has negative coefficient and is insignificant with (p) value of 0.5888. Earnings per share is our second measure of firm performance. The regression analysis for EPS shows that Oil Price has negative coefficient with insignificant impact having value

of (p) 0.4022. Exchange rate is however significant with (p) value of 0.0012 and has negative coefficient of -3.2518. Concentrated inflation coefficient is negative -2.3403 with (p) value of 0.0194 which means ROA receives negative significant impact from inflation. The control variables size is significant with (p) value of 0.0000 while age is insignificant with (p) value of 0.9835 and has positive coefficient of 0.0207. Oil price is the only IVs of study which has insignificant impact on return on equity with (p) value of 0.9067 and has negative coefficient value of 0.1172. Exchange rate, Inflation, GDP, Interest, Size has significant impact on Return on equity with (p) value of 0.0358, 0.0053, 0.0000 and 0.0007 respectively. All IVs has negative coefficient except GDP which has concentrated positive coefficient of 3.7431. Size of the firm has significant impact on ROE with (p) value of 0.0000 and has positive coefficient of 4.3360 whereas age has is insignificant with (p) value of 0.2512 and has negative coefficient of -1.1479. Oil Price, Exchange rate, Inflation and GDP has significant impact on tobin's Q with (p) value of 0.0000, 0.0000, 0.0000 and 0.0063 respectively. The concentrated oil price has positive coefficient of 4.1625, exchange rate is also positive with concentration value of 4.1266, inflation has negative coefficient of -4.9626, and GDP has positive coefficient of 2.7354. The concentrated interest rate has negative coefficient of -0.8572 with (p) value of 0.3915 which means 39.15% impact on Q ratio is exogenous. Interest rate is the only independent variable which has no impact on Q ratio. The age is also insignificance with (p) value of 0.7651 and has coefficient value of 0.2989. control variable size is significant with (p) value of 0.0000 and has concentrated positive coefficient value of 0.2989. The regression analysis for CG shows that oil price has significant impact with coefficient of 11.0264 and (p) value of 0.0000. Exchange rate is also significant with (p) value of 0.0011 and has positive impact with coefficient of 3.2633. Inflation and interest rate have (p) value of 0.0000 and 0.0000 with coefficient of -6.3770 and 4.0862. GDP is the only independent variable which has insignificant impact on CG with (p) value of 30.50% and has negative coefficient of -1.0260. our control variable age and size are insignificant with (p) value of 0.5156 and 0.2551. both have positive coefficient of 0.6503 and 1.1385.

TABLE 4.5: Panel Data Regression Estimate for All Sectors

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	AR(1)	
ROA	Coefficient	-0.195	0.0003	-0.0006	-0.231	0.0066	-0.0808	0.0166	-0.0002	0.5824	
	Std. Error	0.0743	0.0003	0.0006	0.0776	0.0032	0.058	0.0025	0.0004	0.0199	
	t-Statistic	-2.6242	0.9205	-1.0317	-2.9777	2.0723	-1.3933	6.7061	-0.586	29.2348	
	Prob.	0.0088	0.3574	0.3023	0.0029	0.0384	0.1637	0.0000	0.558	0.0000	
	R-squared	0.3713									
	F-statistic	0.3685									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.2947									
	Coefficient	0.0048	-0.0001	-0.0005	-0.0448	0.0039	-0.0551	0.0037	0	0.6953	
	Std. Error	0.019	0.0001	0.0001	0.0183	0.0007	0.0118	0.0007	0.0001	0.0185	
t-Statistic	0.2526	-1.2232	-3.8905	-2.4428	5.6629	-4.6768	5.4542	0.0031	37.545		
Prob.	0.8006	0.2214	0.0001	0.0147	0.0000	0.0000	0.0000	0.9976	0.0000		
R-squared	0.4827										
F-statistic	0.4805										
Prob(F-statistic)	0										
Durbin-Watson stat	2.306										
ROE	Coefficient	-0.0258	0	-0.0033	-0.6259	0.0317	-0.5517	0.0265	-0.0009	0.5004	
	Std. Error	0.1824	0.0008	0.0015	0.2031	0.0082	0.1628	0.0058	0.0008	0.0214	
	t-Statistic	-0.1412	-0.0219	-2.2859	-3.0818	3.8435	-3.3891	4.5869	-1.1665	23.3843	
	Prob.	0.8877	0.9825	0.0224	0.0021	0.0001	0.0007	0.0000	0.2436	0	
	R-squared	0.2614									
	F-statistic	0.2581									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0979									

Table 4.5 (Continued...)

		Independent Variables					Control Variables			
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	AR(1)
Tobin's Q	Coefficient	12.3325	0.0095	0.0172	-3.262	0.0942	-0.6831	0.3595	0.0034	0.9465
	Std. Error	1.6552	0.0031	0.0055	0.8023	0.024	0.3992	0.0509	0.0244	0.0091
	t-Statistic	7.451	3.0924	3.1149	-4.0657	3.9304	-1.7113	7.061	0.1411	103.9828
	Prob.	0.0000	0.002	0.0019	0.0000	0.0001	0.0872	0.0000	0.8878	0.0000
	R-squared	0.9109								
	F-statistic	0.9105								
	Prob(F-statistic)	0								
Durbin-Watson stat	2.1916									
CG	Coefficient	-1.1148	0.0137	0.0043	-3.0221	-0.005	2.0337	0.006	0.0011	-0.0533
	Std. Error	0.3303	0.0013	0.0028	0.5186	0.0128	0.535	0.0073	0.001	0.0248
	t-Statistic	-3.3756	10.9006	1.5124	-5.8276	-0.39	3.8011	0.8165	1.1798	-2.1517
	Prob.	0.0008	0.0000	0.1306	0.0000	0.6966	0.0001	0.4143	0.2382	0.0316
	R-squared	0.1216								
	F-statistic	0.1177								
	Prob(F-statistic)	0								
Durbin-Watson stat	2.0586									

4.4.3 Panel Data Estimation of using Dummy Variable

4.4.3.1 Cement Sector

In cement sectors, the panel data estimation of ROA with independent variables reflects that OP has positive insignificant relationship with (t) value of 0.9567 and (p) value of 0.3389. EG has negative insignificant impact with (t) value of -1.0429 and (p) value of 0.2971. Inflation (CPI) has negative significant impact with (t) coefficient of -2.975 and (p) value of 0.0030 and GDP has positive significant impact with (p) value of 0.0439 and (t) coefficient of 2.0167. Control variable size has positive significant impact on cement sector with (p) value of 0.0000 whereas age has negative insignificant impact with (p) value of 0.9456. Probability of F-statistics is 0.0000 and R-squared is 37.7% for ROA.

Precisely on the basis of empirical evidence from study we can say that oil prices and GDP has positive influence on performance of cement sector in Pakistan. Contrary real effective exchange rate, inflation and real interest rate has negative influence on financial performance of cement sector in Pakistan. The magnitude of influence is strongest for GDP and inflation (CPI).

Empirical results of EPS for cement firms in Pakistan indicate significant relationship with EG, CPI, GDP, INT and size. However, the relationship is insignificant with crude oil price and age of firms. Among all variables EPS has positive relationship with GDP and size. Oil price has negative insignificant impact on EPS with value of (t) -1.2242 and (p) 0.2210, real effective exchange rate has negative significant impact with value of (t) -3.886 and (p) 0.0001, inflation also has negative significant impact having value of (t) -2.4544 and (p) 0.0142.

