ECONOMIC EXPOSURE, PRICING OF RISK AND VARIOUS VOLATILITY DYNAMICS OF STOCK RETURNS ON AN EMERGING STOCK MARKET

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To my beloved father, mother and brother whom did not degree
their prayers and blessings to me ever

To my dear wife, my kids whom filled my life with joy and happiness,
and supported me all-through my journey

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ABSTRACT

Among the scholars, it is believed that the stock market performance reflects the economic and financial conditions of a country. Three dimensions of stock returns that are, economic exposure, pricing of risk and various volatility dynamics have been overlooked by existing studies on stock market. Therefore, this research examined these dimensions at the firm, sectoral and aggregate market level stock returns. Following that, the worth of firm's character effect (firm size, firm age, firm business nature, firm trading nature and sectoral location of the firm) was also explored with respect to these three dimensions. This study focused on the stock returns of firms from 23 sectors listed on the Karachi Stock Exchange of Pakistan. For this purpose, three generalized autoregressive conditional heteroskedasticity (GARCH) models were applied: GARCH (1, 1) for capturing the economic exposure of stock returns together with different volatility dynamics; GARCH-M for pricing of risk and EGARCH for asymmetric and leverage effect. The findings of the study are as follows: first, among other macroeconomic variables, market return is found to be the most important one in explaining the stock returns. Second, the study revealed the existence of pricing of risk and leverage effect in the Pakistani stock market. Third, it is found that generally the firm level stock returns are quite volatile and volatility shocks are rather persistent but holding the property of mean reversion. Fourth, the study provided evidence of lagged effect of macroeconomic variables on stock returns. Fifth, the study found that firm's characteristics play an important role in explaining the stock returns. Resting upon these outcomes, investors can make more informed decisions and policy makers can develop effective policies for controlling and promoting macroeconomic growth and stability in a country.

ABSTRAK

Di kalangan cendekiawan, adalah dipercayai bahawa prestasi bursa saham mencerminkan keadaan ekonomi dan kewangan sesebuah negara. Terdapat tiga dimensi pulangan saham yang merangkumi pendedahan ekonomi, penetapan harga risiko, dan pelbagai gelora dinamik telah diabaikan oleh kajian sedia ada tentang pasaran saham. Oleh itu, kajian ini mengkaji dimensi-dimensi ini di peringkat syarikat, sektor, dan pasaran aggregat bagi pulangan saham. Seterusnya, kesan ke atas nilai ciri syarikat (saiz syarikat, umur syarikat, jenis perniagaan syarikat, jenis perdagangan syarikat, dan lokasi sektor syarikat) juga dikaji berdasarkan ketiga-tiga dimensi ini. Kajian ini tertumpu kepada pulangan saham syarikat daripadai 23 sektor tersenarai di Bursa Saham Karachi di Pakistan. Untuk tujuan ini, tiga model *generalized autoregressive conditional heteroskedasticity* (GARCH) telah digunakan: GARCH (1,1) untuk menangkap pendedahan ekonomik pulangan saham bersama dengan gelora dinamik yang berbeza; GARCH-M untuk penetapan harga risiko dan EGARCH untuk kesan tidak simetri dan hutang. Penemuan kajian ialah seperti berikut: pertama, antara pembolehubah-pembolehubah makroekonomi, pulangan pasaran didapati menjadi pembolehubah terpenting untuk menerangkan pulangan saham. Kedua, kajian mendedahkan kewujudan penetapan harga risiko dan kesan hutang di pasaran saham Pakistan. Ketiga, didapati bahawa umumnya pulangan saham peringkat syarikat adalah agak bergelora dan kejutan gelora adalah agak berterusan tetapi mempunyai ciri berpatah-balik kepada min. Keempat, kajian ini menyumbang bukti kesan tangguh pembolehubah makroekonomi ke atas pulangan saham. Kelima, kajian ini mendapati bahawa ciri-ciri syarikat memainkan peranan utama dalam menerangkan pulangan saham. Bersandarkan penemuan ini, para pelabur dapat membuat keputusan lebih bijak dan pembuat polisi dapat membentuk polisi berkesan untuk mengawal dan mempromosikan pertumbuhan makroekonomi dan kestabilan sesebuah negara.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1 General Overview

Financial infrastructure is the integral component of an economy. Current economic environment of a country demands a well functioning financial system for economic growth and development. Stock market being a very important part of financial system is a key player in stabilizing the financial sector to foster the economic growth of a country (Mala and White, 2006). Stock market reflects health of the economy to rest of the world (Singh, 2010). This chapter begins with the empirical relation between macroeconomic indicators and stock returns, current economic environment, industrial and stock market situation. Then it proceeds to describe the problem statement which leads to the objectives, research questions, importance and scope of the study. However, later in this chapter, limitations of research along with a sketch of the entire thesis are presented.

1.2 Background of the Study

Signifying the role of economic indicators in detecting the business overall systematic risk and cash flow, the connectivity between the macroeconomic factors and capital market is instinctively intoxicating (Arnold and Vrugt, 2006; Chinzara,

2011). Capital Asset Pricing Model (CAPM), Arbitrage Pricing Theory (APT) and Dividend Discount Model (DDM) built a considerable quest for the stock returns. Together, the Arbitrage Pricing Theory (APT) and Dividend Discount Model (DDM), set theoretical foundations that employ the conduit to root the factoring of economic variable into the stock returns. These models entail that any expected or unexpected influx of new information regarding macroeconomic variables (e.g. inflation, exchange rate, interest rate, GDP etc), will impact the stock returns through discount factor, dividends or both.

Impact of macroeconomic forces on stock returns is always a matter of inquisitiveness among the researchers. Study regarding macroeconomic forces and stock returns started in 1980's when researchers like Fama (1981) and Chen *et al.,* (1986) investigated the impact of economic indicators on aggregate stock returns in New York Stock Exchange (NYSE). They determined considerable influence of macroeconomic forces on stock returns. Similarly, Tokyo Stock Exchange (TSE) was explored by Mukherjee and Naka (1995). Most of the existing studies (e.g. see Elyaisani and Mansur, 1998; Ibrahim, 1999; McSweeney and Worthington, 2008; Narayan and Sharma, 2011; Khan *et al.,* 2013) focusing on economic factors and stock returns reported strong association between them in various economies.

Moreover, given the importance of predicting the pricing of risk, asymmetry & leverage effect and various volatility dynamics in any investment and portfolio decision, along with aiming each of firm, sectoral and an aggregate market level stocks, it is also quite worthy to explore that how does all the afore-mentioned dimensions vary with respect to firms characteristics (i.e. firm size, firm age, firm nature of business, firm trading nature and sectoral location of the firm) [1].

[1]The literature motivating current study to consider all these dimensions has been discussed in quite detail in the following chapter (i.e. Chapter 2).

1.3 Capital Market

In contemporary market dominated economic system, stock market performs a key role by mobilizing the financial means from savers to the potential investors (Mala and White, 2006). It exhibits the capital growth, saving and investor's faith in financial sector. Capital market being the most prominent component of financial system drives the financial strength through effective resource mobilization and consequently influences the economic growth and development of a country (Buyuksalvarci, 2010).

1.3.1 Stock Markets in Pakistan (1950-2000)

Pakistan comprehended the worth of equity market by setting up Karachi Stock Exchange (KSE) in 1949. KSE is the largest and oldest stock exchange in Pakistan since its inception (Uppal and Mangla, 2006). Holding almost 85% of the total turnover sets KSE as the most prominent equity market in Pakistan (Iqbal, 2012). Asian Development Bank (ADB) introduced a plan in 1997 which involved the improvements of existing Corporate Law Authority. Hence, parliament approved and formally proclaimed the Act of Security and Exchange Commission of Pakistan (SECP) in December 1997. From 1950 to 1990, economic and financial policies in Pakistan displayed the control and command approach based on central planning by the government (ADB Report, 2008). Business activities were controlled by the government through Nationalization Act 1974. According to Husain (2010); the nationalization of all the main industries including manufacturing, banking, insurance, and education etc. caused erosion of private investor confidence. Furthermore, economy and stock market was kept closed to the foreign as well as local private investors (Husain, 2010). Prior to 1990s, both money and capital markets were highly underdeveloped, inactive and virtually nonexistent because of strong governmental control (Khan and Qayyum, 2007). Hence, KSE remained almost flat till 2000 (Clark *et al*., 2008). However, from 1991 onward, government realized the importance of foreign and local private investors by introducing

liberalization policies. These steps in 1990s improved the stock market through rebuilding the investor confidence and providing investment amiable environment but the nuclear tests in 1998 resulted in number of sanctions on Pakistan by the international community; which consequently harmed Pakistan's economy and stock market (Hussain, 2005; Iqbal, 2012).

