PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS

PIDE WORKING PAPERS
No. 148

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January 2017

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PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS
ISLAMABAD
2017

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Designed, composed, and finished at the Publications Division, PIDE.

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ABSTRACT

This study investigates the difference between short and long run aftermarket performance of state owned and non- state owned initial public offerings issued at Karachi Stock Exchange, with the total sample of 72 IPOs out of which 61 are non-state enterprises and 11 state owned enterprises during the period of Mar 2000- June, 2015. Study finds that both groups of IPOs outperforms on first trading day, as average initial market adjusted returns of SOE and non-SOE IPOs are 27.65 percent and 22.53 percent respectively. But the mean difference of both IPOs is not statistical significant and in contrast of asymmetric information theory. In long-run after market performance buy and hold abnormal returns of SOE and non-SOE IPOs 80.457 percent and -91.866 percent respectively, which shows outperformance of SOE while underperformance of non-SOE in long run. Values of SOE and the mean difference values of both groups of IPOs are not statistically significant. By using cross sectional multiple variables with OLS estimation technique, this research also reveals the factors that can significantly influence the underpricing, aftermarket long-run performance of IPOs and comparison of association between underpricing and ownership structure of SOE and non-SOE IPOs. Regression results unveils that firm size, after market-risk level of IPO and subscription ratio are significant factors of underpricing while, first day return, market-volatility and retained ownership are significant factors of aftermarket over 5 years long run performance. Study examines that ownership concentration in both SOE and non-SOE IPOs is similar, and underpricing is positive and significantly related with ownership concentration while firm size and after market risk of issue and ROA also affects ownership concentration.

Keywords: Initial Public Offering, Underpricing, Aftermarket Performance, Non-state Owned Firms, State Owned Enterprises, Capital Structure

1. INTRODUCTION

Companies have several methods of raising long-term capital at their disposal. In choosing a particular method, the problems of capital gearing and the likely impact on the cost of capital must be considered, therefore there is need to obtain the best financing mix or the optimum capital structure. According to Conte and Carr (2001), one of the important method to generate capital is the sale or issuance of common stock. In Initial public offerings (IPOs), the focus of this study, the private company becomes a public concern, when any company raise its capital by selling or issuing its common shares to the general public for the first time and are subsequently traded on the stock market [Barnes and Walker (2006)]. The term privatisation refers to procedures through which a government transfers ownership of assets and control of commercial activities to the private sector.

In order to expand capital IPOs are often issued by smaller, younger companies, but can also be issued by large privately-owned and government owned companies wanted to become publicly traded. Typically, underwriters which are mostly investment bankers, help companies in issuance and subscription of common stocks.

Firms go for IPO process for a variety of reasons. One of the primary reasons are: IPOs formulae the exit strategy for the existent owners: Venture capitalists etc. To meet the higher growth rates and for expansion requirements in multiple nations firms raise its capital through IPO which is a source of an external financing. Consequently it may lead to an increase in market share of the company. Larger firms commence IPO process in order to acquire other organisations for vertical and/or horizontal integration.

Various researchers have been studied IPO characteristics for many decades [Varshney and Robinson (2004)]. They found that underpricing phenomena and ownership structure is an important characteristic of IPO process. These IPOs characteristics significantly influence on the performance in both short and long term.

There are three most imperative anomalies found in the IPOs, the short-run outperformance, the hot issue market phenomenon, and the long-run under performance. This study focused on two main anomalies, the short-run outperformance and the long-run under performance. Large number of theoretical and empirical studies has been done on the IPOs in the past twenty years. They analysed interesting empirical results on the IPOs performance and

found abnormal stock returns both in short-run and in long run, which necessitated a great deal of theoretical work that tried to explain the puzzling phenomena and postulate new hypotheses.

Generally, the firm‘s offer price in IPO is lower than the first day closing market price. In result of this underpricing in IPO, the investors can enjoy high returns. As previous studies found that an average IPO is underpriced [Aggarwal (1993); Loughran and Ritter (2000)]. So it is profitable to buy stock at offer price in short run. The studies indicated very different results in long-run performance of IPOs. Some empirical evidence from U.S and developed countries considered that long run performance of IPOs is based on the overall market performance [Levies (1993); Aggarwal, *et al.* (1993)].

Around the world very few studies have explicitly compared the price behaviour of state owned and non-state owned companies IPOs. Vickers and Yarrow (1988), Jenkinson and Mayer (1988), Jacquillat (1987) and Perotti and Guney (1993) all suggest that underpricing is greater for state owned enterprises (SOE) IPOs than for non-state owned enterprises (non-SOE) IPOs. The empirical evidence of the long-run aftermarket performance of firms going public indicates Private sector IPOs mostly experience a negative abnormal performance over the first three to five years of aftermarket trading, whereas state owned IPOs mostly experience an outperformance in long-ru[1] Aussenegg, (2000). Underpricing played a very vital role in achieving the desired ownership structure. In emerging markets, ownership structure is pivotal in corporate finance [LaPorta, *et al*. (1999)]. After going public firms may opt for concentrated ownership to enjoy private gains, to reduce agency cost problems or may indulge in dispersion of ownership to acquire after market liquidity.

For the companies listed at Karachi Stock Exchange (KSE), IPOs of state-owned enterprises and private sector IPOs have gained momentum in some previous years and the trend is expected to continue into the future as more private companies and state-owned companies are listed. It is therefore important to know if indeed there is any difference in the degree of underpricing or overpricing and the long-run performance of privatisation IPOs and private-sector IPOs in a developing nation like Pakistan. This study distinguishes the association between ownership structure and underpricing for public and private IPOs. As ownership structure is an imperative variable to explain financial phenomes like operating performance with others. In consequences of this we can control firms‘ characteristics that can influence underpricing, ownership structure and liquidity [Pham, *et al.* (2003)]. The study also tries to find the firms characteristics that can determine underpricing and aftermarket performance. Firm size, retention ratio, market volatility, over-subscription, risk, issue size, firms leverage are the factors that can effect firms‘ decisions on underpricing.

[1]Evidence for a significantly positive long-run performance of SOEs is also provided by Choi et al. (2010) and Dewenter and Malatesta (2001).

The main objective of this study is to measure, analyse and compare the IPO performance of short-run for first trading day and the long-run aftermarket performance for first five years of state-owned and non-state owned companies listed at the KSE. The study examines the factors that affect the degree of underpricing and aftermarket performance of state-owned and non-state owned IPOs. Furthermore this study distinguishes the association of ownership structure and level of underpricing for state-owned and non-state owned IPOs.

There is voluminous literature on IPOs around the world, but explicitly work done on comparison of state-owned and non-state owned is scarce. As in Pakistan there is only one study exists, that is by Rizwan and Khan (2007), in which they compared the short and long run IPO performance of state-owned and non-state owned by using a sample of 35 offerings from 2000-2006.

This study contributes to existing literature by comparing and analysing state-owned and non-state owned after market long-run IPOs performance up to three and five years. This is the first study in Pakistan which signifies aftermarket determinants over 5 years for both public and private IPOs. This study also contributes to compare the association between ownership structure and level of underpricing for state-owned and non-state owned by using data of these initial public offerings listed at the KSE from Mar 2001 to June 2015. There is no previous research on comparison of the association between ownership structure and underpricing for SOE and non-SOE IPOs.