GDP has significant positive impact with value of (p) 0.0000 and (t) 5.6691, real interest rate has strong negative impact with (t) value of -4.6828 and this relationship is significant with (p) value of 0.0000. For control variables, size significant positive impact with value of (t) 5.5701 and (p) 0.0000 while age has negative insignificant relationship with EPS. R square is equal to 48.31% with probability of F-statistic equal to 0.000 and Durbin-Watson statistics equal to 2.3042.

For ROE, the OP has (t) value of -0.0210 reflecting weak insignificant relationship with (p) equal to 0.9832. In case of EG the value of (t) is -2.2872 and (p) equal to 0.0223 which show strong negative but significant impact on ROE. CPI and INT have negative significant impact with value of (t) -3.0794 and -3.3862, while (p) is 0.0021 for CPI and 0.0007 for INT. GDP also has significant impact with value of (p) 0.0000 but this relationship is strongly positive having value of (t) 3.8402. Both control variables, firm size and age has insignificant relationship with ROE. The R-square is 26.14% with probability of F-statistic equal to 0.0000 and Durbin-Watson Statistics 2.0976. The R-square states that only 26.14% impact on EPS is due to external variables which means we have covered main variables in this study to evaluate the behavior of EPS.

The independent variables OP, EG, CPI and GDP have significant impact on Tobin'Q with (p) value of 0.0019, 0.0017, 0.0000 and 0.0001 respectively. The only significant variable with negative impact is inflation (CPI) having (t) value of -4.07. The real interest rate has negative insignificant impact on Q ratio with value of (p) 0.0963 and (t) -1.6641. Both control variables have positive impact while size is significant with (p) 0.0000 and age is strongly insignificant with value of (p) 0.6338. R-Square is quite strong with 91%, probability of F-Statistics is 0.0000 and Durbin-Watson Statistics is 2.1829. Tobin's Q is a strong measure of firm internal value against the market price. The Q ratio greater than 1 reflects strong internal value of firm against the market price. It means the value of firm is undervalued in market. Below 1 means the market value of firm is overvalued when compared with internal financial strength.

The last dependent variable is stock return which is represented by CG. It has significant positive impact with OP having (p) 0.0000 and (t) 0.0258 which reflects weak relationship. INT is another economic indicator which has positive significant impact with (p) 0.0001 and (t) 3.7998. CPI is the only significant variable which has negative impact on stocks with (p) 0.0000 and (t) -5.8265. GDP and EG has insignificant impact where former have positive and latter has negative relationship with the capital gain. R-squared 12% changes in dependent variable are due to other variables and Durbin-Watson stat is equal to 2.0584.

TABLE 4.6: Pool Data Estimate with Dummy (Cement Sector)

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
ROA	t-Statistic	-2.3829	0.9567	-1.0429	-2.975	2.0167	-1.349	5.7884	-0.0683	2.5055	28.7555
	Prob.	0.0173	0.3389	0.2971	0.003	0.0439	0.1775	0	0.9456	0.0123	0.0000
	R-squared	0.3734									
	F-statistic	120.1297									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.2892									
EPS	t-Statistic	0.1389	-1.2242	-3.8869	-2.4544	5.6691	-4.6828	5.5701	-0.2097	-1.1195	37.3868
	Prob.	0.8895	0.221	0.0001	0.0142	0.0000	0.0000	0.0000	0.834	0.2631	0.0000
	R-squared	0.4831									
	F-statistic	188.3652									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.3042									
ROE	t-Statistic	-0.1077	-0.021	-2.2872	-3.0794	3.8402	-3.3862	4.2926	-1.0775	0.3196	23.3608
	Prob.	0.9142	0.9832	0.0223	0.0021	0.0001	0.0007	0.0000	0.2814	0.7493	0.0000
	R-squared	0.2614									
	F-statistic	71.3429									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0976									
Tobin's Q	t-Statistic	7.5765	3.1129	3.1369	-4.0741	3.8508	-1.6641	7.1361	0.4764	2.1237	98.3376
	Prob.	0.0000	0.0019	0.0017	0.0000	0.0001	0.0963	0.0000	0.6338	0.0338	0.0000
	R-squared	0.9111									
	F-statistic	2066.692									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.1829									

Table 4.6 (Continued...)

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
	t-Statistic	-3.341	10.898	1.5076	-5.8265	-0.3895	3.7998	0.7067	1.2038	0.2386	-2.159
	Prob.	0.0009	0.0000	0.1318	0.0000	0.697	0.0001	0.4799	0.2288	0.8114	0.031
CG	R-squared	0.1216									
	F-statistic	27.9104									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0584									

4.4.3.2 Automobile Sector

Accounting performance of automobile sector fluctuates as the macro-economic indicators experience ups and downs. The empirical evidences reflect that impact of these external indicators, is not unanimous on all accounting ratios. Since, crude oil price is insignificant with ROA having value of (p) 0.3169 with (t) 1.0012. Real effective exchange rate and real interest are also insignificant with (p) 0.3102 and 0.1804. GDP has significant positive impact with (p) 0.0453 which is near to 0.05, while inflation has significant negative impact having (p) 0.0025 and is stronger than GDP.

For control variables, the size is positively significant whereas age is negatively insignificant. The R-square is 37.64% and Durbin-Watson statistics is 2.2875. Earnings per share (EPS) has insignificant relationship with crude oil price only, with value of (p) 0.2343 and t-stat -1.1897. GDP has positive causal relationship with t-stat of 5.6636 and is also strongly significant with prob of 0.0000. EG, CPI and INT have significant negative causal relationship with EPS. The prob value for EG, CPI and INT are 0.0001, 0.0107 and 0.0000.

All three have strong negative impact on EPS. The R-square is 48.91% and Durbin-Watson stat is 2.2937. ROE is insignificant only with OP, having (p) value of 0.9794 and this is a weak positive relationship with (t) 0.0258. EG, CPI and INT have negative impact on ROE with (t) -2.2590, -3.1214 and -3.3668 respectively. GDP, however, has positive significant impact on ROE with (p) 0.0001 and (t) 2.8148. The R-square is 26.35 and Durbin-Watson Stat is 2.0938. Tobin's Q has strong significant relationship with OP, EG, CPI and GDP. The only insignificant variable is real interest rate with (p) value of 0.0858 and (t) -1.7189. Firm size has significant impact on Q ration while firm age is insignificant. The R-square is 91% which is quite strong. Finally, the capital gain is insignificant with GDP and real effective exchange rate having value of (p) 0.6952 and 0.1338. OP has prob value of 0.0000 while CPI and INT have prob value of 0.0000 and 0.0002. Both control variables are insignificant with capital gain. The R-square value is 0.1239 and Durbin Watson Stat is 2.0578.