Table 1.1: KSE Progress from 1950-2000

KSE Progress (Decade-Wise)			
Years	No. of Firms Listed	Total Capital of Listed Firms (Rs in Million)	Market Capitalization (Rs. In Million)
1950	15	117	-
1960	81	1,008	1,871
1970	291	3,865	5,658
1980	314	7,630	9,767
1990	487	28,056	6,1751
2000	762	236,459	382,730

***Source**: State Bank of Pakistan*

Table 1.1 above shows the developments of stock market from 1950 to 2000. Karachi Stock Exchange (KSE) began with an index of 50 companies; but with the increase in number of listed companies (see table 1.1); KSE index was changed to 100 companies in 1991 to make it more representative. KSE-100 index is a capital weighted index (Khan and Rizwan, 2008). KSE-100 index is considered as the most prevalent standard of the stock market situation since its inception in 1991. KSE showed flat picture from 1950 to 2000 (see table 1.1) and remained inactive as the market capitalization was very low before 2000 (Clark *et al*., 2008).

1.3.2 Stock Markets in Pakistan (2001-2012)

Since the last decade, improvements in regulatory framework have motivated the local as well as foreign investors to invest; resulting in the stock market's exceptional performance (IMF Country Report, 2010). On May 04, 2012,

591 companies were listed on KSE, with paid-up capital of Rs.1059.087 billion (US$11.66 billion) and an average market capitalization of Rs.3730.489 billion (US$41.09 billion) (Economic Survey, 2011-2012). The companies listed at KSE have been classified into 34 sectors representing almost all sectors of Pakistan's economy. Authorities have taken number of steps to improve the operations of capital market for enhancing the progression and solidity of financial sector and capital market in Pakistan (Iqbal, 2012). These steps included, implementing the code of corporate governance, establishing code of conduct for brokers, control through circuit breakers, electronic entry book system, no restriction on transfer of dividend and capital gain, no prior approval for issuance and transfer of shares to the foreigners, setting up a National Clearing Company to promote clearing and settlement activities (IMF Country Report, 2010; Iqbal, 2012).

In Pakistan, stock market has shown exceptional performance over the last decade (IMF Country Report, 2010). Figure 1.1 shows March end value of KSE-100 index for each year from 2000 to 2011. The factors responsible for such improvements in stock market (particularly from 2000 to 2007) included, decrease in interest rate from 11 percent in 2000 to 9 percent in 2007, mergers and acquisitions (three in telecommunication, five in banking and five in manufacturing), advance payments of expensive debts ($1.1 billion), improving relation with neighbours (improved relations with India), global financial institution's donation coverage ($1.8 billion donation), rescheduling of foreign medium and long term loans ($29.18 billion with Paris Club) and some stability in exchange rate (depreciation of only Rs.3 per dollar from 2000 to 2007) (Economic Survey, 2006-2007). Furthermore, wave liberalization, privatization[2] and deregulation also aided the investors and consequently exerted significant positive influence on stock market's trading volume (Khan and Rizwan, 2008; ADB Report, 2008). Such as, privatization of forty nine firms, reduction in tariff and custom duty, establishment of a tax free zone and free

[2] Pakistan's privatization experience is considered as being among the most successful in South Asia. Privatization picked up in 1999 when a number of structural bottlenecks were removed (for further details see ADB Report, 2008). The Privatization Act 2000 was promulgated, the macroeconomic environment was reformed, regulatory frameworks were established (Regulatory agencies for electricity, oil and gas, and telecommunications were set up and existing regulators such as the SBP and the SECP were strengthened), a Ministry of Privatization and Investment was created, a high-powered Cabinet Committee on Privatization (CCOP) was formed, and the Board of the Privatization Commission was strengthened.

trade agreement with Iran and Sri Lanka, no restriction for expatriation of capital and profits related to FDI and easing foreign currency control. Foreign direct investment is the main driving force improving the performance of capital market during the last decade (IMF Report, 2010). Figure 1.1 shows rise in KSE-100 index from 2000-2001 to 2007-2008; however, from the mid of 2008 onward, downward trend in KSE-100 index is observed. Since as at March 2008, the aggregate market capitalization on KSE stood at $56 billion, which dropped to just $20 billion on January 2009, showing a significant decrease of $36 billion (Economic Survey, 2008-09). However, over the last three years (i.e. 2010, 2011 & 2012) improvement in the performance of banking, oil and gas, chemical and personal goods attracted the foreign investors; which consequently improved the KSE-100 index (Economic Survey, 2011-2012).

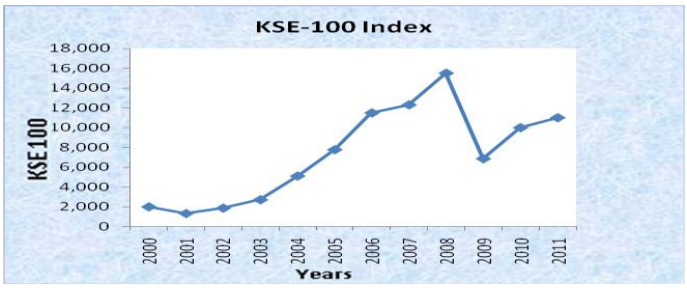

Figure 1.1: KSE 100 Index

However, the Karachi Stock Market is facing several micro as well as macro issues hampering its growth (Ocampo *et al.*, 2008; KSE Report, 2012). They are discussed in detail as follows. Firstly, 35 percent corporate tax rate against just 20-25 percent for partnership/sole-proprietorship is a hurdle for listing on stock market. Secondly, poorly designed Capital Gain Tax (CGT) regime was imposed with the exemption for agriculture sector and Reformed General Sales Tax (RGST) for trading services. Moreover, harassment by tax officials of individuals drove out the retail investor from the stock market. Thirdly, the SBP is yet to focus on establishing robust local secondary market for government debt at retail level. If it happens, the stock exchange can become a luscious retail network for government, helping to reduce cost. Fourthly, the complicacy of Special Convertible Rupee Account (SCRA) throws a major discouragement to the Non-Resident Pakistani to invest in the local stock market. Fifthly, the absence of upgraded electronic system for trading together with settlement and clearing mechanism is a hurdle in gaining momentum.

The sixth issue is related to the lack of systematic and institutionalized plans and efforts to leave Pakistani equity market to the foreign investors and local dispersion (KSE Report, 2012). However, Iqbal (2012) also added that in Pakistani stock market, higher volatility might be attributed to Badla trading together with noise traders and speculators. In a related vein, Ocampo *et al.* (2008) spotlighted an important aspect of market fluctuations particularly in emerging markets like Pakistan- is their short term focus. Short term risk management practices (Persaud, 2000), short term criteria for investment fund evaluation, benchmarking against indices and more recently, the practise of expecting firm announcements of short tern profit forecast (which is highly uncertain), all contributes to the short term bias, influencing the investors behaviour in stock market.

1.4 Pakistan's Industrial Sector

In Pakistan, during late 1980s, the non-conducive regulatory framework and outdated infrastructure created need to improve the financial and industrial sector of the country (Khan and Qayyum, 2007; Asian Development Bank Report (ADB), 1998; 2008). Establishment of private organizations accompanied by the privatization of government owned companies pushed the industry by improving shareholder base and consequently forming an efficient industrial sector with much better orientation (ADB Report, 2008). Pakistan industrial sector went through lot of changes since independence, which are discussed as follows.

1.4.1 Industrial Sector from 1950-2000

Immediately after the independence, government focused on industrial developments with investment in various sectors. These investments included sugar mills, papers mills, energy projects and telephone and wireless equipments (ADB Report, 2008). During 1960s, government focused on machinery sector by establishing Machine Toll Factory and Heavy Mechanical Complex. All these steps

contributed towards industrial sector growth which was in par with Japan and more than Korea and Chine (ADB Report, 2008). However, whole economic scenario changed from 1972 to 1990, after the Nationalization Act 1974. From 1972 to 1977, 3 life insurance firms, 32 basic firms, 26 ghee firms and 4 cotton firms were nationalized (ADB Report, 2008). Subsequently, the economy began to slow down since the private investment evaporated. Declining business activities pushed the government in realizing the importance of private ownership by passing Transfer of Managed Establishments Order (TMEO) 1978. TMEO mainly targeted the return of state owned enterprises to their previous owners (ADB Report, 2008). However, apart from Pakistan Industrial Corporation Units, four small PIA motels and three textile units, no such privatization took place under the cover of TMEO 1978 (ADB Report, 2008). From 1970 to 1990, state control and command over the economic and financial activities led to decline in economic performance because of inefficient allocation of resources (ADB Report, 1998; 2008).

However, in early 1990s, cutback in financial aid by the US (after Soviets defeat) and mismanagement of government owned enterprises forced the process of privatization in the country (ADB Report, 2008). In 1991, government permitted the establishment of private enterprises. Some of the major privatizations from 1991 to 1998 included: Allied Bank, Muslim Commercial Bank, Banker Equity and Habib Credit & Exchange Limited (Year Book, 2005-2006, ADB Report, 2008). Furthermore, State Bank of Pakistan (SBP) initiated various policies to improve the performance of industrial sector of the country. These policies included issuing banking licence to private investors and providing legal cover to private investors against nationalization through Economic Reform Act (ADB Report, 2008). All these steps promoted healthy competition in the economy and increased the efficiency of industrial sector in the country (ADB Report, 1998; 2008).