As this study is about IPOs it provides information or guide investors, government, researchers, Capital Markets Authority and other regulatory agencies about short-run and long-run performance of initial public offerings. As this study investigates about return patterns of SOE and non-SOE IPOs, which mainly assist investors who invest in stock for speculative purpose. So this study helps them in prudent decision making to know appropriate time of selling of shares and in order to achieve higher returns. This study also guides that which public offerings are better for investment in contrast of both SOE and non-SOE. As a consequence of this active trading occurs in stock market.

With the intention to examine the performance of SOE and non-SOE IPOs the study is structured as follow. Chapter 2 provides overview of activity of initial public offerings and underpricing level in Pakistan and globally. Chapter 3 comprises of literature review. Chapter 4 explains theoretical background and development of Hypothesis. Chapter 5 describes methodological framework, description of variables and data collection sources. The empirical results are discussed in chapter 6. And last chapter 7 concludes the study and gives policy implications.

2. OVERVIEW OF INITIAL PUBLIC OFFERINGS

This section consists of brief overview and historical background of initial public offerings in Pakistan. The comparison of first day underpricing of

SOE and non-SOE IPOs with some other developed and developing countries are also provided.

2.1. Overview in Pakistan's Scenario

The issuance of Initial public offerings is not new proposition in Pakistani capital markets. On April 2, 1949 Karachi Electric Supply Corporation was the first company which got listed at KSE but without any prospectus. In 1953, M/s Hussain Industries firstly introduce issuance of prospectus to get subscription from general public. Due to political instability, disturbance in law and order situation and nationalisation process, the sluggish trend remained in issuance of IPO from 1953 to 1990. However in 1991 various reforms undertaken to strengthen the capital markets. After this most of the private firms increased the issuance of IPOs as they wanted to diversify ownership and elevate financing opportunities. In consequence of this, there is substantial increase in number of IPOs in the duration of 1991 to 1996. The purpose of these reforms which included privatisation policy, is to cover the public and foreign debt, to increase efficiency and transparency in public system privatisation initiated in Pakistan. By the end of 1993 privatisation activities were subsequently amalgamated into one Privatisation Commission. The privatisation process during the Musharraf's regime got some momentum as a result many firms were privatised. Results achieved through privatisation were mixed. In Pakistan the privatisation results achieved are mixed, generally there is no substantial improvement of performance indicators like profitability, leverage, operating efficiency, as there is not real transparency. Because of these reasons during the years of 2008 to 2013 government of PPP (Pakistan People's Party) stopped privatisation process. But currently the incumbent government of PML-N once again has focused on privatisation with the intention of following its objectives.

After the abolishment of Corporate Law Authority (CLA) which was a regulatory authority to administer the transparency in the reforms of capital markets, Securities and Exchange Commission (SECP) was established in 1997 and began its operations on Jan 1, 1999 to develop the system more efficient and competitive.

Internationally, there are various procedures for pricing an IPO i.e. fixed price method, book building, auction, sale through the stock exchange and hybrid offerings (Kucukkocaoglu, 2008). In Pakistan, only fixed price Offer (FPO) method was adopted since its initiation. But later on, because of ongoing stock market conditions, to make more efficient mechanism and friendly investor for the first time the book building method was introduced in March 2008.

Karachi Stock Exchange (KSE) is one of the emerging markets around the world. Beside of this two other exchanges are performing functions in Pakistan, Lahore Stock Exchange (LSE) and Islamabad Stock Exchange (ISE). KSE was established on 18th Sep, 1947, it is the most active and old among all exchanges. It was established in 1947, and it is open for trading (liberalised) from 1992. In 1991,

among the five leading emerging markets International Finance Corporation ranked it second in terms of percentage returns obtained by investors. Currently there are almost 581 firms listed on KSE with a total market capitalisation of Rs. 7,326.286 billions (as per KSE website). In 2002 KSE stood the best operating market in the world according to the Business Week magazine.

KSE-100 Index is a benchmark of stock index used to compare prices on the KSE over a period. To compute the index it consists of top 100 companies from each sector with the highest market capitalisation. So this index can truly interpret the market. In 2005-06 KSE-100 index maintained the strong performance and reached the height of 10,303 and 12,000 points respectively resulting the improvement of macro-economic conditions. This improvement was ascribed to privatisation process as PTCL and National Refinery largely attracted investment. But in 2008 due to global economic crisis KSE crashed with the falling index to 5,000 points. However KSE index recovered and rose but with decreasing rate. In 2015 KSE reposing the interest and confidence of investors by crossing the height of 34,000 points.

Mostly Ordinary shares are traded in the market. Other securities like while TFCs, future trading, preference shares and redeemable certificates are also traded. It is beneficial for investors to perceive their stock performance in short and long run as equity stock market in Pakistan is highly volatile.

Fig. 1. Annual SOE and Non-SOE IPOs Activity in Pakistan

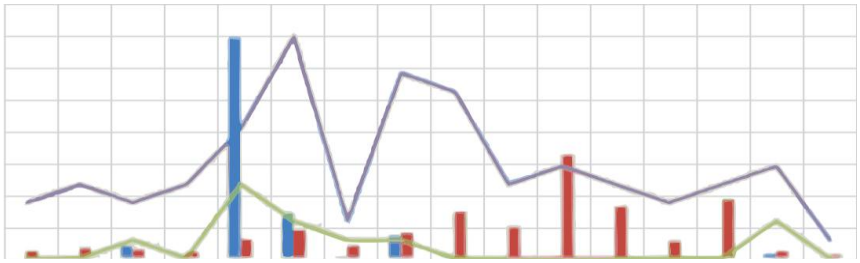
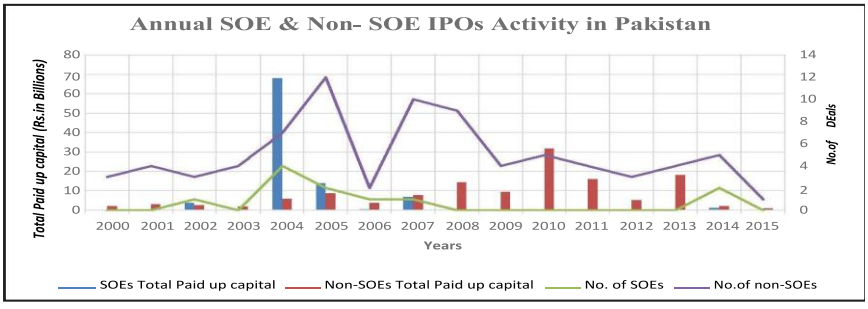


Fig. 2.1. Annual SOE and Non-SOE IPOs Activity in Pakistan, 2000-2015



Source: *Securities and Exchange Commission of Pakistan.*

Figure 2.1 depicts the annual SOE and non-SOE IPO activity in Pakistan from 2000-2015. In the span of 16 years, a total of 79 non-SOE IPOs and only 11 SOE IPOs took place with the paid up capital of Rs.132.68 billion and Rs.94 billion. Only in year 2004 and 2005 SOEs were with larger paid up capital (Rs.68.09 billion and Rs.13.98 billion) as compare to non-SOEs (Rs.5.79 billion and Rs.8.65 billion) although number of deals are smaller in SOE. As number of deals trend shows SOEs IPO is smaller than non-SOEs IPO in all years. Even during the years of 2008-2013 there were no initial offering of SOE.