TABLE 4.7: Pool Data Estimate with Dummy (Automobile Sector)

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
ROA	t-Statistic	-2.5756	1.0012	-1.0151	-3.0317	2.0029	-1.3399	6.4624	-0.6232	3.9114	28.4243
	Prob.	0.0101	0.3169	0.3102	0.0025	0.0453	0.1804	0.0000	0.5332	0.0001	0.0000
	R-squared	0.3764									
	F-statistic	121.6827									
	Prob(F-statistic)	0									
Durbin-Watson stat	2.2857										
EPS	t-Statistic	0.3399	-1.1897	-3.9084	-2.5546	5.6636	-4.6869	5.2406	0.0245	4.8369	36.0301
	Prob.	0.7339	0.2343	0.0001	0.0107	0.0000	0.0000	0.0000	0.9805	0.0000	0.0000
	R-squared	0.4891									
	F-statistic	192.9544									
	Prob(F-statistic)	0									
Durbin-Watson stat	2.2937										
ROE	t-Statistic	-0.1102	0.0258	-2.259	-3.1214	3.8148	-3.3668	4.3851	-1.1929	2.2753	23.0673
	Prob.	0.9123	0.9794	0.024	0.0018	0.0001	0.0008	0.0000	0.2331	0.023	0.0000
	R-squared	0.2635									
	F-statistic	72.0988									
	Prob(F-statistic)	0									
Durbin-Watson stat	2.0938										
Tobin's Q	t-Statistic	7.9071	3.058	3.0916	-4.0569	3.9259	-1.7189	7.3443	0.0632	3.1055	99.0127
	Prob.	0.0000	0.0023	0.002	0.0001	0.0001	0.0858	0.0000	0.9496	0.0019	0.0000
	R-squared	0.9114									
	F-statistic	2073.524									
	Prob(F-statistic)	0									
Durbin-Watson stat	2.1859										

Table 4.7 (Continued...)

			Independent Variables					Control Variables				
			C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
	t-Statistic		-3.3158	10.946	1.5001	-5.8545	-0.3919	3.7988	0.5917	1.1668	2.1686	-2.2837
	Prob.		0.0009	0.0000	0.1338	0.0000	0.6952	0.0002	0.5541	0.2434	0.0302	0.0225
CG	R-squared	0.1239										
	F-statistic	28.4958										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.0578										

4.4.3.3 Oil Refining Sector

Oil refining or midstream oil sector has significant role in economy of Pakistan. Its relevance and nature of relationship with macro indicators are elaborated in this section. Reference to empirical evidences it can be seen in table 4.8 that CPI and GDP have significant impact on ROA with (p) 0.0032 and 0.0436. The CPI has negative impact with (t) -2.9512 while GDP has positive influence on ROA with value of (t) 2.0194. OP (p 0.3500), EG (p 0.2999) and INT (p 0.1770) have insignificant impact on ROA.

Real effective exchange rate and real interest rate have negative relationship with RPA having vlaue of (t) -1.0369 and (t) - 1.3507. OP has positive insignificant impact with (t) 0.9348 and value of (p) 0.2990. For control variable, firm size has positive significant impact with (t) 7.0113 and (p) 0.0000, while firm age has negative insignificant impact. R-squared is 37.25% which means ROA receives 63% impact from the variables of the study. The Durbin-Watson stat is 2.2907 with probability of F-Statistics is 0.0000.

For Earnings Per Share (EPS) the crude oil price (OP) is the only independent variable which is insignificant with having vlue of (p) 0.2225 and (t) -1.2204. The negative value of coefficient reflects deteriorating performance of share prices due to changes in international oil prices. The empirical evidence reflects that changes in international crude oil prices has no direct impace on share prices of the oil refining sector in Pakistan.

All other independent variables are significant, where EG has (p) 0.0001, CPI has (p) 0.0151, GDP has (p) 0.0000 and INT has (p) 0.0000. EG, CPI and INT have negative impact with (t) -3.8877, -2.4330 and -4.6615, while GDP has positive impact with (t) 5.6427. The control variable size is significant with (p) 0.0000 and age is insignificant with (p) 0.9201. R-squared is 48.30%, Durbin-Watson stat is 2.3006 and prob F-Stat is 0.0000. The profitability of the firms receives least impact from changes in oil prices because it is the main source of energy and prices never badly hurt the demand at individual and insitutionl level.

ROE has more consistent results showing significance with EG, CPI, GDP and INT. The significance level is negative with EG, CPI and INT while positive with GDP. The only insignificant variable is OP with value of (p) 0.9817 and (t) -0.0229. EG has (p) value of 0.0001 and (t) -2.2868, CPI has (p) value 0.0021 and (t) -3.0766, GDP has (p) value of 0.0001 and (t) 3.8396, finally INT is significant with (p) 0.0007 and (t) -3.3857. the R-square value is 26.14%, F stat is 71.3331, probability of F statistics is 0.0000 and Durbin-Watson is 2.0978. ROE is significant with control variable firm size for (p) value of 0.0000 and insignificant with firm age with (p) 0.9905.

All independent variables have significant impact on Q ratio except INT which have (p) value 0.0845, meaning INT is has weak insignificant impact with (t) -1.7259. OP has strong significant impact having probability value of 0.0022 and this impact is strongly positive with (t) 3.0698. EG and GDP has positive causal relationship with Q ration having value of (p) 0.0020, 0.0001 and value of (t) 3.0937, 3.9464 respectively. CPI has negative causal relationship with (p) 0.0001 and (t) -4.0574. Firm size as control variable has significant positive impact with (p) 0.0000 and (t) 7.0490 while firm age is insignificant with ratio. R-squared 91.13 percent reflects change in Q ratio is due to other variables. Durbin-Watson stat is 2.1888 and prob of F-stat is 0.0000.

In oil refining sector of Pakistan, the capital gain has causal relationship with changes in crude oil prices, inflation and real interest rate. The (p) value reflecting significant is 0.0000 for OP with (t)10.887, 0.0000 for CPI with (t)-5.8186 and 0.001 for INT with (t) 3.8027. results of the study reveal that capital gains for oil refining sector are not linked with real effective exchange rate and GDP. The probability of real effective exchange rate (EG) is 0.1387 and for GDP it is 0.7004. The relationship is negative for GDP and positive for EG with (t)-0.3848 and 1.4812 respectively. R-squared indicates the impact of variable other than included in study and this impact is only 12% with F-statistics 28.0576 and Durbin-Watson statistics 2.0591.

TABLE 4.8: Pool Data Estimate with Dummy (Oil Refining Sector)

		Independent Variables					Control Variables					
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)	
ROA	t-Statistic	-2.8449	0.9348	-1.0369	-2.9512	2.0194	-1.3507	7.0113	-0.3952	-1.9001	28.9943	
	Prob.	0.0045	0.35	0.2999	0.0032	0.0436	0.177	0.0000	0.6927	0.0576	0.0000	
	R-squared	0.3725										
	F-statistic	119.669										
	Prob(F-statistic)	0.0000										
	Durbin-Watson stat	2.2907										
EPS	t-Statistic	0.1315	-1.2204	-3.8877	-2.433	5.6427	-4.6615	5.538	0.1004	-0.9608	37.5377	
	Prob.	0.8954	0.2225	0.0001	0.0151	0.0000	0.0000	0.0000	0.9201	0.3368	0.0000	
	R-squared	0.483										
	F-statistic	188.295										
	Prob(F-statistic)	0.0000										
	Durbin-Watson stat	2.3066										
ROE	t-Statistic	-0.1612	-0.0229	-2.2868	-3.0766	3.8396	-3.3857	4.503	-1.142	-0.1918	23.376	
	Prob.	0.8719	0.9817	0.0223	0.0021	0.0001	0.0007	0.0000	0.2536	0.8479	0.0000	
	R-squared	0.2614										
	F-statistic	71.3331										
	Prob(F-statistic)	0.0000										
	Durbin-Watson stat	2.0978										
Tobin's Q	t-Statistic	7.6562	3.0698	3.0937	-4.0574	3.9464	-1.7259	7.049	0.0118	1.1765	102.1799	
	Prob.	0.0000	0.0022	0.002	0.0001	0.0001	0.0845	0.0000	0.9905	0.2395	0.0000	
	R-squared	0.911										
	F-statistic	2063.22										
	Prob(F-statistic)	0.0000										
	Durbin-Watson stat	2.1888										

Table 4.8 (Continued...)