1.4.2 Industrial Sector from 2000-2012

More policies for reform (see appendix A) have amplified both the direct foreign and domestic investment from 2000-01 to 2007-08 (Economic Survey, 2008;

ADB Report, 2008). Government has focused on privatization, liberalization and deregulation policies; since 1999 (World Bank Report, 2007; ADB Report, 2008). The most prominent among forty nine privatizations included; Pakistan Telecom Limited, Habib Bank Limited, Union Bank Limited, Karachi Electric Supply Company and a number of cement and fertilizer firms (Year Book, 2005-06; ADB Report, 2008). Further, liberalization and deregulation policies included opening almost all sectors to foreign investors, allowing 100 percent foreign ownership, export processing zones, zero rated import of raw material for export manufacturing, reduction in tariff and import duty on 4000 items (Year Book, 2005-06; ADB Report, 2008). Thus Pakistan's industrial sector turned into an attractive and profitable place for the international as well as local investors (Economic Survey, 2006-07).

According to Economic Survey (2006-07), Pakistan's economy achieved significant growth from 2000 to 2007 (e.g. economic growth rose from 2 % in 2000 to 7.5 % in 2007; for further details see Economic Survey, 2006-07). Macroeconomic forces (e.g. interest rate, inflation etc.) improved during that period because of reformed governmental policies (Lorie and Iqbal, 2005; Economic Survey, 2006-07). These policies included; mergers and acquisitions, decrease in interest rate, advance payments of debts, improved relation with neighbours, global financial institution's coverage, rescheduling of foreign loans and a stable exchange rate (Economic Survey, 2006-07). High profitability and growth opportunities in telecom, energy and financial sector during that period attracted foreign investments (Economic Survey, 2006-07; ADB Report, 2008).

Pakistan's economy grew at an average rate of 6% percent per annum from 2000 to 2007 (Economic Survey, 2000-07). It is treated as a gratifying performance due to unusual and extraordinary conditions faced by the economy (Economic Survey, 2000-07). These conditions included: an unusual damage caused by earthquake, political instability in the country, water shortage, law and order situation and also external factors like 9/11 attacks in USA, energy and food shortage (Economic Survey, 2006-07). On one hand, these events threatened the financial stability but on the other hand, they have created new opportunities for Pakistan's economic growth. Since after 9/11 attacks in USA, a significant amount of financial

aid was granted to Pakistan accompanied by heavy foreign direct investment; particularly, in the education, telecom, banking, oil & gas and automobile sectors of the economy. However, from the mid of 2008 onward, Pakistan's economy began to slow down (Congressional Research Service Report (CRS), 2009; IMF Country Report, 2010); Average growth rate for the last four years dropped to just 3% (Economic Survey, 2008-12). Additionally, the Pakistan's economy is facing the unemployment, currency depreciation, rising oil prices, inflation and interest rate along with declining industrial production (CRS Report, 2009; Economic Survey, 2008-11; IMF Country Report, 2010; 2012). Figure 1.2 shows real GDP growth from 2000 to 2011. After achieving ever highest growth of 8.3 percent in 2004-05; decline in GDP growth in 2005-06 was mainly due to widespread damage caused by earthquake in 2005; estimated at Rs. 9.1 billion (Economic Survey, 2005-06; Earthquake Report; 2005). However, in 2006-07; growth accelerated to 7.5 percent due to strong investment taking lead over consumption for the first time in the last three years (Economic Survey, 2006-07). Where after, GDP growth fell was due to internal as well as external problems (Economic Survey, 2010-011). Internally, political instability, weak economic policies and energy shortage and externally; rapid cutback in FDI[3] severely affected the Pakistan's economy (Economic Survey, 2010-11).

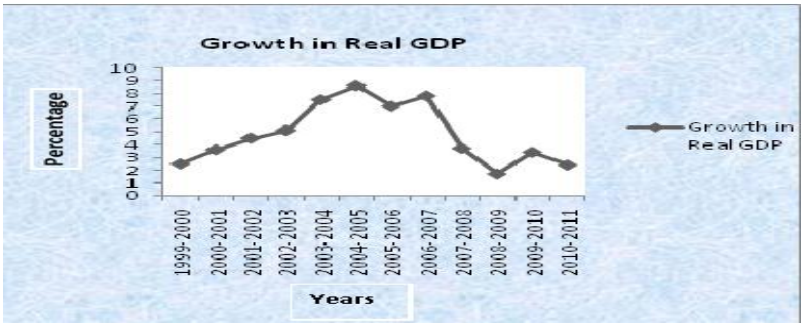

Figure 1.2: Growth in Real GDP

In Pakistan, the manufacturing sector grew by an average of 9% from 2001 to 2007; but decline to an average growth of just 2.3% between 2008 and 2012 (Economic Survey, 2006-12). Construction, fertilizer and automobile industries contributed considerably to the growth from 2001-07 because of extraordinary situations that included the earthquake in 2005, the restoration process of

[3]Foreign direct investment was US$5438 million in 2008 which declined to just $2382 million in 2009 (see figure 1.3 below) (for further details see Economic Survey, 2007-11 & ADB Report, 2008).

Afghanistan and foreign direct investment (Economic Survey, 2006-07). There was a rapid increase in demand for construction material in the earthquake region and in Afghanistan that boosted the construction industry during that period. Furthermore, the commencement of various foreign and local banks in the country aided the growth of several industries; particularly, the automobile industry due to intensified consumer financing (Economic Survey, 2006-07). Manufacturing sector accounted for 60% of the total private sector credit. However, over the last few years manufacturing sector is facing several issues including rapid increase in cost of business operations, security tension, wars against terror, energy shortfall and political instability. (Economic Survey, 2008-12). Figure 1.3 shows foreign direct investment in Pakistan from 2000 to 2011. As shown in the figure, intensive foreign direct investment from 2000 to 2007 has resulted in considerable economic growth during that period (Iram and Nishat, 2009). This considerable rise in foreign direct investment is due to good governmental policies of privatization, liberalization and deregulation during that period (Trevin and Mixon, 2004; IMF Country Report, 2010). However, from mid of 2008 onward, there is significant decline in foreign direct investment (see figure 1.3); which is due to both internal and external problems (UN ESCAP Report, 2009; CRS Report, 2009; Hamdani, 2011). The internal problems include: energy crisis (frequent power shut), security tensions, high borrowing cost[4] and weak economic policies[5]. While, the prominent external force is the financial meltdown at international level because of global financial crisis; that decreased the global demand for commodities and also forced the foreign investors to cut back their investment in Pakistan (Velde, 2008[6]; UN ESCAP Report, 2009; CRS Report, 2009; Economic Survey, 2010-11; Hamdani, 2011). Furthermore, since 2008, one-third of the decline in foreign direct investment is due to low reinvestment returns[7] and two-third is due to low equity inflow (Asiedu, 2002[8]; Hamdani, 2011).

[4] Pan (2003) empirically tested and proved that the security tension and borrowing cost are negatively associated to foreign direct investment.
[5] Cheng and Kwan (2000) empirically verified that the economic policies are positively related to foreign direct investment.
[6] He stated that the cutback in FDI is one of the way through which the global financial crisis has damaged the developing countries.
[7] Reinvestment returns for foreign investors decreased by 75% in 2009 (for further details see Hamdani, 2011).
[8] Asiedu (2002) empirically proved that the reinvestment return is positively associated with foreign direct investment.