In Pakistan participating rate of general public in stock markets is very low. Ownership structure is concentrated as mostly it is consisted on the nature of family owned business. In the result of liberalisation in 1992 most of the IPOs on average per year 35 offerings were issued at KSE till 1999. But after this number of deals of IPOs became low as only 90 IPOs up to March 2015, which demonstrate average 7 issues per year. This decrease may be because of different social, political, and security issues. As in 1998 there were a lot of sanctions imposed on Pakistan after atomic explosions, in impact of this in 1999 there was no issue and only one in 1998. Due to security reasons after 9/11 activity of stock market was low till 2003. But in year 2004 Recovery started in the market as level of trading increased. Later in 2007 due to financial crisis trading volume was low in primary market. There may be higher cost involved in equity offerings than from debt which can be one of the reason of low participation of general public in stock market. To increase the general participation rate and to encourage the investors there should be some incentives. To make the stock market more vigorous or increase the trading volume, financial knowledge should also be given to general public.

In Pakistan, single study on comparison of short and long term performance of SOE and non-SOE IPOs was observed. They found positive market adjusted initial return of 36.48 percent of 35 IPOs listed at KSE during the period of 2000-2006. This is also in accordance with this study and previous international Evidence, which finds excess returns in the short-run on new issues. Results indicated that in the short run SOE IPOs are more underpriced than non-SOE IPOs and also performance of SOE IPOs in the long run was remarkably better than non-SOE initial offerings.

Some internal frictions and economic factors e.g. war against terrorism affects shoddily the performance of KSE, in such circumstances small investors suffer critically. But despite of these facts, KSE is also rewarding to investors highly positive initial returns.

2.2. International Evidence on Comparison of Underpricing

In finance literature underpricing is very well documented phenomenon. Researchers found that in short term IPOs are generally underpriced. Ibbotson (1975) identify underpricing for the very first time. He found positive average

initial return of 11.4 percent in by using sample of 120 IPOs from 1960 to 1969.

In Table 2.1 below the initial returns of SOE and non- SOE IPOs of different emerging and developed markets are compared. By observing the t-test results in following table 2.1 it is concluded that initial returns of SOE are significantly greater than initial returns of non-SOE IPOs. Which is in accordance with traditional view that government underprice their issues more than private sector IPOs.

Table 2.1

Tests of Difference in Mean Initial Returns for SOE and Non-SOE IPOs

	Non-State Owned Enterprises			State-Owned Enterprises			Comparison	
Country	Sample Period	Sample size	Initial Return	Sample Period	Sample size	Initial Return	Difference	t-stat
Australia	1976-89	266	11.9	1991-97	7	16.6	4.7	.96
Canada	1971-92	258	5.4	1986-96	10	7.6	2.2	.73
Finland	1984-92	85	9.6	1988-95	5	50.8	41.2	.93
France	1983-92	187	4.2	1986-97	21	18.5	14.3	2.88[b]
Germany	1978-92	170	10.9	1988-96	4	6	-4.9	-.59
Hungary	1987-97	5	14.90	1987-97	10	14.94	0.04	-0.01
Italy	1985-91	75	27.1	1994-97	5	16.1	-11	-1.73
Indonesia	2000-09	143	46.9	2000-09	4	5	-41.9	-1.6
Japan	1970-91	472	32.5	1986-96	3	21.1	-11.4	-0.67
Korea	1980-91	347	78.1	1988-94	3	76.3	-1.8	-0.12
Malaysia	1980-91	132	80.3	1984-95	14	56.2	-24.1	-30.7[c]
Netherlands	1982-91	372	7.2	1986-94	3	5.2	-2	-1.02
New Zealand	1979-91	149	28.8	1991-92	2	30.6	1.8	1.6
Pakistan	2000-06	28	26.66	2000-06	7	74.33	47.67	2.12[b]
Portugal	1986-87	62	54.4	1989-97	5	22	-32.4	-2.56[a]
Poland	1991-00	107	19.82	1991-00	52	60.43	40.61	1.6
Singapore	1973-87	66	27	1990-94	6	39.4	12.4	1.52
Spain	1985-90	71	35	1987-97	8	41.3	6.3	.44
Taiwan	1971-90	168	45	1991-96	4	39.8	-5.2	-.09
Thailand	1988-89	32	58.1	1989-97	7	51	-7.1	-.33
U.K.	1959-90	2,133	12.0	1981-96	39	36.3	24.3	8.08[c]

Note: Sample period and initial returns of privately-held enterprises are updated version, taken from Loughran *et al.* (1994). Initial returns of state-owned enterprises are from Jones *et al*. (1999), Dewenter and Malatesta (1997), and *Privatisation International*. The superscripts a, b, and c denote significance at the 10, 5, and 1 percent levels, respectively, for two-tailed tests.

3. LITERATURE REVIEW

There is extensive literature on the short run and long run underperformance for initial public offerings for the developed market, however, less research is done on this issue for developing markets. A very few studies among them are done to compare the short run and long run performance of public versus private firm IPOs, among them only one study is done in case of Pakistan. This chapter provides the empirical review of relevant literature in this area. Section 3.1 reviews the literature on underpricing in initial public offerings. While section 3.2 and 3.3 reviews the literature on aftermarket long run performance and review on ownership structure and underpricing.

3.1. Underpricing of Initial Public Offerings

After the issuance of IPO, investors earn the positive average abnormal return over a short period of time this is known as initial underpricing phenomenon. The initial abnormal returns are usually measured as the difference between the offer price and at the end of the first day closing price after the IPO. Initial public offerings (IPOs) are facing difficulties in price valuation ever as prior to offer price given by the company there is no observable market price. The first major study in this context is Ibbotson (1975) in which he report a positive mean initial return of the IPOs. During the time period of 1965-69 on a sample of 120 IPOs, he finds an initial underpricing of 11.4 percent from the issuance date of offering to the end of month. Most of the following studies measured initial returns during the first day of trading.

After this in similar period by using much larger sample Ibbotson and Jaffe (1975) document initial underpricing of 16.8 percent. From 1975-84 using a sample of 5,162 IPOs Ritter (1984) finds an initial return of 18.8 percent. Additional studies whichconfirms this phenomenon by reporting positive initial returns are Miller and Reilly (1987), Tinic (1988), Beatty (1989) , Carter and Manaster (1990), Ibbotson, *et al*. (1988), they find an 16.4 percent average initial underpricing during 1960-87 for a sample of 8,688 IPOs.