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
	t-Statistic	-3.4338	10.8887	1.4812	-5.8186	-0.3848	3.8027	1.0638	1.2831	-1.1053	-2.1764
	Prob.	0.0006	0.0000	0.1387	0.0000	0.7004	0.0001	0.2876	0.1996	0.2692	0.0297
CG	R-squared	0.1222									
	F-statistic	28.0576									
	Prob(F-statistic)	0.0000									
	Durbin-Watson stat	2.0591									

4.4.3.4 Oil & Gas Marketing Companies (OMCs)

In case of oil and gas marketing companies, the ROA, EPS, ROE, Tobin'Q and CG behaved differently when measured against same macro economic variables. The ROA receives significant impact from CPI and GDP, while insignificant from OP, EG and INT. CPI has probability (p) value of 0.003 and GDP has 0.0385. The nature of relationship is negative for CPI and positive for GDP. CPI has value of (t) -2.9750, and GDP has 2.0709.

The Insignificant variables OP has (p) value of 0.3577, EG has 0.3024 and INT has (p) value of 0.1640. ROA has significant causal relationship with control variable, the firm size as indicated by (p) 0.0000 while insignificant with firm age having (p) value of 0.5651 with (t) -0.5754. The R-square value for ROA is 37% which indicates the proportion of influence caused by external variables. The Durbin Watson for ROA is 2.2947 and F-statistics is 119.3.

Empirical results for EPS are different from ROA. Table 4.9 shows that EPS is significant with EG and INT which showed no causal impact on ROA. Besides these CPI and GDP are also significant with value of (p) 0.0149 and 0.0000. For EPS, OP is the only independent variable which shows no causal impact with value of (p) 0.2218 and (t) -1.2222. EG has value of (p) 0.0001 with (t) -3.8886 and INT has value of (p) 0.0000 with (t) -4.6694.

The varying impact of EPS from ROA indicate that share prices of OMCs are more sensitive toward changes in real effective exchange rate, real interest rate, inflation and gross domestic product. However, the main business activity of these OMCs relies on oil price changes which according to empirical evidence has no causal impact on share prices. ROA has R-square of 37% and EPS has 48% whereas the Durbin-Watson stat for ROA and EPS is 2.2947 and 2.3064.

ROE reveals similar trend of results like EPS, however OP is the only insignificant variable having value of (p) 0.9874, unlike EPS this impact is positive with (t) 0.0157. For other independent variables the (p) value for EG is 0.0244, for CPI it is 0.0017, for GDP it's 0.0001 and for INT the value of (p) is 0.0007. GDP has positive t-stat with value 3.8469 while EG, CPI and INT has negative relationship

with value of (t) -2.2534, -3.1365 and -3.3940 respectively. The R-squared value of 26% show the proportion of impact on ROE by other variables and Durbin-Watson stat is 2.0955, F-Stat is 71.7082 and prob of F-Stat is 0.0000. ROA, EPS and ROE are significant with control variable Size having same value of (p) 0.0000 for all while firm age is insignificant with (p) 0.5651, 0.9669 and 0.1700.

The Q ratio reveals significant positive relationship with OP, EG and GDP while negative with CPI. INT is insignificant with value of (p) 0.0800 which is quite weaker insignificant relationship. Firm age which is our second control variable is also insignificant. However, first control variable firm size is positively significant with value of (p) 0.0000 and (t) 7.1312. OP has stronger positive impact with (p) 0.0025 and (t) 3.0259. The significant value for crude oil price indicate strong impact on assets and liabilities of oil and gas marketing companies. EG and GDP are also strongly significant with (p) value of 0.0023 and 0.0001.

OMCs experience exchange gain and losses due to appreciation and depreciation of local currency against the international currencies mostly USD. The petro dollar is a significant factor which contributes toward profitability of oil marketing companies in Pakistan. The negative impact of CPI with (t) -4.0432 is also strong with (p) value of 0.0001. The changes in monetary policy influences the general public demand which in turn has impact on their purchasing capability and saving habits. Empirical evidence thus reveal negative relationship between tobin'q and this impact is quite stronger.

Regression results for CG show EG and GDP are insignificant and have negative (t) statistics. The value of (p) for EG is 0.1283 and for GDP it's 0.6952. For OMC sector the capital gain or loss is more significant for OP with value of (p) 0.0000, CPI with value of (p) 0.0000 and INT with value of (p) 0.0001. the direction of relationship is positive for OP and INT while negative for CPI. The R-square percentage for Q ratio and CG is 91% and 12%, which reflects the impact of other variables.

TABLE 4.9: Pool Data Estimate with Dummy (Oil & Gas Marketing Sector)

		Independent Variables						Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)	
ROA	t-Statistic	-2.6036	0.9199	-1.0317	-2.975	2.0709	-1.3923	6.4599	-0.5754	-0.0363	29.222	
	Prob.	0.0093	0.3577	0.3024	0.003	0.0385	0.164	0.0000	0.5651	0.971	0	
	R-squared	0.3713										
	F-statistic	119.0368										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.2947										
EPS	t-Statistic	0.2073	-1.2222	-3.8886	-2.4372	5.6531	-4.6694	5.3404	0.0415	-0.2817	37.5401	
	Prob.	0.8358	0.2218	0.0001	0.0149	0.0000	0.0000	0.0000	0.9669	0.7782	0.0000	
	R-squared	0.4828										
	F-statistic	188.1144										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.3064										
ROE	t-Statistic	0.0449	0.0157	-2.2534	-3.1365	3.8469	-3.394	3.9868	-1.3728	1.5949	23.1983	
	Prob.	0.9642	0.9874	0.0244	0.0017	0.0001	0.0007	0.0001	0.1700	0.1109	0.0000	
	R-squared	0.2624										
	F-statistic	71.7082										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.0955										
Tobin's Q	t-Statistic	8.1299	3.0259	3.0555	-4.0435	3.9724	-1.7518	7.1312	-0.2132	2.338	97.836	
	Prob.	0	0.0025	0.0023	0.0001	0.0001	0.08	0	0.8312	0.0195	0	
	R-squared	0.9112										
	F-statistic	2067.793										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.1817										

Table 4.9 (Continued...)

		Independent Variables						Control Variables			
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
	t-Statistic	-3.3418	10.902	1.5217	-5.8302	-0.3918	3.7994	0.6859	1.1231	0.3339	-2.1501
	Prob.	0.0008	0.0000	0.1283	0.0000	0.6952	0.0001	0.4929	0.2615	0.7385	0.0317
CG	R-squared	0.1217									
	F-statistic	27.9173									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0587									

4.4.3.5 Technology & Telecommunication

The financial performance of technology and telecommunication sector of Pakistan against macro-economic variables is synonymous as revealed in table 4.10. The OP is insignificant with ROA, EPS and ROE while significant with Q ratio and CG. The impact of significance of OP is positive on both financial ratios but stronger for CG. OP has (p) value of 0.0020 for Q ratio and 0.0000 for CG. The coefficient (t) value of OP against Q ratio is 3.0934 which is positive and relatively stronger. The impact on capital gain is also positive but quite stronger as compared to OP which is (t) 10.9246.