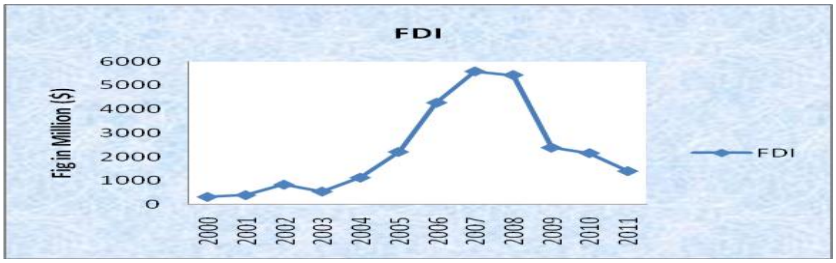

Figure 1.3: Foreign Direct Investment

More so, in case of oil substitute sector (i.e. Gas & Water), due to rising oil prices, government decided to decrease the gas price by almost 40% with the intentions of providing an alternative source of energy at a cheaper rate for boosting the businesses in the country (State Bank of Pakistan (SBP), 2012). Consequently, the significant fall in the gas prices damaged the profitability of gas providing firms (SBP, 2012). Further, the Oil & Gas sector performed well due to rising oil prices in the country. However, the lack of energy generation plans by the government has put the Electricity sector under strong stress over the last six years due to growing electricity demands and rising supply-demand gap in the country. As a result, several business units shifted to other countries e.g. Bangladesh, Malaysia and Thailand etc (SBP, 2012; ADB Report, 2008; 2012; IMF Country Report, 2010; 2012). Further, Electricity sector is also victim of increasing corporate governance issues (e.g. see IMF Country Report, 2010). Whereas, for Personal Goods and Food Producer sectors; the extra ordinary situation including: energy shortage, electricity shutdown, rising fuel prices, lack of R & D regarding cotton, lack of modernized technology, lack of new investments, cuts in demand for Pakistan's cotton by EU and USA, lack of efficient supply chain management and bad planning by the government added momentum to the decreasing profitability. Consequently, resulting in closure of various units and shifting of several ones to the other countries (SBP, 2012; ADB Report, 2008; 2012; IMF Country Report, 2010; 2012; Textile Sector Report, 2012). Next, owing to rapid growth, Oil & Gas sector overall dominated in the preferences of foreign investors; however, over the last five years a drift in FDI from Oil & Gas sector to other sectors was quite evident (IMF Country Report, 2010; 2012; Economic Survey, 2011-2012). Further, in the case of Fixed Line Telecom sector, severe competition and huge investments shifted the consumer demand from fixed line to the mobile systems (SBP, 2012; ADB Report, 2008). However, Industrial Metal & Mining sector suffered from several problems such as slack of geological

data basis, experienced management, capital resources and finally and most importantly the lack of infrastructure and security are the leading issues (Economic Survey, 2011-2012). The survey also added that the fall in domestic demand for their products has significantly and negatively affected their growth.

In Chemical sector, however the problem of shortage of natural gas (used as raw material for manufacturing as well as for plant fuel), hampering the productivity and profitability (Economic Survey, 2011-2012). Similarly, in Auto & Parts sector; the factors like protection through high importing duties and other barriers to entry and competition along with low skilled and unproductive labour force render it inefficient and uncompetitive (ADB Report, 2008; MIPSGP Report, 2008). Non-tariff shelter for both domestic assembler and producers resulted in small and inefficient domestic firms, the reports further added. Moreover, the sectors namely: Personal Goods, Food Producer, Gas & Water, Chemical, Pharma & Bio, Industrial Metal & Mining, Construction & Material, Auto & Parts and Electricity are relatively facing higher external debt (SBP, 2012; Economic Survey, 2010-2012). Further, General Industrial, Pharma & Bio and Household Goods sectors are victim of long lasting issues of energy shortage causing underutilization of plants and rising input cost, leaving them less competitive in the market, consequently damaging their profitability (ADB Report, 2008; Economic Survey, 2011-2012). However, Construction & Material sector is the victim of well known energy crisis together with demand-supply mechanism, adversely affecting the productivity and resulting in profit volatility (IMF Country Report, 2010; 2012; Economic Survey, 2011-2012).

The financial sector in Pakistan mainly constituted of non-life insurance, life insurance, banking and financial services sectors. Exceptional performance of financial sector (i.e. an average growth of 21%) has contributed significantly to uplift the economic growth and to keep the economy at a competitive position. Furthermore, it has compensated for the lethargic growth of manufacturing and agriculture sector (Economic Survey, 2000-2011; ADB Report, 2008). An average growth of 21% (2001-2007) puts the financial sector as a leader to keep the economy closer to competitive growth rate[9] (Economic Survey, 2006-07). However, from

[9]There was an overall average growth of 6% from 2000 to 2007 (for further details see Economic Survey, 2006-07).

2008 onward financial sector showed declining growth mainly subject to cutback in foreign direct investment[10], due to global financial crisis (Velde, 2008; Economic Survey, 2010-12). On the other hand, financial sector's growth increased consumer financing; which resulted in increase in consumer spending and consequently created an extraordinary inflationary pressure (an average 15%) together with steep rise in supply of money[11] (Economic Survey, 2010-12). More so, Banking sector is vulnerable due to significant rising NPL's (bulk are with Personal Goods and Foods Producers sectors) and holding of government securities (IMF Report, 2012). Although government securities raises bank's liquidity and capital ratios but yet are subject to market value variations and are drying out private sector credit from the economy, the report noted. While, the Banking, Financial Services and Non-Life Insurance sectors are also involved in lending to, holding of corporate bonds and selling of insurance products to non-financial firms (IMF Report, 2012).

The financial sector has achieved magnificent growth over the last decade, playing key role for the economic growth and development of Pakistan (ADB Report, 2008; IMF Country Report, 2010). However, it went through some serious corporate governance issues including the group structure and complex ownership (IMF Country Report, 2010). The key issues include: (i) dominance of controlling shareholders directors over board proceedings, (ii) lack of board independence, (iii) preferential treatment of shareholders, and (iv) facilitating the group concerns through channelling financial resources (IMF Country Report, 2010). Further, the financial sector also suffers from: lack of compliance with and violations of corporate governance practices, unfair issue of credit to the sectors, cheap loans to targeted priority sectors, loose credit controls, infected lending portfolio and inefficient governmental policies (IMF Country Report, 2010; 2012; Hameed *et al.*, 2013). However, the non-financial sector in Pakistan has not performed up to the benchmark (ADB Report, 2008; IMF Country Report, 2010; 2012). The key factors include corporate governance (group structure and complex ownership), serious energy shortage and security tensions accompanied by bad governmental policies and political instability (ADB Report, 2008; IMF Country Report, 2010; 2012).

[10]Foreign direct investment in financial sector decreased from US$ 1864 million in 2007-08 to just US$163 million in 2009-10.
[11]Money supply increased from Rs. 36, 24885 million in 2007 to Rs. 76, 41800 million in 2012.

Both the financial and non-financial sectors run together and act as a pillar for each other's supports in an economy. Therefore, any shock to one sector can flow the other. Hence, summing it up; both of these sectors (directly or indirectly) have been put under some stress due to security threats, energy shortage, rising energy prices, corporate governance issues (complex ownership and group structure), lack of compliance with and violations of corporate governance practices, inequitable issue of credit to the sectors, cheap loans to targeted priority sectors, loose credit controls, infected lending portfolio and inefficient governmental policies (IMF Country Report, 2010; 2012; Hameed *et al.,* 2013).

More so, Pakistan is involved in the exports of chemical, surgical, pharmaceutical, guar, cement, engineering, leather products and textile products to various countries around the globe (Economic Survey, 2011-2012). Exports are considered as one of the key factor in promoting and stabilizing the economic growth of a country. Pakistan is the eighth largest exporter of textile products in Asia. Whereas, over the last few years; a decline in exports (relative to other developing countries mainly India and China) can be attributed to several obstacles faced by the exporting firms in Pakistan. The lack of skilled labours, lack of availability of cheap fuel particularly the electricity, and quality certification are the key factors adversely affecting their performance (Amjad e*t al.,* 2012). Institutional rigidness, weak physical infrastructure, lack of general business environment and market imperfection also added fuel to the declining performance of the exporting firms (Amjad e*t al.,* 2012). However, by way of comparison; despite of these issues, one can argue that exporting firms in Pakistan performed better than the non-exporting firms (IMF Country Report, 2010; 2012; Economic Survey, 2011-2012). The reasons can rest on the conclusions of financial literature stating that the exporting firms have better payment mechanism for workers and managers, are more R&D oriented, have more experienced management, have faster growth rate, have larger customer base, have large and diversified suppliers, have strong financial bases, have more research resources, are more productive and are better in developing strategies in contrast to their non-exporting counterparts (e.g. see McDougall, 1989; Westhead, 1995; Farinas and Marcos, 2006; Hagemejer and Kolasa, 2011). More so, exporting firms are relatively larger in size as compared to non-exporting firms due to larger customer base, more exposure to various and diversified markets, large productivity

and profitability (IMF Country Report, 2010). Further, owing to their access only to local market; specifically from the context of Pakistan, significant decline in the performance of non-exporting firms can be attributed to: ever growing energy problem, political instability, corruption, lack of infrastructure, rapidly rising production cost, serious security threats and bad governmental policies (Ministry of Commerce Report, 2009; IMF Country Report, 2012; Economic Survey 2011-2012). However, on the contrary, more experienced management, strong financial bases, more research resources and better strategies (McDougall, 1989; Westhead, 1995; Farinas and Marcos, 2006; Hagemejer and Kolasa, 2011); place the exporting firms in a better position to cater these issues in contrast to their non-exporting counterparts.