The initial underpricing phenomenon is not only limited to the U.S. IPOs. Researchers confirmed that IPOs of various countries have initial underpricing in all stock markets, although the size of initial return varies substantively from country to country.For example, Aggarwal, Leal and Hernandez (1993) report initial underpricing 78.5 percent in Brazil using sample of 62 offerings in 1980-1990, 16.3 percent in Chile using sample of 36 IPOs in 1982-1990 and 33.0 percent in Mexico by using sample of 44 IPOs during 1987-1990. Hasan and Quayes (2008) report underpricing on the first and 21-trading day as 108 percent and 119 percent respectively. They reveal that foreign ownership, oversubscription, capital retention and after market risk significantly affect underpricing. Islam et al. (2010) analyse sever underpricing of 433.92 percent which is comparatively much higher than international evidences. They also find offer size is essential crucial factor in determining underpricing.

Despite there is less extensive evidence on privatisation of state owned enterprises, although it is consistent with the price behaviour of privately-owned companies, that on average the IPOs of privatisation of state owned enterprises are also underpriced.

One of the first study reporting initial return of SOE-IPOs is Jenkinson and Mayer (1988). They analyse that SOE IPOs in French are underpriced by an average of 25.1 percent and United Kingdom (UK) SOE IPOs are underpriced by an average of 22.2 percent. Moreover, Perotti and Guney (1993) find that privatisation of SOE in Turkey, Malaysia, Spain are underpriced as well. They also report that there are strong regularities in privatisation programs

across countries. Governments mostly retain a substantial stake for future and in initial public offer sell only a fraction of state enterprises.

Dewenter and Malatesta (1997), investigating a more international perspective, analyse for a total sample of 109 Privatise IPOs of eight countries including Japan , Canada, Malaysia, the United Kingdom, Poland ,France, Thailand and Hungary, find an average initial return of 23.7 percent. For a subsample of 19 Polish privatise IPOs they report an average market-adjusted return of 50.0 percent. Jones et al. (1999) review a 59-country sample of privatise IPOs for which they report an initial underpricing of 34.1 percent. Jacquillant (1987),Vickers and Yarrow (1988), Huang and Levich (1998) report on initial public offerings of SOE of U.K and France respectively, provide corresponding results with previous mentioned studies.

Consistently, the evidence proposed in these studies reveals that initial public offerings of state-owned companies, like those of non-state owned companies‘ initial offerings incline to be underpriced.

In spite of voluminous literature on IPOs anomalies, there is scarce research on explicit comparison of IPOs of state-owned companies with IPOs of non-state owned companies. In this field studies have produced contradictory results (Choi and Nam, 1998; Vieira and Serra 2006; Breda et al 1997 and Steen et al 2001).

Menyah and Paudyal (1996) document the initial market adjusted return of privatise public and private Owned IPOs in the UK. Privatise SOE IPOs suggest a significant positive initial market adjusted return of +38.70 percent compared to 3.48 percent for Non-SOE offerings. Dewenter and Malatesta (1997) test for differences between the average market adjusted initial return of SOE and non- SOE initial public offerings for a 8-country sample (Malaysia, Canada, Japan, France, Poland, Thailand, Hungary, and the UK) except UK they perceive no general proclivity for privatisations of public owned offerings to be underpriced more than non-SOE IPOs. Similarly, Ikoku (1998) reports 15.6 per cent and 21 per cent average market adjusted returns of public and private owned IPOs respectively from the Nigerian equity market from 1989 to 1993. In contrast, Paudyal et al. (1998) examine during the period of 1984-1995 that the initial underpricing on Malaysian SOE IPOs is significantly greater than on non-SOE IPOs. Jelic and Briston (1999) differentiate Hungarian SOE and non-SOE initial public offerings and document initial average market adjusted returns of 44 percent and 40 percent respectively.

Choi and Nam (1998) compare the average initial returns of privatisation of SOE offerings with the non-SOE IPOs with a sample of 185 privatisations in 30 countries. They find SOE IPOs are on average, more underpriced than IPOs of non- SOE. For instance they analyse Australian IPOs which was one of the country in the sample. They document initial underpricing of 16.6 percent, during the period of 1991-97, with the sample of 7 Australian SOE initial public

offerings. They then analyse their non-SOE short run IPO performance with the sample of 266 private offerings from 1976-89 and report initial underpricing of 11.9 percent.

By using the same method of measuring initial returns and with the same sample time period (1991-97) as Choi and Nam (1998), Steen *et al*. (2001) produce contrast results. As they report positive initial average returns of 11.57 percent for retail prices or 10.25 percent for institutional price in Australian privatise SOE IPOs. While they find 17.55 percent initial returns for the same sample time period all non-SOE Australian IPOs. The standard deviation of initial returns of privatise SOE IPOs is 17.09 percent for retail prices and 16.27 percent for institutional prices. The corresponding figure for initial return of non-SOE offerings is 55.49 percent, which is roughly three times higher than privatise SOE. These statistics supports the conviction that risk and returns should be positively associated. Hence, privatise SOE initial public offerings consists significantly lower risk therefore there is lower initial returns than non- SOE IPOs. Aussenegg (2000) differentiate the initial underpricing of privatise and privately-owned companies in Poland from 1991-99 using sample of 52 privatise SOE and a sample of 107 non-SOE initial public offerings and find average market adjusted initial returns of 60.43 percent and 19.82 percent respectively. He also provides evidence that the Polish government is market oriented in the sense of Perotti (1995), therefore portion of retain ownership remain low as government try to escalate reputation for its privatisation policy by valuing high positive initial returns. Setiobudi *et al.* (2011) find non-SOE offerings with initial return of 5 percent are more underpriced than privatise SOE offerings with initial return of 47 percent with sample of 147 total IPOs from 2000-09 in Indonesia.

In Pakistan, only one study is on comparison of SOE and non-SOE IPOs, which is by Rizwan and Khan (2007). With a sample of 35 Pakistani offerings out of which 28 are non-SOE and 7 SOE initial public offerings from 2000-2006, they conclude that initial market adjusted returns of privatise SOE and non-SOE IPOs are significantly underprice with initial returns of 74.33 percent and 26.66 percent respectively but the mean difference of both groups are not statistical significant, which means that SOE offerings are significantly equally underpriced than the non-SOE IPOs in the short run. They also report that fraction of share sold at initial offer and firm size significantly effects underpricing. Sohail and Rehman (2010) analyse the short term performance of 73 IPOs illustrating three different states i.e., normal, boom and recession. They find that the average underpricing is 42.2 percent, 41.0 percent, 37.4 percent, 38.1 percent and 39.4 percent at the close of 1, 5, 10, 15 and 20 trading day respectively during the period 2000-2009. In addition, wealth relative is more than one in all states representing that Pakistani IPOs outperform over the first 20 trading days.

3.2. The Long-Run Underperformance of Initial Public Offerings

Another anomaly of IPOs is the poor long-run stock price performance first documented in Ritter (1991). Using a sample of 1,526 IPOs that went public in the U.S. during 1975-84, he finds that after 3 years of going public, the IPOs in his sample produced an average 3-year holding period return of 34.37 percent. The long-run underperformance of IPOs is found to continue after the three-year period examined by Yi (1992), using the same IPO sample as in Ritter, finds that the underperformance continues until six years after going public. Loughran and Ritter (1995) use a larger sample of IPOs (4,753 issues between 1970 and 1990) and find that the poor stock performance extends to five years after issue, with no further underperformance in the sixth year.