Real effective exchange rate (EG) is insignificant with ROA and CG but significant with EPS, ROE and Tobin's Q. These variables reflect difference (t) values as reflected in table 4.10, the EG has negative relationship with ROA, EPS and ROE while positive with Q ratio and CG. ROA has (p) value of 0.3094, EPS has (p) value of 0.0001, ROE has (p) value of 0.0221, Q has (p) value of 0.0019 whereas CG has (p) value of 0.1234.

The CPI is significant with all financial ratios and the direction of impact is negative as reflected by t-statistics in table 4.11. This causal impact of CPI has (p) value of 0.0027 for ROA, 0.0137 for EPS, 0.0022 for ROE, 0.0001 for Q and 0.0000 for CG. The only insignificant independent variable is GDP which has (p) value of 0.6992 when measure against capital gain.

GDP measures the production of goods and services and this definition is linked with our findings as table shows significance with ROA, EPS, ROE and Q ratio which are all linked with productivity and profitability. Finally, the real interest rate reveals no significant impact on ROA but weaker insignificant on Tobin's Q with value of (p) 0.0880 and (t) -1.7069. It has strongly significant impact on EPS, ROE and CG with value of (p) 0.0000. This significance reveal that INT has negative causal impact on EPS and ROE but positive on CG having value of (t) -4.7012, -3.3354 and 3.7988. The impact of control variable firm size is positively significant on all dependent variables except for CG. The firm age is however insignificant with all financial ratios.

TABLE 4.10: Pool Data Estimate with Dummy (Technology & Telecommunication)

		Independent Variables						Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)	
ROA	t-Statistic	-2.6324	0.9315	-1.0174	-3.0059	2.0836	-1.4034	6.7974	-0.8809	-1.1697	29.1514	
	Prob.	0.0086	0.3517	0.3091	0.0027	0.0373	0.1607	0.0000	0.3785	0.2423	0	
	R-squared	0.3718										
	F-statistic	119.2779										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.2935										
EPS	t-Statistic	0.2736	-1.2282	-3.8904	-2.4669	5.6925	-4.7012	5.5572	-0.3464	-1.3161	37.4551	
	Prob.	0.7844	0.2195	0.0001	0.0137	0	0	0	0.7291	0.1883	0	
	R-squared	0.4832										
	F-statistic	188.4689										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.3053										
ROE	t-Statistic	-0.1376	-0.0248	-2.2898	-3.0726	3.8395	-3.3854	4.5397	-1.0476	0.2736	23.376	
	Prob.	0.8906	0.9802	0.0221	0.0022	0.0001	0.0007	0.0000	0.295	0.7844	0.0000	
	R-squared	0.2614										
	F-statistic	71.3388										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.0981										
Tobin's Q	t-Statistic	7.2177	3.0934	3.1159	-4.0653	3.9209	-1.7069	7.0616	0.1625	0.1028	102.1554	
	Prob.	0.0000	0.002	0.0019	0.0001	0.0001	0.088	0.0000	0.8709	0.9181	0.0000	
	R-squared	0.9109										
	F-statistic	2061.557										
	Prob(F-statistic)	0										
	Durbin-Watson stat	2.1912										

Table 4.10 (Continued...)

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
	t-Statistic	-3.4054	10.9246	1.5415	-5.8456	-0.3959	3.7988	0.9381	0.7974	-1.2309	-2.184
	Prob.	0.0007	0.0000	0.1234	0.0000	0.6922	0.0002	0.3483	0.4253	0.2185	0.0291
CG	R-squared	0.1223									
	F-statistic	28.0947									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0582									

4.4.3.6 Textile Composite

The regression analysis of this sector indicate that ROA is significant with CPI, GDP and Firm size while insignificant with OP, EG and INT. The value for (p) against CPI is 0.0028, and for GDP it is 0.0389 whereas firm size has significant impact at (p) 0.0000. The coefficient (t) is negative for CPI which is -2.9938 while positive for GDP with value 2.0665. EG and INT are negatively correlated with (t) -1.0346 and -1.3890. The probability (p) for OP is 0.3487, for EG it is 0.301 and for INT it stands at 0.165. The R-squared is 37.15% and Durbin Watson stat is 2.2932. The results of EPS in table 4.11 show that it is significantly positive correlated with GDP while other significant variable EG, CPI and INT are negatively correlated. The value of (p) for GDP is 0.0000 and (t) 5.6661. The (p) value for EG, CPI and INT is 0.0001, 0.0142 and 0.0000 with (t) -3.8967, -2.4541 and -4.6793 respectively. The only insignificant negatively correlated variable in OP which has (p) value of 0.2231 and has coefficient of (t) -1.2187. The statistical results for ROE reflect significantly positive relationship with GDP and firm size with value of (p) 0.0001 and 0.0008 with (t) 3.8225 and 3.373 respectively. Significant variable EG, CPI and INT has negative coefficient of (t) -2.2685, -3.123, and -3.3733. The value of (p) for EG is 0.0234, for CPI 0.0018 and for INT 0.0008. The only insignificant variable is OP with (p) 0.9804 but it has positive correlation with (t) 0.0246. The probability of F-statistics is 0.0000, R-square is 0.2635 and Durbin Watson stat is 2.0944. Table 4.11 reflects that Tobin Q receives significant positive impact from OP by having (p) near to 0.0023 with (t) coefficient of 3.052. EG is also significant with value of (p) 0.002 and t-stat 3.099 whereas CPI has negative coefficient and is significant with (p) of 0.0000. GDP is also significant with (p) 0.0001 and has positive relationship with Q ratio of 3.8003. The only insignificant variable is INT having (p) of 0.0984 which is weaker with value of (t) -1.6537. For control variable firm size is significant while age is insignificant. The R-square value of Q is 0.9124 with Durbin Watson of 2.1621. The results for CG reflect its significance with OP, CPI and INT having (p) 0.0001, 0.0001 and 0.0002. CPI is has negative coefficient while OP and INT has positive coefficient with CG.

TABLE 4.11: Pool Data Estimate with Dummy (Textile Composite)

		Independent Variables						Control Variables			
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
ROA	t-Statistic	-2.5982	0.9246	-1.0332	-2.9729	2.0607	-1.3841	6.6896	-0.5078	-0.6694	29.1336
	Prob.	0.0094	0.3553	0.3016	0.003	0.0395	0.1665	0.0000	0.6117	0.5033	0.0000
	R-squared	0.3715									
	F-statistic	119.1155									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.2932									
EPS	t-Statistic	0.2204	-1.2245	-3.8899	-2.4473	5.6692	-4.6819	5.4765	-0.0794	0.7563	37.5367
	Prob.	0.8255	0.2209	0.0001	0.0145	0.0000	0.0000	0.0000	0.9367	0.4496	0.0000
	R-squared	0.4829									
	F-statistic	188.2203									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.3065									
ROE	t-Statistic	-0.1336	-0.022	-2.2862	-3.0793	3.841	-3.3869	4.5765	-1.1385	-0.185	23.3733
	Prob.	0.8937	0.9824	0.0224	0.0021	0.0001	0.0007	0.0000	0.2551	0.8532	0.0000
	R-squared	0.2614									
	F-statistic	71.3327									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0978									
Tobin's Q	t-Statistic	7.3441	3.0825	3.1047	-4.0624	3.9518	-1.7254	7.0303	0.0342	1.0105	103.97
	Prob.	0.0000	0.0021	0.0019	0.0001	0.0001	0.0846	0.0000	0.9727	0.3124	0.0000
	R-squared	0.911									
	F-statistic	2062.886									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.1943									

Table 4.11 (Continued...)