1.5 Problem Identification

Pakistan economy emerged prominently[12] in the world in terms of growth and development during the last decade but started to crumble over the last few years (ADB Report, 2008; IMF Country Report, 2010; Economic Survey, 2010-11). It is subject to both internal and external factors. Internally, government furnished various inducements to both foreign and local investors with improved regulatory framework[13] (Economic Survey, 2006-07; ADB Report, 2008). While, the most prominent external force includes 9/11, serving as a foundation to attract huge amount of foreign investment and financial aid (Yousuf *et al.*, 2008; Akbar and Kundi, 2009; Economic Survey, 2006-07). Foreign direct investment can significantly contribute to the macroeconomic stability of a country (Lemi, 2004; Khan, 2007; Yousaf *et al.*, 2008)[14]. Direct foreign investment has appeared as a prominent force in economic growth and stability of Pakistan through transfer of technology, capital formation, improving human capital, enhancing the managerial skills, expanding the infrastructure facilities and integrating the global trade

[12] Pakistan enjoyed economic growth of 7.5% in 2007 which was almost in par to Malaysia, Singapore and Philippines and was more than Seri Lanka and Thailand.
[13] See appendix A (for further details see Economic Survey, 2006-07; ADB Report, 2008).
[14] They all empirically proved that FDI is positively related to economic growth.

(Miyamoto[15]; Economic Survey, 2006-07; Yousaf *et al.*, 2008; Blalock and Gertler, 2008[16]). Over the last decade, policy makers have liberalized the regulatory framework for foreign investors and provided investment friendly economic policies[17] in order to attract and encourage the foreign investment in the country (Year Book, 2005-06; ADB Report, 2008). These policies included opening almost all sectors to foreign investors, allowing 100 percent foreign ownership, export processing zones, zero rated import of raw material for manufacturing, free trade agreements, reduction in tariff and custom duty on 4000 items (Year Book, 2005-06; ADB Report, 2008). Hence, Pakistan has emerged as an attractive place for foreign investors (Economic Survey, 2006-07; ADB Report; 2008).

In Pakistan, intensified financial aid and foreign direct investment have significantly strengthened several macroeconomic factors and eased various restrictions to the economy (Tashrifov, 2005[18]; Economic Survey, 2006-07; ADB Report, 2008; IMF Country Report, 2010). Sectors opened to foreign investors include: oil & gas, communication, financial business, textile, trade, construction, chemical, transport, food and beverages, automobile (Economic Survey, 2006-07; ADB Report, 2008). Among others, food and beverage, oil & gas, financial and communication sectors were preferred by the foreign investors. These sectors accounted for more than 80 percent of total foreign direct investment (Economic Survey, 2006-07; ADB Report, 2008; IMF Country Report, 2010).

Foreign direct investment increased significantly from 2001 to 2007, reflecting tremendous trust of foreign investors in Pakistan's economy during that period (ADB Report, 2008; IMF Country Report, 2010). However, over the last few years; considerable decline in foreign direct investment is evident after the peak till to the year of 2007 (see figure 1.3). This decline in foreign direct investment is due to both internal and external problems (Velde, 2008; UN ESCAP Report, 2009; Economic Survey, 2010-11; Hamdani, 2011)[19]. Manufacturing sector is producing

[15] Miyamoto (2001) concluded that the foreign direct investment significantly improves the human capital in host country (for further details see OECD Report, 2001).
[16] Blalock and Gertler, (2008) empirically verified that the transfer of technology and foreign direct investment are positively associated.
[17] For further details see appendix A on investment incentives in Pakistan.
[18] Tashrifov (2005) empirically proved that the foreign aid has strong positive impact on economic growth of developing countries including Pakistan.
[19] For further details see Figure 1.3 along with the explanation.

low quality products, creating customer dissatisfaction and consequently reducing the market share at international level, therefore causing a considerable decline in its average performance, particularly during the last 3-4 years[20] (ADB Report, 2008; Economic Survey, 2006-011). In addition, growing energy shortage (frequent power shut), increasing political instability, lack of long term financing, rapid increase in cost of business operations and rising internal security tension are the prominent internal forces that recently damaged the manufacturing sector's performance in the country (ADB Report, 2008; Economic Survey, 2010-011). Among manufacturing; Gas & Water, Oil & Gas, Personal Goods, Food Producer, Fixed Line Telecom, Industrial Metal & Mining, Chemical, Auto & Parts, General Industrial, Pharma & Bio, Construction & Material and Household Goods sectors have faced several issues [21] that adversely affected their performance (ADB Report, 2008; 2012; MIPSGP Report, 2008; IMF Country Report, 2010; SBP, 2012; Economic Survey, 2011-2012).

An efficient service sector is a prerequisite for strong economic growth **(**Tandrayen-Ragoobur, 2010)[22]. In Pakistan, service sector has furnished considerable support to maintain and strengthen the economic growth[23] (ADB Report, 2008; IMF Country Report, 2010; Economic Survey; 2010-11). Financial sector appeared as progressive and vibrant force driving the economy (Jalil and Maa, 2008; Khan and Khan, 2007;[24]; ADB Report, 2008; Economic Survey; 2006-07). Rising financial needs of emerging economy and financial sector improvements have fuelled the financial sector growth and set it as main stimulator of Pakistan's economy (Khan and Khan, 2007; Jalil and Maa, 2008[25]; Economic Survey; 2006-07; IMF Country Report, 2010). Yet, as discussed in detail in previous section, financial sector in

[20] The average growth rate for the last four years drops to just 2.3% as compared to the average growth of 9% from 2001 to 2007 (For further details see ADB Report, 2008; Economic Survey, 2006-011).

[21] All the issues faced by these sectors have been discussed in detail in previous section (i.e. section 1.4.2)

[22] Tandrayen-Ragoobur (2010) empirically tested and proved that the service sector of a country significantly contributes to the economic growth.

[23] Service sector contributed 52% to the GDP in 2007-08 (for further details see ADB Report, 2008, Economic Survey, 2007-08; IMF Country Report, 2010).

[24] Jalil and Maa, (2008) and Khan and Khan, (2007) empirically proved that the improvements in financial sector are positively associated with economic growth and financial sector has contributed significantly to economic growth of Pakistan particularly from 2000-01 to 2007-08.

[25] For further details see the empirical study of Khan and Khan (2007) and Jalil and Maa (2008) together with Economic Survey (2006-07) and IMF Country Report, (2010).

Pakistan is exposed to serious corporate governance issues accompanied by unfair issue of credit to the sectors, cheap loans to targeted priority sectors, loose credit controls and infected lending portfolio (IMF Country Report, 2010; Hameed *et al.,* 2013). However, Banking sector is vulnerable due to significant rising NPL (bulk are with Personal Goods and Foods Producers sectors) and holding of governmental securities (IMF Report, 2012). In Pakistan, monetary system liberalization[26] has aided the significant growth of money market. An energetic money market furnishes solidity to financial system by fulfilling the liquidity requirements at competitive rates and with much ease (Economic Survey of Pakistan, 2009-10). Increase in money supply, rise in production of industries and continuous inflationary pressure are some of the main macroeconomic forces that are generated by rapid financial and real sector growth. Further, as discussed in earlier section, both the financial and non-financial sectors run together and act as a pillar for each other's supports in an economy. Therefore, any shock to one sector can flow the other (ADB Report, 2008; IMF Country Report, 2010; 2012; Hameed *et al.,* 2013). Exporting is one of the critical elements in the growth and stability of an emerging economy. In Pakistan, over the last few years; a decline in exports can be attributed to several obstacles[27] faced by them (Amjad e*t al.,* 2012). However, relatively; the exporting firms in Pakistan performed better than the non-exporting firms (IMF Country Report, 2010; 2012; Economic Survey, 2011-2012)[28].

For a developing country like Pakistan, firm size and age can be flag rising in the debate of economic and financial stability and growth. Since, small and young firms can play a significant role in the economic growth and development of a country (Khan, 2005). In the spotlight of World Bank Survey in 2007 and 2010; in Pakistan, particularly the small and new ones are facing several obstacles. The top ones rest on electricity shortage followed by serious corruption and crime. The report further noted that access to finance; land and tax rates are also hindering their performance (World Bank Survery, 2010; Afraz *et al.,* 2013). Hussain *et al.* (2012)

[26] These liberalizations include; out of the court settlements of NPLs, banks are allowed to establish separate subsidiary to function as mutual funds, asset management companies and venture capital, relaxing the marginal requirements, reserve requirements and interest rate.(For further details see Khan and Khan (2007) and Economic Survey of Pakistan).

[27] All these obstacles faced by exporting firms have been discussed in quite detail in the previous section (i.e. section 1.4.2). For further details see Amjad e*t al.,* (2012).

[28] The possible reasons for such better performance of exporting than the non-exporting firms in Pakistan have been discussed in quite detail in the previous section.

determined that these obstacles resulted in lost of 10 percent of the annual sales on average. Adding together, Sherazi *et al.* (2013) identifying the major obstacles for the small firms in Pakistan, also ranked corruption [29] at the top followed by technological and infrastructure issues. Realizing the importance of small and young enterprises in an economy, recently Pakistan has been engaged in various steps for their development; such as, approval of SME policy and setting up of SMEDA as a separate agency for the development of small businesses. SMEDA took various steps including human resource development, infrastructural improvements and technological upgrading (Economic Survey, 2011-2012). In addition, SMEDA collaborated with international agencies such as, JICA in Japan, SEC in Germany, APO in Asia and local experts to furnish technical assistance to small enterprises in Pakistan (Economic Survey, 2011-2012). Nevertheless, owing to all these steps, despite of all the issue, small and young firms contributed reasonably to the Pakistan economy (around 32% to the GDP) (Economic Survey, 2011-2012).