Studies explicitly comparing the characteristics and the price behaviour of SOE and non-SOE IPOs are scarce. The empirical evidence of the long-run performance of firms going public indicates that SOE and non-SOE IPOs do not perform similarly. Private sector IPOs mostly experience a negative abnormal performance over the first three to five years of aftermarket trading [Ritter (1991); Loughran and Ritter (1995); Levis (1993); and Keloharju (1993)].

Publicly owned enterprises mostly experience a long-run aftermarket performance equal or better than that of benchmark firms. As there is (at least some) evidence that SOE IPOs tend to outperform private sector IPOs in the long-run [Menyah and Paudyal (1996)] for the UK and Jelic and Briston (1999) for Hungary. For Hungarian issues Jelic and Briston (1999) report a positive 3-year aftermarket performance for SOE IPOs but a negative one for private sector IPOs. They show that SOE IPOs perform significantly better in the long run than non-SOE IPOs. Similarly, Ikoku (1998) for the sample of 14 non-SOE and 24 SOE IPOs report underperformance of non-SOEs with market adjustedreturn of –84.9 percent and outperformance of SOE with 26.4 percent returns for 2 years aftermarket performance in the Nigerian equity market from 1989 to 1993. In contrast to these findings, Paudyal et al. (1998) document no abnormal long-run aftermarket performance difference between privatisations and private sector IPOs in Malaysia. Banaluddin (2007) however, indicates that while in the short-run Malaysian SOE IPOs offer higher returns than private-sector IPOs, the pattern reverses in the long run.

International evidence of long-run privatisation IPOs performance reveals mixed results. In developed capital markets, it seems that in the long-run privatisation IPOs performance is significantly negative but in emerging capital markets it is in contrast.

In Portugal, Vieira and Serra (1996) reveal that Portuguese public IPOs are less underpriced than private sector IPOs. They also provide evidence indicating that in the long-run, SOE IPOs underperform the private sector IPOs. Aussenegg (2000) differentiate the aftermarket long run performance of privatise and privately-owned companies in Poland from 1991-99 using sample

of 52 privatise SOE and a sample of 107 private owned IPOs, document 3 year insignificant buy and hold abnormal returns (BHARs) at 39.47 percent (outperform) and -12.19 percent (underperform) respectively. Similarly, Rizwan and Khan (2007), study 2 years after market long run performance of 28 public and private Owned IPOs from 2000-2006 in Pakistan and report significant BHARs of 12.69 percent and -33.11 percent for 2 years respectively. Goergen et al. (2007) find underperformance over the 3 years considering 240 UK IPOs during the period 1991-1995. Further they find that the level of under-performance of small firms is more than the large firms.

Prior research highlights various explanatory variables for long run aftermarket performance. Cai, Liu and Mase (2008) indicate that Chinese IPOs market in three year underperformance are influence by offer size, underpricing, oversubscription and growth rate in earnings using the CAR and the BHAR methodologies. Chen et al. (2011) argue that the signalling and ex-ante uncertainty hypothesis support long term underperformance but not the divergence of opinion hypothesis. They conclude that EPS, offer size, aftermarket risk, seasoned equity offerings are impacting factors of IPOs in Chinese market. Gounopoulos, *et al*. (2012) point out that activity period of IPO and ownership retention are important factors in determining long term underperformance. Zarafat and Vejzagic (2014) argue that underpricing, offer size and book to market are determinants of 3 year underperformance in the Malaysian IPO market.

3.3. Ownership Structure and IPO Underpricing

Lemmon and Lins (2003) contend that ownership structure is a fundamental determinant of the extent of agency problems between insiders and outsiders, which may in turn affect the firm‘s valuation. The conventional concept of agency problems state that there is a lack of alignment between managers and shareholders, where managers may pursue their own interests, negatively affecting the maximisation of shareholder‘s wealth [Jensen and Meckling (1976)]. This condition is referred to as Agency Problem I. However, such condition is found in firms with dispersed ownership structure, where shares are distributed among a large number of shareholders. As documented by La Porta, *et al*. (1999), dispersed ownership structure of listed firms is a phenomenon is commonly found only in a few markets, such as Canada, Ireland, Japan, the UK, and the US. Outside those few economies, the ownership structure of listed firms tends to be more concentrated, where a controlling shareholder have effective control of the firm. Given the concentrated ownership structure, agency problems may arise due to the lack of alignment between the controlling shareholder and minority shareholders [Shleifer and Vishny (1997)], later referred to as Agency Problem II. Demsetz and Lehn (1985) also suggest that concentrated ownership can lead to poor performance due to the firm‘s large

exposure to business risks. When large shareholding is associated with corporate performance, a number of studies find a positive relationship, such as Holderness and Sheehan (1988), McConnell and Servaes (1990) and Joh (2003).

Other studies, however, find no significant association between ownership structure and firm performance, including Demsetz and Lehn (1985), Demsetz and Villalonga (2001) and Weir, *et al*. (2002). Empirical results provided by studies examining IPO underpricing are also ambiguous. Based on a sample of Australian IPO firms, Pham, *et al*. (2003) find a negative association between the shareholdings of top twenty investors. Javid and Shehryar (2014) also find a negative relation between ownership concentration and underpricing in Pakistan and support ownership dispersion hypothesis in Pakistan. In China, the proportion of shares held by the largest shareholder is also found to negatively influence IPO underpricing [Chen and Strange (2004)]. In contrast Venkatesh and Neupane (2005) fail to find any significant association between ownership concentration and underpricing in the context of Thai IPO firms. Bernnan and Franks (1997) examine how separation of ownership and control evolves due to an IPO, and IPO underpricing can be used to retained control by insiders. To prove it they used data for 69 IPOs of London Stock Exchange listed from 1986–1989. Empirical analysis shows that underpricing is used to achieve oversubscription, which allows owner/issuer to discriminate larger bidder to prevent block holdings. Hearn (2010) by using sample data of 37 IPO firm‘s across West Africa examine the impact of a range of governance attributes on level of underpricing and find negative impact of retained director ownership on firm value. Whereas, in family owned firm, higher level of ownership reduces level of underpricing.

Hill (2006) undertook a sample of 502 unseasoned listings of ordinary shares on the London markets for the period 1991-98 which are accompanied by the selling of shares. A thorough analysis of the relationship between underpricing and share ownership structure in the aftermarket explains that IPO underpricing does not play a significant role in determining the proportion of block holdings in the share ownership structure of a firm, either at the IPO, or over the longer term.

Gajewski and Gresse (2008) have studied the relationship between underpricing and information asymmetry by taking a sample of 204 IPOs through an ownership dispersion variable and find that Information asymmetry is negatively linked to the level of initial underpricing, suggesting that more public information is produced on more underpriced IPOs.