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
	t-Statistic	-3.3928	10.9011	1.5187	-5.8287	-0.391	3.8002	0.8368	1.1111	0.5458	-2.1495
	Prob.	0.0007	0.0000	0.129	0.0000	0.6958	0.0001	0.4028	0.2667	0.5852	0.0317
CG	R-squared	0.1217									
	F-statistic	27.9408									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.059									

4.4.3.7 Textile Spinning

The statistical results for ROA show that it is significant with CPI, GDP and firm size having value of (p) 0.0028, 0.0389 and 0.0001 respectively. CPI and INT have negative coefficient while GDP has positive coefficient. OP is insignificant having (p) 0.3487 and has positive coefficient (t) of 0.9374 while other insignificant variable EG has negative coefficient of -1.0346 and (p) value of 0.301. The R-square for ROA is 0.3724 while Durbin Watson stat is 2.2943. EPS receives significant impact from EG, CPI, GDP INT and firm size while insignificant from OP and firm age. The value of (p) for EG, CPI, GDP and INT is 0.0001, 0.0142, 0.0000, and 0.0000. EG, CPI and INT has negative coefficient of -3.8967, -2.4541, -4.6793 respectively while GDP has positive coefficient of 5.6661. OP is insignificant with (p) value of 0.2231 and has negative coefficient of (t) -1.2187. The results for ROE show that it is significant with EG, CPI, GDP, INT and firm size which is quite similar in matter to EPS. EG has (p) value of 0.0234 with (t) -2.2685, CPI has (p) value of 0.0018 with (t) -3.123, GDP has (p) value of 0.0001 and (t) 3.8225 while INT has (p) 0.0008 with negative coefficient of -3.3733. GDP, OP and firm has positive coefficient of (t). The OP is insignificant with value of (p) 0.9804 and (t) 0.0246. The R-square value for ROE is 0.2635. Empirical evidence for Tobins Q indicate that it has significant relationship with OP, EG, CPI, GDP, INT and firm size. The coefficient of relationship is negative incase of CPI and INT while positive for rest of the independent variables. OP has value of (p) 0.0023 with (t) 3.052, EG has value of (p) 0.002 with (t) 3.099, CPI has value of (p) 0.0001 with (t) -4.0698, GDP has value of (p) 0.0001 with (t) 3.8003 and INT has value of (p) 0.0984 with (t) -1.6537. Incase of control variables the firm size is significantly positive with (p) 0.0001 and (t) 7.6919 while firm age is insignificantly positive with value of (p) 0.6208 and (t) 0.4948. The R-square value for Tobin Q is 0.9124 and Durbin Watson is 2.1621. The results for CG reflect that it is significantly positive with OP, EG, and INT = while negative with CPI. The only insignificant variable is GDP with value of (p) 0.695 and has negative coefficient of -0.3921. OP has value of (p) 0.0000, EG has value of (p) 0.1313, and INT has value of (p) 0.0002.

TABLE 4.12: Pool Data Estimate with Dummy (Textile Spining)

		Independent Variables						Control Variables			
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
ROA	t-Statistic	-2.1202	0.9374	-1.0346	-2.9938	2.0665	-1.389	5.5442	-0.3864	-1.7618	29.0539
	Prob.	0.0341	0.3487	0.301	0.0028	0.0389	0.165	0.0000	0.6992	0.0783	0.0000
	R-squared	0.3724									
	F-statistic	119.5838									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.2943									
EPS	t-Statistic	0.5849	-1.2187	-3.8967	-2.4541	5.6661	-4.6793	4.6183	0.1508	-1.3549	37.3839
	Prob.	0.5587	0.2231	0.0001	0.0142	0.0000	0.0000	0.0000	0.8801	0.1756	0.0000
	R-squared	0.4833									
	F-statistic	188.4906									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.3051									
ROE	t-Statistic	0.3678	0.0246	-2.2685	-3.123	3.8225	-3.3733	3.373	-0.9044	-2.275	23.0822
	Prob.	0.7131	0.9804	0.0234	0.0018	0.0001	0.0008	0.0008	0.3659	0.023	0.0000
	R-squared	0.2635									
	F-statistic	72.0997									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0944									
Tobin's Q	t-Statistic	9.8492	3.052	3.099	-4.0698	3.8003	-1.6537	7.6919	0.4948	-6.0169	86.7354
	Prob.	0.0000	0.0023	0.002	0.0000	0.0001	0.0984	0.0000	0.6208	0.0000	0.0000
	R-squared	0.9124									
	F-statistic	2099.58									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.1621									

Table 4.12 (Continued...)

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
	t-Statistic	-3.1013	10.9238	1.5096	-5.8415	-0.3921	3.7977	0.2124	1.3292	-1.3181	-2.2098
	Prob.	0.002	0.0000	0.1313	0.0000	0.695	0.0002	0.8318	0.184	0.1876	0.0272
CG	R-squared	0.1224									
	F-statistic	28.1225									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0581									

4.4.3.8 Textile Weaving

Table 4.13 shows the regression analysis with textile weaving as dummy variable. Results for ROA against macro economic indicate that OP, EG and INT are insignificant with value of (p) 0.3566, 0.3037 and 0.1626 respectively. The coefficient of t-statistics is positive incase of OP with value of (t) 0.9221 while negative for EG and INT with value of (t) -1.0288 and -1.3971 respectively. CPI and GDP have significant impact on ROA with value of (p) 0.0029 and 0.038. The relationship of CPI is negative with value of (t) -2.9841 and positive incase of GDP having (t) 2.0767. For control variables the firm size is significant while age is insignificant. The R-squared for ROA against independent variables is 37%, F-statistics is 0 and value of Durbin Watson is 2.2948. The results for EPS show that it is insignificant with OP only having value of (p) 0.2208 and this relationship is negative with value of (t) 1.2247. The impact of EG, CPI, GDP and INT is significant on the EPS with value of (p) 0.0001, 0.0144, 0.0000 and 0.0000. GDP is the only macro economic variable which has positive impact on EPS with value of (t) 5.6733 while EG, CPI and INT has negative relationship with value of (t) -3.8908, -2.4505 and -4.6852 respectively. Durbin Watson for EPS is 2.3062 and R-squared value is 0.4829 whereas the F-Statistic is 0. Results for ROE indicate that OP is insignificant and has negative coefficient with value of (p) 0.9816 and (t) 0.023. EG is significantly negatively correlated with value of (p) 0.0222 and (t) -2.2885. GDP has significant positive relationship with ROE with value of (p) 0.0001 and (t) 3.8376. CPI and INT both have negative coefficients with value (t) -3.0744 and -3.3839, and the value of (p) for CPI is 0.0021 and for INT it is 0.0007. Tobins Q is significant with OP, EG, CPI and GDP while insignificant with real interest rate (INT). The value of (p) for OP is 0.0021, for EG 0.0019, for CPI 0.0001 and for GDP 0.0001. Q ratio is positively corelated with OP, EG and GDP while negative with CPI and INT. CG is insignificant with GDP and EG while significant with OP, CPI and INT. It is negative correlated with CPI and GDP only while positive with rest of variables. The of value of (p) for OP is 0.0000, for EG 0.1328, for CPI 0.0000, for GDP 0.6976 and for INT it is 0.0001.