In Pakistan, Karachi Stock Exchange (KSE) is the largest and the oldest stock exchange which is measured through KSE-100 index. Recently, KSE has made many achievements and remained among the top exchanges round the globe in terms of performance (IMF Country Report, 2010). On May 04, 2012, there were 591 companies listed on KSE, with paid-up capital of Rs.1059.087 billion (US$11.66 billion) (Economic Survey, 2011-2012). The KSE-100 index had 13801 points as on June 30, 2012, after achieving record summit of 15,677 points as on April 16, 2008. The KSE-100 index was just 1200 points at the start of last decade. Aggregate market capitalization as on May 04, 2012 stood at Rs.3730.489 billion (US$41.09 billion) as compared to June 30, 2007 figure of Rs.4019 billion (US$66.4 billion), a decline of Rs.288.511 billion (a decline of US$ 25.31 billion due to currency depreciation); however, aggregate market capitalization was Rs.392 billion (US$7.6 billion) at the beginning of last decade (Economic Survey, 2000-2012). The forces such as: decrease in interest rate, advance payment of debts, improvement in relation with neighbours, mergers and acquisitions, global financial institution's coverage, rescheduling of foreign loans and some stability in exchange rate contributed

[29] Most common form of corruption is the inappropriate application and interpretation of the policies across the government offices. It includes policies related to the licensing, labour and tax etc. Firms are forced to pay huge bribe payments to get their matters done (Hussain *et al.*, 2012; Afraz *et al*., 2013).

significantly to prospering conditions in the market (Economic Survey, 2006-08). Furthermore, private investors were stimulated by liberalization, deregulation and privatization policies, consequently influencing the stock exchange performance during that period (Khan and Rizwan, 2008; ADB Report, 2008). Exceptional corporate earnings during that period specifically, in financial and banking sectors; also motivated the foreign investors to focus on the equity market (Economic Survey, 2006-07; ADB Report, 2008). On the other hand, the Karachi Stock Market is also facing several micro as well as macro-structural issues along with short term bias, hampering its growth and can cause high volatility (Ocampo *et al.*, 2008; KSE Report, 2012) [30].

An advance and efficient equity market is the strength of an economy, since the existing studies (e.g. see Brasoveanu *et al.,* 2008) [31] documented significant positive association between stock market and economic growth of a country. Capital markets are the most prominent component of financial system (Mala and White, 2006). A well developed equity market provides a platform to allocate the long term resources of the economy from the saver to the potential investor. It mobilizes the foreign and local funds and directs them to foster the business activities in the country. Hence, it is recognized that the growth and development of an economy is heavily dependent on stock market efficiency (Brasoveanu *et al.,* 2008). Globalization of economies is forcing the national financial markets to integrate, which is fruitful for global economic growth but such integration can expose the economies to crisis; specifically, if it emerges from giant markets (Mishkin, 2001; Schmukler *et al.*, 2005 [32]). Before the world financial crisis of 2007-08, world economy recorded significant growth (Obstfeld and Rogoff, 2009). This growth was accompanied by the easy access to financial resources, expansion of international trade and financial flow, generally low inflation and widespread growth enjoyed by the developing countries with the absence of crisis (Obstfeld and Rogoff, 2009)[33]. During the first seven years of last decade, Pakistan's economy enjoyed significant

[30] All these problems faced by KSE have been discussed in quite detail in the previous section (i.e. Section 1.3.2). For further details, see (Ocampo et al.,, 2008 and KSE Report, 2012)

[31] These studies (e.g. see Brasoveanu *et al*., 2008) empirically proved that the stock market improvements and economic growth has strong positive association.

[32] They concluded that the countries with weak fundamentals are more prone to crises as they become subject to the reaction of domestic and international markets.

[33] For further details see Obstfeld and Rogoff (2009).

growth together with exceptional historical achievements of stock exchange market. However, over the last few years, macroeconomic indicators are exhibiting negative signals as inflation is climbing, currency is depreciating, industrial production is decreasing, oil prices are mounting and interest rate is rising (CRS Report, 2009; Economic Survey, 2008-11; IMF Country Report, 2010; 2012).

In line with the macroeconomic indicators, at the same time stock market, after a record achievement of 15,677 points as on April 16, 2008, closed at 13,801 points as on June 30, 2012. The stock exchange market and macroeconomic indicators were growing parallel to each other (IMF Country Report, 2010). This side by side movement of stock market performance and macroeconomic indicators demands an examination of the relationship between them. Furthermore, according to Bekaert and Harvey, (1997); in emerging markets, investors are most likely to make their decision on the basis of local economic and market conditions. Hence, it is very crucial to investigate the association of economic factors with stock returns particularly at the firms along with sectoral and aggregate market level for effective decision making.

These macroeconomic uncertainties along with various firm's feature specific issues in Pakistan generates serious concerns regarding the stock returns volatility, risk-return relationship and asymmetry and leverage effect. Since literature (e.g. see Bollesrev *et al.* 1992; Elyasiani and Mansur, 1998) is of the view that macroeconomic changes are the major sources of stock market volatility that can cause the stock market to plunge. It is a widely held belief among the scholars (e.g. see Mandimika and Chinzara, 2012) that the volatility is a measure of risk. Furthermore, the asymmetric volatility of economic factors theory strongly claims that the leverage effect in stock market can be due to the under-forecasting of future economic factors growth rate in an economy. Hence, it can be conjectured that all these three main issues of stock returns (i.e. economic exposure, volatility dynamics and pricing of risk) are closely interrelated and demands a detailed investigation. Thus, it is also worthy to inspect the stock returns volatility, its persistence, mean reversion and speed of mean reversion of volatility together with pricing of risk and asymmetric & leverage effect.

As far literature is concerned, it is indeed noticeable that the existing scholars have highly overlooked this potential research gap inspite of its importance as alluded above. For instance the existing literature regarding all the three dimensions of stock returns (i.e. economic exposure, pricing of risk and various volatility dynamics) is only limited to aggregate market (most) or sectoral level (few) stock returns (*c.f.* Ewing *et al.,* 2005; West and Worthington, 2006; Akbar and Kundi, 2009; Rahman *et al.,* 2009; Le and Youngho, 2011; Carroll and Connor (2011) and Elyasiani *et al.* 2011; Jiranyakul, 2011 and Mandimika and Chinzara, 2012) Whereas, the aggregate market as well as sectoral level analysis is highly elusive and deceptive (Ewing *et al.,* 2005; Khan *et al.,* 2014a). Furthermore, the presented studies also ignored the potential avenue of firm feature's effect with respect to all these dimensions of stock returns. Hence, due to the negligence of existence studies along with recommendations of the literature (e.g. Ewing *et al.,* 2005; Mandimika and Chinzara, 2012; Khan et al., 2014 a, b), this study is aiming to close this potential research gap.

1.6 Research Questions

This study investigates what, if any, is the association between macroeconomic indicators and stock returns. More so, current study also explores the stock returns volatility, its persistence, mean reversion and speed of mean reversion of volatility along with pricing of risk and asymmetry and leverage effect. Further, this study also examines the lagged effect of economic factors on stock returns. Specifically, to examine the following:

1. What is the impact of economic factors on each of the firm and sectoral together with aggregate market level stock returns? And how does their impact on stock returns vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature (exporting vs. non-exporting), firm business nature (financial vs. non-financial), and sectoral location of the firm).
2. Is the risk a priced factor at each of the firm and sectoral besides aggregate market level stock returns? And does the pricing of risk vary with respect to

firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).

3. Is there any asymmetry & leverage effect at each of the firm and sectoral along with aggregate market level stock returns? And how does it vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).
4. What are the volatility dynamics (i.e. volatility, persistence, mean reversion and speed of mean reversion) at each of the firm and sectoral together with aggregate market level stock returns? And how do these dynamics vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).
5. What are the differences regarding various volatility dynamics (volatility, persistence, mean reversion and speed of mean reversion) between firm and aggregate market level stock returns? And does the firm characters effect play any role in this manner (i.e. firm size, firm age, firm trading nature, firm business nature and sectoral location of firm).
6. Do economic factors hold any lagged effect on each of the firm and sectoral besides aggregate market level stock returns? And how does it vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).

1.7 Objectives of the Study

This empirical research study underlines the following key objectives:

1. To examine the impact of economic factors on each of the firm and sectoral together with aggregate market level stock returns and also to explore the variations in their impact on stock returns with respect to firms characteristics (i.e. firm size, firm age, firm trading nature (exporting vs. non-exporting), firm business nature (financial vs. non-financial), and sectoral location of the firm).
2. To investigate the pricing of risk at each of the firm and sectoral besides aggregate market level stock returns and also to explore the variations in pricing

of risk with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).