After reviewing the numerous works, literature indicates that there is mix behaviour of IPO anomalies for SOEs and non-SOEs. Despite of less extensive evidence on privatisation of SOEs, although it is consistent with the price behaviour of non-SOEs, that on average both group of IPOs are underpriced. The empirical evidence of the long-run performance of firms going public indicates that SOE and non-SOE IPOs do not perform similarly. Private sector IPOs mostly

experience a negative abnormal performance over the first three to five years of aftermarket trading, while SOEs mostly experience an outperformance in long-run aftermarket trading, but results are in contrast in emerging capital markets. Literature also indicates that oversubscription, firm size, after market risk, retention ratio are some important factors of short run and aftermarket long run performance. Most of the literature support ownership dispersion hypothesis to explain relation between underpricing and ownership structure.

Literature also suggests that there is less work done on comparison of IPO anomalies for SOEs and non-SOEs specially in emerging markets like Pakistan, it would be interesting to examine performance of both groups after trading, their determinants and difference in their ownership structure. The present study aims to fill these gaps.

4. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

This section discusses the theoretical explanation of public and private owned IPOs and develops the hypothesis for empirical testing.

4.1. Asymmetric Information and the Winner's Curse Hypothesis

Rock's (1986) model relies on information asymmetry, which is between informed and uninformed investors. The model posits that informed investors subscribe to IPOs only when they expect a positive initial return, while uninformed investors subscribe to every IPO. If underpriced, IPOs would be oversubscribed by informed investors, resulting in rationing of shares to uniformed investors. If overpriced, IPOs would be sold exclusively to uninformed investors who would earn negative initial returns (thus, the so-called—winner's curse). Because issuers must continue to attract uninformed as well as informed investors, new issues must be underpriced (on average) to provide uninformed investors with acceptable rates of return. Rock's model thus predicts that underpricing is an equilibrium and ongoing phenomenon However in this adverse selection problem, for underpriced stocks, when un-informed and informed investors, both, submit the purchase order, the allocation of stocks is rationed between them. Therefore a measure of times the share offering is over-subscribed then it stipulates a positive relation between level of underpricing and oversubscription. Extensions of the model predict that expected underpricing is greater the greater is the ex-ante uncertainty about the value of a new issue.

Empirical evidence Koh and Walter, (1989) and Michaely and Shaw, (1994) generally confirms the major implications and predictions of Rock's model. In the case of privatisation sales, it can be argued that SOEs are usually large, well-known firms and governments make genuine efforts to provide the general public with information prior to the public offering. While these efforts

might result in information asymmetry for privatisation IPOs, that is no greater than (and possibly less than) for conventional IPOs. On the basis of this theory following hypothesis are formulated:

Hypothesis 1: The mean initial market-adjusted return of SOE IPOs is lower than for non-SOE IPOs.

Hypothesis 2: There is a negative relationship between underpricing and firm Size.

Hypothesis 3: There is a positive relationship between underpricing and oversubscription.

According to asymmetric information theories, the uncertainty about the value of recently established firms such as new issues (IPOs) is higher than that about well-known firms. As a result, investors are worried about the future performance of IPOs, which is referred to as ex-ante uncertainty. Therefore there should be a positive relationship between the levels of underpricing and ex-ante uncertainty. Beaty and Ritter (1986) indicate a positive relationship between level of underpricing and ex-ante uncertainty. Therefore we hypothesise:

Hypothesis 4: There is a positive relationship between underpricing and ex-ante uncertainty.

4.2. Signalling Theory

Allen and Faulhaber (1989), Welch (1989) and Grinblatt and Hwang (1989) develop signalling models where issuers possess better information than outside investors about the value of the offer. High value companies may choose to underprice and retain their ownership to signal to investors that they are high quality companies. This enables a high value firm to charge higher prices in subsequent offerings or to enjoy higher value for the equity that they retain. Thus, a positive relationship should exist between both the degree of underpricing and the fraction of shares owned.

Hypothesis 5: There is a positive relationship between the initial market-adjusted return and the retain ratio of shares at the initial offer. A higher retention is associated with a higher level of underpricing.

Hypothesis 6: The relationship between the level of underpricing and the fraction of the share retain at the initial offer is negative for SOE IPOs.[2]

Hypothesis 7: The larger the size of offer, the lower the underpricing.

4.3. Market Volatility

Any company committed to IPO has the objective that public offers of enterprises should be a success. One requirement for success is that the market

[2]A higher political uncertainty might require lowering a retention to transfer control rights credibly, which in turn forces a committed government to underprice more, which results in a negative relationship between the level of underpricing and the fraction sold (hypothesis 6).

price on the first trading day does not fall below the issue price. The regulatory authorities try to minimise the probability of unsuccessful issues by lowering prices as long as market volatility is high, which results in higher underpricing. Reilly (1977) has indicated that IPO issues following a rising market experience higher underpricing levels than IPOs following a falling market.

Hypothesis 8: The relationship between the level of underpricing and the market volatility is positive.

4.4. Divergence of Opinion

According to this theory, IPOs are usually subscribed by investors who are the most optimistic about the issue and their prices are set by this group rather than the appraisal of the typical investor. Further, greater the uncertainty about the value of IPO, higher is the price that optimistic investors are willing to pay relative to pessimistic investors. In the long-run, as more information about the issuing firm becomes available, the divergence of opinion between these two groups of investors will narrow and, consequently, market price will drop. Thus, Miller (1977) predicts that IPOs, especially the riskier issues, will underperform in the long run.

Hypothesis 9: The long-run abnormal performance of SOE IPOs is significantly better than the non-SOE IPOs.

A mostly non-negative long-run abnormal performance for PIPOs coincides with the objectives of a market-oriented government. As privatisation programs in most cases last several years, a committed government will be interested in building up reputation for its privatisation program over time. This is the only way to generate support in the population, which is necessary to successfully continue the program. For Pakistan the following hypothesis is tested as follows:

Hypothesis 10: For SOE IPOs the long-run aftermarket performance over 5 years is non-negative.

4.5. Political Influence

Boycko, Shleifer and Vishny (1996) show in their model that the retention ratio of shares in government enterprises at the initial offer is an important factor for the restructuring efforts of state enterprises. The lower the retention, the lower is the possibility that politicians interfere directly. Boycko, Shleifer and Vishny (1996) conclude that the relationship between efficient restructuring activities and the fraction of the state enterprise sold at the initial offer should be positive. Provided that a lower state holding leads to a more efficient restructuring, the long-run abnormal performance should be positive. In this context the following hypothesis is tested:

Hypothesis 11: The lower the fraction of the shares owned at the initial offer, the lower is the direct political influence. This implies a better restructuring and therefore a better long-run abnormal performance.

4.6. Investor Sentiment Theory

According to this theory, over-optimistic investors misevaluate prices in short run which cause a poor long-run performance [Aggarwal and Rivoli (1990), Ritter (1991) or Loughran and Ritter (1995)]. Firms planning to go public make use of this over-optimism and time their IPO correspondingly. If investors lose their over-optimism in the course of time, this leads to a bad long-run performance (investors' sentiment hypothesis). The level of investors' optimism cannot be observed directly. As a proxy the subscription ratio is used in this study. The hypothesis can be formulated as:

Hypothesis 12: There is negative relation between subscription ratio and long run performance.