TABLE 4.13: Pool Data Estimate with Dummy (Textile Weaving)

		Independent Variables						Control Variables			
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
ROA	t-Statistic	-2.589	0.9221	-1.0288	-2.9841	2.0767	-1.3971	6.6553	-0.6438	-0.4886	29.2216
	Prob.	0.0097	0.3566	0.3037	0.0029	0.038	0.1626	0.0000	0.5198	0.6252	0.0000
	R-squared	0.3714									
	F-statistic	119.0788									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.2948									
EPS	t-Statistic	0.3087	-1.2247	-3.8908	-2.4505	5.6733	-4.6852	5.3914	-0.0954	-0.7733	37.5229
	Prob.	0.7576	0.2208	0.0001	0.0144	0.0000	0.0000	0.0000	0.924	0.4394	0.0000
	R-squared	0.4829									
	F-statistic	188.2259									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.3062									
ROE	t-Statistic	-0.1651	-0.023	-2.2885	-3.0744	3.8376	-3.3839	4.6063	-1.1014	0.429	23.3703
	Prob.	0.8689	0.9816	0.0222	0.0021	0.0001	0.0007	0.0000	0.2709	0.668	0.0000
	R-squared	0.2615									
	F-statistic	71.3552									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0978									
Tobin's Q	t-Statistic	7.4315	3.085	3.1077	-4.0623	3.9359	-1.7163	7.0517	0.0941	-0.3704	103.7389
	Prob.	0.0000	0.0021	0.0019	0.0001	0.0001	0.0863	0.0000	0.9251	0.7112	0.0000
	R-squared	0.9109									
	F-statistic	2061.715									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.1913									

Table 4.13 (Continued...)

		Independent Variables					Control Variables				
		C	OP	EG	CPI	GDP	INT	SIZE	AGE	Dummy	AR(1)
	t-Statistic	-3.3812	10.8951	1.5039	-5.824	-0.3886	3.8004	0.8391	1.2154	0.3505	-2.1574
	Prob.	0.0007	0	0.1328	0	0.6976	0.0001	0.4015	0.2244	0.726	0.0311
CG	R-squared	0.1217									
	F-statistic	27.9187									
	Prob(F-statistic)	0									
	Durbin-Watson stat	2.0586									

4.5 Comparative Study of Sectors

Crude oil price (OP) has significant impact on efficiency and effectiveness of economic cycle in Pakistan. Any instability of international oil prices directly or indirectly influences the performance of corporate firms in Pakistan. Our study precisely measures this impact on eight different sectors. Results reveal that impact of crude oil prices are found significant with Q ratio and capital gain while insignificant with ROA, ROE and EPS. It shows share price are strongly responsive to crude prices which results in capital gain or loss. The Tobin's Q is also responsive but weaker than capital gain. Firms' profitability is not affected by crude prices as reflected by profitability ratios. In conclusive remarks this trend is same for all sectors of Pakistan, however response of Q ratio is stronger in cement sector as compared to rest of the firms. For all sectors our hypothesis for crude oil prices is accepted in case of Tobin's Q and CG while rejected for ROA, ROE and EPS.

Real effective exchange rate (EG) for all firms is insignificant with ROA and CG. The coefficient is negative for ROA and positive for CG. In case of significance EG does has impact on ROE, EPS and Tobin's Q. The coefficient is negative for ROE and EPS while positive for Q ratio. This significant and insignificant behavior of EG is similar for all sectors of Pakistan having same nature of coefficient. However, the impact on Q ratio is stronger in case of textile sector as compared to all other. We can say that our null hypothesis for EG is accepted in case of ROE, EPS and Q ratio while rejected for ROA and CG. Our proxy to measure inflation is consumer price index (CPI) and the results reveal that it has negative coefficient for all sectors. It means the director of impact is not favorable for firms operating in Pakistan for all financial ratios included in this study. The significance impact is strongest on CG (0.0000) while weakest for ROA (0.0029). Similar to OP and EG, all sectors of Pakistan have synonymous response to changes in inflation (CPI) with different magnitudes.

Gross Domestic Product (GDP) is strong measure of economic performance and

the case is not different for Pakistan. The ratios reflecting profitability and productivity are strongly significant with GDP i.e. ROA, ROE, EPS and Q ratio. All these have positive coefficient with GDP. The only insignificant dependent variable is the capital gain (CG) that too with negative coefficient. It means GDP is not a predictor of fluctuation in share prices of sample firms in Pakistan. ROA for technology and telecommunication firms has the strongest (p) value against GDP as compared to the rest of sectors. Our null hypothesis for GDP is rejected for capital gain only. Real interest rate (INT) is the last independent macro variable of the study. In order to avoid the overlapping impact of inflation we are taking real interest rate. Study results reveal that INT is significant with ROE, EPS and CG while insignificant with ROA and Q ratio. The coefficient is positive for CG only. It means the monetary policy causing fluctuation in interest rate has negative impact on earnings and productivity of the firms in Pakistan. Firm size and firm age are the two control variables in this study. Firm size has positive coefficient with all financial ratios and is insignificant with CG only. In case of firm age, the variable does not have significant impact with any dependent variable. It is evident from market where newly emerged firms outperform the industry champions in few years with some new idea or unique offering. Hence, it won't be wrong to say based on empirical evidences that firm age has no significance with firm performance.

4.6 Discussion of the Results

Return on Asset (ROA) is insignificant with oil prices and is positively correlated. In case of Pakistan the results are symmetric for both manufacturing and services sectors included in this study. Our results are consistent with the findings of (Dayanandan & Donker, 2011). However, their study also identifies significant impact during financial crisis of 2007-08 and earlier crisis due to 9/11 incident.

Using daily stock data Naryan & Sharma, (2014) found that crude oil price is a strong significant predictor and determinant of variances in stock prices. They also concluded that investors could predict variances in stocks by forecasting crude oil

prices. A study on UK listed firms revealed that relationship between crude oil prices and stock returns is always positive and highly significant (El-Sharif, Brown, Burton, Nixon, & Russell, 2005). The empirical evidence of this study indicates direct impact of oil prices volatility on changes in share prices within the sector. Malik A., (2009) in her study found that rise in crude oil price resulted worsen debt situation which ultimately effected the output of firms. The reason behind this causal relationship is rising taxes and duties by government to meet the debt repayment targets which affected the output of manufacturing and service sector.