3. To investigate the asymmetry & leverage effect at each of the firm and sectoral along with aggregate market level stock returns and also to explore its variations with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).
4. To examine the volatility dynamics (i.e. volatility, persistence, mean reversion and speed of mean reversion) at each of the firm and sectoral together with aggregate market level stock returns and also to explore the variations in these dynamics from the point of view of firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).
5. To investigate the differences regarding various volatility dynamics (volatility, persistence, mean reversion and speed of mean reversion) between firm and aggregate market level stock returns and also to untie the role of firm characters effect in this manner (i.e. firm size, firm age, firm trading nature, firm business nature and sectoral location of firm).
6. To investigate the lagged effect of economic factors on each of the firm and sectoral besides aggregate market level stock returns and also to explore the role of firms characters effect in this regard (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).

1.8 Mapping the Research Questions and Objectives

Table 1.1 below displays the focus of the study together with respective research questions and their objectives. The first focus of the study is to explore the economic exposure of stock returns, followed by the second and third focus examining the pricing of risk and asymmetry and leverage effect of stock returns, respectively. However, the fourth aim of the study is to investigate the various volatility dynamics of stock returns. Furthermore, the fifth and sixth focus of the study is to examine the various volatility dynamics and the difference between firm level and aggregate market volatility, respectively. While, the last focus is to

examine the lagged effect. All these focuses of the study are matched with their respective research questions and objectives set for the study.

Table 1.2: Focus, Research Questions and Objectives of the study

Focus	Research Question	Research Objective
Economic Exposure	What is the impact of economic factors on each of the firm and sectoral together with aggregate market level stock returns? And how does their impact on stock returns vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).	To examine the impact of economic factors on each of the firm and sectoral together with aggregate market level stock returns and also to explore the variations in their impact on stock returns with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).
Pricing of Risk	Is the risk a priced factor at each of the firm and sectoral besides aggregate market level stock returns? And does the pricing of risk vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).	To investigate the pricing of risk at each of the firm and sectoral besides aggregate market level stock returns and also to explore the variations in pricing of risk with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).
Asymmetry and Leverage Effect	Is there any asymmetry & leverage effect at each of the firm and sectoral along with aggregate market level stock returns? And how does it vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).	To investigate the asymmetry & leverage effect at each of the firm and sectoral along with aggregate market level stock returns and also to explore its variations with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).

Continue....Table 1.2: Focus, Research Questions and Objectives of the study

Focus	Research Question	Research Objective
Various Volatility Dynamics	What are the volatility dynamics at each of the firm and sectoral together with aggregate market level stock returns? And how do these dynamics vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).	To examine the volatility dynamics at each of the firm and sectoral together with aggregate market level stock returns and also to explore the variations in these dynamics from the point of view of firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).
Difference between firm level volatility and aggregate market volatility	What are the differences regarding various volatility dynamics between firm and aggregate market level stock returns? And does the firm characters effect play any role in this manner (i.e. firm size, firm age, firm trading nature, firm business nature and sectoral location of firm).	To investigate the differences regarding various volatility dynamics between firm and aggregate market level stock returns and also to untie the role of firm characters effect in this manner (i.e. firm size, firm age, firm trading nature, firm business nature and sectoral location of firm).
Lagged Effect	Do economic factors hold any lagged effect on each of the firm and sectoral besides aggregate market level stock returns? And how does it vary with respect to firms characteristics (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).	To investigate the lagged effect of economic factors on each of the firm and sectoral besides aggregate market level stock returns and also to explore the role of firms characters effect in this regard (i.e. firm size, firm age, firm trading nature, firm business nature, and sectoral location of the firm).

1.9 Significance of the Study

Literature shows variety of studies investigating the aggregate stock market returns and macroeconomic forces association concerning, particular economic and political situations[34]. Further, most of the previous studies round the world including

[34] These conditions include focusing only on 9/11, real estate or property conditions or specific economic factor that represents specific economic condition such as output, trading volume, monetary

Pakistan have been focusing on the aggregate market level to examine the relationship (e.g. see Fama, 1981; Mukherjee and Naka, 1995; Ibrahim, 1999; Park, 2007; Ahmed, 2008; Rahman *et al.*, 2009; Buyuksalvarci, 2010; Le and Youngho, 2011). However, market level analysis provides deceptive results and consequently does not provide clear direction for effective decision making (Rehman *et al.*, 2009; Le and Youngho, 2011; Chinzara, 2011). More so, majority of the scholars in presented literature examining sectoral level stock returns primarily focused only on a specific sector (e.g. see Joseph, 2002; Liow, 2004; West and Worthingeton, 2006; Joseph and Vezo, 2006; Chinzara, 2011; Muneer *et al.*, 2011 are among others). Since the relationship between various macroeconomic factors and stock returns have not been well explored specifically, in emerging markets (Lopez-Herrera and Ortiz, 2011) like Pakistan, so it warrants a serious consideration. Turning to various volatility dynamics, asymmetry and leverage effect and risks-returns trade-off, it is quite evident from the extensive literature survey, that across the countries including Pakistan, most of the existing scholars are only limited to aggregate market and/or sectoral level data up-till recent (Sharma *et al.*, 2014 and Khan *et al.*, 2014b), thus leaving the firm level analyses very scarce in this manner[35]. However, firm exposure can be very different because of their heterogeneous nature (Ewing *et al.*, 2005). In this vein, Ewing *et al.* (2005) also stated that even the sectoral level analysis limit our capability to generalize the results, since the firms with considerably different features coexist even in a very narrowly defined sectors. Particularly related to this thesis, Sharma *et al.* (2014) stated that the studies aiming the firm level volatility are very scarce up-till recent. Whereas, Campbell *et al.* (1997), are of the view that abnormal returns are contingent on firm level volatility rather than sectoral or aggregate market volatility. In the view of Malkiel (1979) and Pindyck (1984 and 1988), the unforeseen uncertainty in investment causes the stock market to plunge. Further, the comparison of firm level analysis across the sectors is essentially important as the stock returns of various sectors due to their unique features might display diversified response to any news regarding stock price change (Ewing *et al.*, 2005). Moreover, it is quite worthy for the investors to understand and diversify their

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policy variables (e.g. West and Worthingeton, (2006) and Liow, (2004) focused only on property industry; while; Oertmann *et al.*, (2000), Bessler and Murtagh, (2003), Pan *et al.*, (2007) are among other studies who only focused on exchange rate and interest rate).

[35] For a good discussion motivating all these dimensions of stock returns for this study, see Chapter 2 (Section 2.7.1).

investment between the risky and stable sectors (Mandimika and Chinzara, 2012). In a related argument; Park (2007), Kandir (2008), Rehman *et al.,* (2009) and Le and Youngho (2011) stressed the need for the future research to target the cross sectoral analysis. More so, the literature survey theorizes the importance of examining the differences between firm level volatility and aggregate market level volatility[36]. But subject to scarcity of firm level studies particularly in emerging markets, this potential avenue remains unexplored. Hence, it is worth highlighting here that the existing financial literature specifically in emerging markets overlooked this potential research gap, therefore, the current study focuses separately at each of the firm level along with sectoral and aggregate market level stock returns in order to explore: the impact of economic factors on stock returns; lagged effect of economic factors on stock returns; the stock returns volatility; its persistence; mean reversion and speed of mean reversion of volatility together with pricing of risk and asymmetry & leverage effect.

More so, however, a strong stream of financial literature regarding: firm size and age (e.g. see Moeller *et al.,* 2004; Chun *et al.,* 2008; Loderer and Waelchli, 2010; Jiang *et al.,* 2011 among others); firm nature of business (e.g. see Elyasiani *et al.,* 2007; Mustafa *et al.,* 2009; Hameed *et al.,* 2013 among others); firm trading nature (exporting vs. non-exporting) (e.g. see Westhead, 1995; Yaprak, 2007; Hagemejer and Kolasa, 2011) and sectoral location of the firm (e.g. see Baca *et al.,* 2000; Narayan and Sharma, 2011), theoretically motivates to conclude that the behaviour of stock returns might be quite different with respect to these firms features[37]. Complimenting the firm features, Baker and Wurgler (2006) categorically stated that the investors pick the stocks based on firm characteristics rather than its statistical properties outlined by Markowitz (1959). More so, keeping these firm features as a critical factor in investment and policy decisions, the study of Mandimika and Chinzara (2012) and Khan *et al.* (2014a,b,c) proposed the future research to investigate the firm features in this regard. But unfortunately, up-till now there is no empirical study in this manner (Khan *et al.,* 2014a, b). Hence, the current research thesis is aiming to close this gap.