4.7. Signalling Theory, IPO Underpricing and Ownership Structure

One of the signals to the outside investor from informed issuers in the context of signalling theory is the ownership concentration. The signalling theory suggests that the issuing firms use the retention ratio as an indication of the quality of the offer. Although this has not been convincingly corroborated by empirical evidences, the explanation of the theory is quite interesting. A high concentration ratio would indicate a higher quality of firm as the owners are reluctant to release a high proportion of the future cash flows to the outside investors. Jenkinson and Mayer (1988) and Menyah and Paudyal (1996) have shown that underpricing on U.K. privatisation sales is greater than that on IPOs in the private sector. Second, the governments retain large stakes in privatised firms long after having transferred ownership to the private sector.

Hypothesis 13: The correlation between ownership structure and underpricing is higher in SOE IPOs than non-SOE IPOs.

5. METHODOLOGY AND DATA

The methodological framework, data and data sources and variables construction are presented in this section.

5.1. Empirical Models

5.1.1. *Determinants of Underpricing in SOE and Non-SOE IPOs*

The determinants of underpricing in SOE and non-SOE IPOs are examined in a multivariate cross-sectional analysis on first trading day. To test

the specified hypothesis, the following explanatory variables are used as underpricing determinants in given cross sectional multiple regression model. This study used dummy variable for comparison of SOE and non-SOE IPOs. To estimate this model the simple ordinary least square (OLS) regression technique as suggested by Setiobudi et al. (2011) is used.

$$MAR_i = \alpha_0 + \beta_1 DPB_i + \beta_2 MV_i + \beta_3 FS_i + \beta_4 SR_i + \beta_5 RO_i + \beta_6 RK_i + \beta_7 IP_i + \varepsilon_i \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5.1)$$

Where MAR_i is mean market adjusted abnormal returns of issue i for first trading day; DPB_i is dummy variable if issued IPO is from publicly owned firm then value is 1 and 0 if otherwise; MV_i is market volatility over 2 months prior to issue i; FS_i is firm size of issue i; SR_i is subscription ratio of issue i; RO_i is retained ownership of issuing firms; RK_i is after market risk level of public and privately owned firms; IP_i is issue proceeds of IPO firm. The βs are parameters to estimate and ε_i is the error term.

5.1.2. *Aftermarket Long run IPOs Determinants of SOE and Non-SOE*

The determinants of aftermarket long run abnormal returns in SOE and non-SOE IPOs are investigated in a multivariate cross-sectional analysis over 5 years. To test the stated hypothesis in chapter 4, the following model consists of same explanatory variables as used in underpricing determinants model with an additional variable of market adjusted abnormal returns on first day. This study used dummy variable for comparison of SOE and non-SOE IPOs. To estimate this model the simple ordinary least square (OLS) regression technique as suggested by Omran (2005) is used.

$$BHAR_i = \alpha_0 + \beta_1 MAR_i + \beta_2 DPB_i + \beta_3 MV_i + \beta_4 FS_i + \beta_5 SR_i + \beta_6 RO_i + \beta_7 RK_i + \beta_8 IP_i + \varepsilon_i \quad \ldots \quad \ldots \quad \ldots \quad (5.2)$$

Where $BHAR_i$ is aftermarket long run abnormal returns of issue i over 5 years.

5.1.3. Ownership Structure and Underpricing

To compare the relation between underpricing and ownership structure for IPOs of both public and private owned, the methodology of Pham *et al*. (2003) is followed. This analysis also included some firm‘s characteristics such as subscription ratio, ROA, firm‘s size, risk in our regression model as an explanatory variables, as they can also influence ownership structure. The following cross section model is estimated by OLS:

$$OWN_i = \alpha_0 + \beta_1 DPB_i + \beta_2 MAR_i + \beta_3 FS_i + \beta_4 SR_i + \beta_5 ROA_i + \beta_6 RK + \varepsilon_{i_i} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5.3)$$

Where all other variables remains the same as in model (1), to measure concentration and inequalities in ownership structure (*OWN*), two proxies

Herfindahl–Hirschman Index (*HHI*), and block holders proportion (*BLOCK*) are used respectively.

5.2. Variables Definition and Construction

5.2.1. *Measure of Performance*

Following are the short and long run measures, which are used to measure performance of SOE and non-SOE IPOs.

Measure of Initial Returns

The study analyses the initial returns of IPOs using market adjusted daily returns with traditional event study methodology also used by Suchard and Singh (2007) in consistent with various previous studies. Event study methodology which is first time presented by Dolley in (1933) in finance literature, is the more suitable approach to measure abnormal performance of IPOs than causal comparative approach [Rumrill (2004)].

Initial market adjusted abnormal returns for first day are measured as by taking the difference between initial raw returns and the corresponding raw return on market index (KSE 100) for both private sector IPO and government owned companies IPOs, consistent with Dewenter and Malatesta (1997).

$$MAR_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) - \left(\frac{I_{i,t}}{I_{i,t-1}}\right) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5.4)$$

Where $MAR_{i,t}$ is market adjusted abnormal returns of stock i at day t, $P_{i,t}$ and $P_{i,t-1}$ represent adjusted closing prices on days t and $t-1$. I_t and $I_{i,t-1}$ is closing value of market index on corresponding ith issue on day t and $t-1$. Mean market adjusted abnormal return is measured as:

$$\underline{MAR_t} = \frac{1}{n}\sum_{i=0}^{n} MAR_{i,t} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5.5)$$

Where *n* is number of sample IPOs. For testing the null hypothesis that Mean of SOE are equals to mean of non-SOE IPOs this study uses empirical p values, which is in consistent with Setiobudi, *et al*. (2011).

Measure of Aftermarket Performance

To measure the performance of IPOs in the aftermarket, buy-and-hold returns are calculated in a first step for each issue by using event study methodology. In contrast to cumulative returns, which are sometimes used to measure long-horizon security, price performance buy-and-hold returns have the advantage that they are based on a realistic ex-ante trading strategy. Under this approach this study uses compounded abnormal returns over a specific period of time. The buy-and-hold returns for issue i ($BHR_{i,T}$) is

defined as:

$$BHR_{i,T} = \left[\prod_{t=1}^{T}(1 + R_{i,t})\right] - 1 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5.6)$$

Where $R_{i,t}$ is the return of IPOi in period t and t = 1 indicates the first trading day in the aftermarket. BHRs are calculated for the following time periods: T = 1 week, 2 weeks, 1 month, 2 months, 3 months and 6 months,1 year, 2 years,3 years 4 years and 5 years.

The aftermarket performance is measured against the value weighted KSE-Index as a benchmark. In a similar way to the BHR of the KSE-100 Index to the corresponding of $IPO_i\left(BHR_{KSE,i,t}\right)$is calculated as:

$$BHR_{KSE,i,T} = \left[\prod_{t=1}^{T}(1 + R_{KSE,i,t})\right] - 1 \quad \ldots \quad \ldots \quad \ldots \quad (5.7)$$

$R_{KSE,i,t}$is the return of the KSE-Index in period t, where t = 1 indicates the first trading day in the aftermarket.