Exchange Rate and Firm Performance

The depreciation of Pakistani rupee against other currencies has deteriorated the performance the market and book value of firms due to declining domestic sales. Our empirical findings indicate negative significant impact of real effective exchange rate on EPS, ROE, but positive impact on internal growth as measured by Tobin's Q. The results are consistent with the study on firms listed on Taiwan Stock Exchange conducted by (Fung & Liu, 2009). They also found that firms, productivity enhanced with the depreciation of Taiwan's dollar against other currencies. Another study on top 242 Indian firms of Bombay Stock Exchange reveals that firms' indexes such as revenue before tax and interest, price to earnings ratio, and internal growth receives significant positive impact from depreciation in real effective exchange rate (Nagahisarchoghaei, Nagahi, & Soleimani, 2018). These evidences are also consistent with results of (Kelilume, 2016). Abbas, Sheikh, & Abbasi, (2015) in their study on manufacturing firms of Pakistan revealed that real effective exchange rate is significantly negative correlated with revenue from domestic sales, whereas firm size has significant positive impact on firm's performance in terms of revenue generated through domestic sales and exports. A study by Malik A., (2009) on Pakistan is consistent with our findings of negative real effective exchange rate impact on overall output comprising manufacturing, service and financial sector.

Inflation (CPI) and Firm Performance

Empirical results of the study indicate that inflation has significant negative impact on all accounting measures used for firm performance. ROA, ROE, EPS, Q Ratio and capital gain are significant and negatively correlated, and these results are consistent with the study of (Matar, Al-Rdaydeh, Alshannag, & Odeh, 2018). The reasoning behind negative correlation is declining purchasing power for people due to rising inflation resultantly damaging firms' growth due to falling sales. The declining performance leaves negative impact on stocks as reflected by capital gain in this study. A study on inflation in South Africa employed sustainable growth modelling framework and revealed that firm performance is impaired by inflation (Smith, N'Cho-Oguie, Murray, & Blakley, 2005). A similar study by Mirza & Javed, (2013) on stock market of Pakistan examined association between firm performance and economic indicators. Study revealed that significant association exist between inflation and firm performance. Pakistan is continuously experiencing the inflationary environment. Global research has investigated the conditions under which inflation is harmful to firm performance. One such study by Cho-Oguie, Blakley, Murray, & Smith, (2001) developed empirical arguments using multivariate model and it was found that inflation always yields significant negative effects on firm financial performance. Our findings are also consistent with the findings of (Ali, Rehman, Yilmaz, Khan, & Afzal, 2010). They conducted empirical study to find causal relationship between economic indicators and KSE stocks. The Granger causality test depicted no causal relationship between inflation and all share prices listed on KSE (Ali, Rehman, Yilmaz, Khan, & Afzal, 2010). The results are also consistent with another study on textile sector of Pakistan (Nizam ud Din, 2015).

GDP and Firm Performance

GDP is the primary indicator to measure the economic condition of any country in conjunction with productivity of all sectors. Taking the real GDP data 2006-2018

we found that it has positive significant impact on firm financial performance and negative insignificant impact on capital gain from market share price. The reason behind this insignificance is that GDP measures productivity and therefore, it is directly associated with ROA, ROE, EPS and internal growth which is measure by Tobin's Q. Our findings are consistent with past studies of Egbunike & Okerekeoti, (2018), Issah, Antwi, & McMillan, (2017) and (Osamwonyi & Michael, 2014). The sector wise empirical results of sample firms indicate that performance of both manufacturing and non-manufacturing companies react in similar manner to GDP.

Interest Rate and Firm Performance

Empirical results of the study show that real interest rate has significant negative impact on EPS, ROE, whereas positive significant impact on capital gain. There is no causal relationship of interest with ROA and Tobin's Q. Negative significance impact on EPS and ROE is supported by past studies (Sonagl, Campos, & Bragab, 2016). Rise in interest rate causes decline in aggregate spending which is a major reason behind declining returns of firms as indicated by negative t-value of EPS and ROE. Our results of such negative significance are consistent with study of Malik A., (2009) published by Pakistan institute of development economics. The study also supports the positive significance impact of interest rate on capital gain as measure by changes in stock prices.

Chapter 5

Conclusion and Recommendation

5.1 Conclusion

Economic instability is not just a challenge but a real threat to financial independence of developing countries due to unrestrained behavior of external macro variables. For countries like Pakistan coping with such behavior is always critical at both ends, domestically and internationally. Unlike developed nations which are following capitalism, communism and mixed economy system, corporate firms in Pakistan have domestic focus and leave regulatory bodies to fight alone with external factors. However, in Pakistan fully democratic rule is just two terms old and it will not be wrong to say that State Ministries and regulatory bodies are not professionally well managed to neutralize external forces. The impact is automatically transferred to local businesses and the ultimate option left for owners is to either seek relief packages or liquidity injections from financial institutions. This study thus explored impact of key macroeconomic variables on financial performance through primary performance ratios of listed manufacturing and non-manufacturing firms. Our objective was to measure the magnitude of each macro variable on financial ratios one by one individually on every firm and sector. The empirical results of the study emphasize that proactive financial strategies should each sector adopt to neutralize, minimize, or mitigate the impact of every single macroeconomic variable. It further emphasizes to quantitatively

understand which of the variables have positive or negative impact and it also precisely measure the magnitude of influence. Results further emphasize that firms from different sectors should strategically engage by precisely measuring impact of macroeconomic variable against their financial indicators. Based on the past data of 13 years, this study also reveals that how each sector is reacting to the macro variables and what exactly is their center of focus. The primary objective of this study was to determine the sector wise performance against the macroeconomic variables.

5.2 Recommendations

Results of the study indicate that financial performance across the sectors reacted differently when measured against each macro variable. The study has implications for the corporate firms, regulatory bodies, and policy makers operating and functioning in Pakistan. Concise and concrete evidence of this study can be used by multiple stakeholders to devise well directed financial strategies in developing markets like Pakistan. Furthermore, in the light of empirical argument developed by this study, regulatory bodies must formulate and exercise prolonged measure by taking corporate firms in full confidence to proactively handle unforeseen behavior of macro variable. Each strategy should be precise so that opportunities can be spoiled, and threats are either eliminated or neutralized. On the contrary both should also look for weaknesses and strengths possessed by firms and propose unique tactics for each sector. In general, the primary objective of policy makers should be to minimizing gap between corporate firms and Government. This will lead to win-win situation where both parties sit together and cope with changes as a single unit. Empirical evidence of the study will be useful for taking targeted steps for each sector of Pakistan rather than opting general step for all. The impacts can be either direct or indirect and the study does not ensure success but yields significant implications for each stakeholder. The study is also crucial for top management in reducing their stress due to uncontrollable nature of external factors. This study is of its kind in Pakistan which reveals the magnitude of macro

variables and nature of impact on eight different sectors operating across the country. This study is also a guideline for practitioners, academicians, researchers, and state-owned enterprises (SOEs). Corporate firms must change their attitude from business centered to more responsible entity and take efficiently effective measure against uncertainties caused by macroeconomic variables.

5.3 Future Directions

The objective of study was to investigate the impacts of macroeconomic variables on different sector of Pakistan by using firms financial data. It is a comparative study on financial performance of key sectors of Pakistan against the same macro variables. For future researchers, academicians and researchers can conduct study on other developing countries which are more vulnerable to macro variables. Due to time constraints our study sample size is limited to 8 sectors only. Future research on Pakistan and abroad can encompass all sectors or increase the number of sectors. Researchers pursuing further study can also increase number of dependent and independent variables to get more comprehensive results. In future research we can conduct comparative studies across the countries by employing different parameters i.e. communism vs capitalist economies, developed vs developing etc. Our study does not examine the financial institutions. Future research can conduct same study on the financial data of financial firms. In this study we have used several macro variables simultaneously while future researchers can conduct research by employing single variable.

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