[36] For a comprehensive and inspirational discussion in this manner, see Chapter 2 (section 2.7.1.8).
[37] For the significance of these firm features for this study, along with extensive literature support therein, please see Chapter 2 (Section 2.7.1).

. In Pakistan, though some research is documented on equity market movements but mostly addressing a particular economic and political situation[38], or evaluating the relation between economic indicators and stock returns only at aggregate market level.[39] While, the other studies including; Saeedullah and Rehman (2005), Butt *et al.* (2010) and Muneer *et al.* (2011), are only limited to some specific sector (i.e. cement, banking and textile). However, Husain (2006) only focused on relation between real sector forces[40] and aggregate stock market prices and Ahmed and Farooq (2008) only reported the impact of the 9/11 on volatility of equity market returns in KSE of Pakistan. More so, in Pakistan; the existing studies modelling the volatility and/or asymmetry & leverage effect are only restricted to aggregate market level data[41]. However, in the light of scientific consensus**,** the aggregate market (e.g. see Park, 2007; Kandir, 2008; Elyasiani *et al.,* 2011; Chinzara, 2011) and even sectoral level (e.g. see Ewing *et al.,* 2005; Khan *et al.,* 2014a) analysis is highly illusive and non-generealizable due to firm's heterogeneity. Therefore, eying this potential research gap, it is first such comprehensive micro (firm level) as well as macro (sectoral and aggregate market level) study in emerging markets like Pakistan.

Primarily, this current research thesis contributes by investigating various dimensions of stock returns (namely: economic exposure of stock returns; stock returns volatility; persistence; mean reversion and speed of mean reversion of volatility together with pricing of risk; asymmetry & leverage effect and lagged effect of economic factors), separately for each of the firm level along with sectoral and aggregate market level stock returns. More so, this is a first empirical attempt achieving a hallmark by further extending this research area and examining all the afore-mentioned dimensions with respect to each of the firms features namely: firm

[38] These conditions include focusing only on 9/11 (e.g. see Ahmed and Farooq, 2008), real sector variables (e.g. see Husain, 2006) or specific economic factor that represents specific economic condition such as monetary policy variables (interest rate, exchange rate and money supply) (e.g. see Husain and Mehmood, 1999; Rizwan and Khan, 2008; Mubarik and Javid, 2009; Akbar and Kundi, 2009).

[39] The presented studies namely Husain and Mehmood (1999; 2001), Nishat and Shaheen (2004), Husain (2006), Rizwan and Khan (2008), Ahmed and Farooq (2008), Akbar and Kundi (2009) and Mohammad *et al.* (2012) only focused at aggregate market level.

[40] These forces include; real sector GDP, investment spending and consumption expenditure (for further details see Husain, 2006).

[41] These scholars include: Hameed and Ashraf (2006), Saleem (2007), Zafar e*t al. (*2008), Mahmud and Mirza (2011), Rashid *et al. (*2011), Qayyum and Anwar (2011), Mushtaq *et al.* (2011) and Ali and Afzal (2012). For further details highlighting motivations in this manner, please see Chapter 2 (Section 2.7.1).

size, firm age, firm nature of business, firm trading nature and sectoral location of the firms; in a rising economy and stock market of Pakistan which is different in its institutional attributes and structure as compared to the developed countries.[42] In this vein, current study further contributes by investigating the differences between firm level volatility dynamics and aggregate market level and also identifying the role of firm characters effect in this regard. The analysis of this research can be valuable and helpful to comprehend the various dimensions highlighted by the study.

So much so, that the outcome of this research can facilitate the policymakers to design effective policies for the economic growth and development of the country. If the macroeconomic factors influence the stock returns; then the crisis in equity market can be prevented and it can be stabilized by controlling the fluctuation in macroeconomic forces to foster the economic growth (Mishkin, 2001; Brasoveanu, 2008).[43] Since investors are primarily interested in a firm level stock; hence, it is very crucial for them to acquaint and understand all these dimensions at each of the firm level together with sectoral and aggregate market level stock returns. More so, it is widely agreed in the financial literature that investors always expect higher returns for holding the risky assets. In this manner, the understanding of all afore-listed dimensions of stock returns is central for any investment decision.

Further, addressing the firm's features, builds much clearer picture for policy makers, portfolio managers and investors by providing them with more comprehensive and better insight of stock returns behaviour in KSE. More so, government can make use of such information to stimulate and pull the equity investment of foreign investors into the country by making stock returns more attractive to the foreign investors (Bekaert and Harvey, 2000[44]). Given the importance of all these aspects, investors can resolve their issues related to asset pricing and portfolio management through timely portfolio diversification and risk

[42] Stock markets in Pakistan was not demutualized (during study period) like the developed countries stock market (e.g. New York Stock Market (NYSE) & London Stock Exchange (LSE)).

[43] Mishkin (2001) focused on factors contributing toward the crisis in financial markets of emerging economies. He concluded that, among others; macroeconomic factors such as exchange rate, interest rate, money supply, foreign exchange reserves and inflation are to be closely focused on, to prevent the crisis in the financial markets (for further details see Mishkin, 2001). However, the existing studies (e.g. see Brasoveanu, 2008) empirically found that the stock market and economic growth are positively associated.

[44] They empirically proved that the foreign portfolio investment is positively associated with macroeconomic growth of emerging economies.

hedging strategies, while, policy makers can develop an effective policy that leads to the economic growth and stability of the country. More so, the policy makers can develop effective policy to control the flight of capital and flow of investment into the market, with the intentions of controlling the financial instability that can consequently trigger the macroeconomic uncertainty.

1.10 Scope of the Study

This research study targeted the firm level together with sectoral and aggregate market level stock returns for determining the impact of economic factors; various volatility dynamics; pricing of risk; asymmetry & leverage effect and lagged effect of economic factors. Further, this study also explores all aforesaid dimensions from the point of view of each of the firm's features (i.e. size, age, nature of business, exporting vs. non-exporting and sectoral location of the firm) This study is generealizable to the other economies keeping in view their own country specific macroeconomic settings. More specifically, this study focuses on Karachi Stock Exchange of Pakistan. Firms listed on KSE are divided into 34 sectors out of which 23 sectors are selected for this research. These sectors are selected on the basis of data availability of equity prices for 169 months. Data for all the variables under consideration is collected for the period of 169 months starting from June 1998 to June, 2012, since it is not possible to have data for majority of firms before 1998. Furthermore, KSE was almost inactive before 1998 since the index was less than one thousand points and market capitalization was very low (Khan and Qayyum, 2007; Clark *et al*., 2008).

1.11 Limitations of the Study

Followings are the limitations of this study:

1. This study focuses on Pakistan's economy and stock market under its own exclusive macroeconomic and financial environment. Hence, this study is applicable to other markets after considering their own country specific macroeconomic and financial conditions.

2. Data for some of macroeconomic variables (e.g. GDP, FDI, and Foreign Exchange Reserve) is not available on monthly basis, therefore; those variables are not addressed in this study although they can have significant impact on stock returns.

1.12 Organization of Thesis

The projected thesis is planned into seven chapters that illustrate and add towards research streams of economic forces and stock returns text, and add to various tools of analysis. The chapters are formulated on each other and are closely associated, and all aspects that have been discussed in each chapter are indispensable part for the construction and execution of a theoretical scaffold on how efficient economic strategies can be developed for economic and financial growth and expansion of the country.

First chapter 'Introduction' displays the background of the study, including an appearance of industrial sector and stock market in Pakistan and justifying opinions to accomplish the study on searching the relationship amid economic forces and stock returns, various volatility dynamics, pricing of risk along with asymmetry & leverage effect and lagged effect of economic factors on stock returns in Pakistan. Statement of the problem, queries and aims of the research has been acknowledged along with the importance, scope, restrictions and sketch of the thesis.

Chapter two provides a discussion of the previous studies investigating the association between stock market and economy, various volatility dynamics, pricing of risk and asymmetry and leverage effect. This chapter provides the necessary theoretical background and empirical support for the thesis. Later in chapter two, the motivations covering various dimensions of the study along with the hypotheses are mentioned.

Chapter three outlines the research methodology. This chapter also discloses the sampling data, data compilation, methodical practice and statistical tools that are used for investigating the equity returns. In fourth chapter of this thesis; all the results regarding individual firm, sectoral and aggregate market level data are explained in detail. It is followed by chapter five that explains the results separately with respect to each of the firm's features. Whereas, chapter six wrapped up the empirical results along with correlating them with the hypotheses established. However, at the end, chapter seven spells the conclusion followed by the recommendations and future implication of the research study.

1.13 Summary

This chapter is an integral part of the research work since it provides an over view of the Pakistani stock market along with the current situation prevailing in industrial sector of the country. Overall, this chapter explains that serious issues in Pakistani stock market and industrial sector that are considerably damaging the Pakistan's economic and stock market performance. In brief, stock market is also going through some micro as well as macro structural issues that are hampering its growth. Thus, this chapter highlights various problems in Pakistan's economy and stock that are not properly answered by the existing literature.

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