As suggested by Ritter (1991) and Barber and Lyon (1997) buy and hold abnormal returns are measured for each issued IPOs and its corresponding reference portfolio (KSE-100 Index).

$$BHAR_{i,T} = \left[\prod_{t=1}^{T}\left(1 + R_{i,t}\right) - 1\right] - \left[\prod_{t=1}^{T}\left(1 + R_{KSE,i,t}\right) - 1\right] \quad (5.8)$$

Average $BHAR_T$ is defined as:

$$Average\ BHAR_T = \frac{1}{n}\sum_{i=0}^{n} BHAR_{i,T} \quad \ldots \quad \ldots \quad \ldots \quad (5.9)$$

Where n is number of sample IPOs. By following Lyon, Barber and Tsai (1999), this study used a skewness adjusted bootstrapped p-values to test the null hypothesis that mean BHAR of SOE and Non-SOE is similar.

Following Ritter (1991) wealth relatives (WRs) are measured to compare the performance of IPO with its corresponding benchmark portfolio. If the value of wealth relative is more than 1 it means outperformance of IPO while value less than 1 means underperformance of IPO to their corresponding reference. WR is calculated as:

$$WR_T = \frac{1+Average\ BHR_{i,T}}{1+Average\ BHR_{KSE,T}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots (5.10)$$

Where WR_T is wealth relative over period T, $Average\ BHR_{i,T}$ is average buy and hold return of issue i over period T, $Average\ BHR_{KSE,T}$ is average buy and hold returns of reference portfolio over period T.

5.2.2. *Measures of Ownership Structure*

Ownership structure signals the growth potential of the firm as high quality firms will have more prestigious investors resulting in higher block holding or concentrated ownership structure. As in case of Pakistan the majority

of the firms are owned by the family or institution [Cheema, *et al*. (2003)]. Therefore, to measure concentration and inequalities in ownership structure two proxies are used which are block and herfindhal index. Following are the measures of these proxies.

Block Holders

To measure inequalities in ownership structure proxy of block holders is used. Block holders are defined as the investors owing more than 5 percent of issued equity. This proxy is calculated in consistent with Brenan and Franks (1997) and Stoughton and Zechner (1998). It is calculated as:

$$BLOCK = (\sum_{k=1}^{m} Block\ Size - Retain)/Offer\ Size \quad \ldots (5.11)$$

Herfindahl-Hirschmann Index

To measure concentration of ownership structure, study has calculated Herfindhal-Hirschmann Index (HHI) by summing squared shareholdings of five largest shareholders:

$$HHI = \sum_{i=1}^{5} S^2\, i \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots (5.12)$$

Here s_i is the part that belong to the *i*th largest shareholder (i=1, 2, 3, 4, 5).

Range of HHI is from close to zero to 10,000, as close to 0 means low concentration while close to 10,000 depicts high level of concentration. There exists non-normality for Herfindahl index to deal with it this study altered original index with its square root followed by Pham, *et al*. (2003) and Gajewski, Bouzouita and Gresse (2012).

5.2.3. ***Description of other Variables***

Firm Size: The size of the firm may indicate firm quality or decrease information uncertainty. It is measured as natural log of total assets of issue, at the end of twelve month period closest to time of listing. Suchard and Singh (2007) also use same proxy to measure size.

Issue Proceeds: Issue proceed is issue size of firm, measured by taking natural log of market capitalisation after listing; as market capitalisation is calculated by multiplying the number of stock issues with their offer price.

Subscription Ratio: Subscription ratio (over/ under) of issue, obtained from shares required divided by shares offered as used by [Al-Hassan, *et al*. (2010); Habib and Ljungqvist (2001)].

Retained Ownership: Retained ownership ratio is calculated from the ratio of the number of shares retained to the total number of shares owned by the issuer of state owned and non-state owned enterprises.

Risk: The level of risk effects underpricing as mentioned by [Domsetz and Lehn (1985); Leach and Leahy (1991)] is proxied by standard deviation of daily share returns during first trading month.

Market Volatility: Market volatility is measured by standard deviation of daily share returns of KSE index of two months prior of issuance in consistent with Menyah, *et al*. (1995) and Paudyal, *et al*. (1998).

Return on Asset: Return on asset (ROA) is measured as net income divided by total assets; this is also used by Darmadi and Gunawan (2013).

5.3. Data and Sample Characteristics

This study uses sample of 61 privately owned and 11 state owned companies IPOs listed on Karachi Stock Exchange from Mar 2001 to June 2015. This is an event study so data is mostly taken for daily, weekly and monthly basis. Those companies are included in the sample that offered shares to the general public through fixed price method. Data related to firm‘s characteristics like size, ROA, ownership structure are extracted from annual reports and prospectuses. Information about issued companies, their listing dates, offered capital, subscription ratio all these data is taken from capital issuing department of Securities and Exchange Commission of Pakistan (SECP). While data of index and daily opening-closing stock prices are obtained from KSE data base and other financial websites. Some issued IPOs are dropped from analysis due to unavailability of data.

6. EMPIRICAL RESULTS

The section discusses the empirical results and their interpretations. The analysis begins with summary of the data.

6.1. Descriptive Statistics

Descriptive statistics of determinants of market adjusted initial returns and ownership structure proxies are given in following table:

Table 6.1 presents the statistics summary of characteristics of IPO variables and ownership structure proxies used in regression models. Panels A, B and C shows the comparison of all 72 IPOs, 61 private IPOs and 11 public IPOs issued on KSE from March, 2000-June, 2015. The variables are issue proceeds (IP) is in PKR (Pak Rupee), risk level of IPO aftermarket (RK) measured by standard deviation of 1 month after market prices, portion of retained ownership (RO), oversubscription ratio (SR) is measured in times and market volatility (MV) is measured by risk level of market 2 month prior of trading IPO. Ownership structure proxies for ownership concentration are

Table 6.1

Descriptive Stats for Determinants of MAR, BHAR and Ownership Structure

Panel A: All IPOs					
N=72	Mean	Median	Maximum	Minimum	Std. Dev.
IP	5.649	5.379	9.001	2.603	1.357
RK	0.109	0.059	0.557	0.004	0.133
RO	0.788	0.796	0.989	0.167	0.151
SR	3.204	1.909	18.694	0.060	3.643
MV	0.049	0.015	1.114	0.006	0.159
Block	0.297	0.192	0.980	0	0.333
HHI	0.180	0.125	0.646	0.004	0.165
Panel B: SOE IPOs					
N=11	Mean	Median	Maximum	Minimum	Std. Dev.
IP	7.495	7.465	9.001	4.700	1.306
RK	0.120	0.072	0.540	0.021	0.149
RO	0.865	0.900	0.989	0.619	0.116
SR	2.690	2.337	7.450	0.130	2.126
MV	0.019	0.019	0.033	0.010	0.008
Block	0.242	0.112	0.886	0.000	0.317
HHI	0.173	0.126	0.592	0.024	0.177
Panel C: Non-SOE IPOs					
N=61	Mean	Median	Maximum	Minimum	Std. Dev.
IP	5.317	5.165	7.830	2.603	1.076
RK	0.108	0.059	0.557	0.004	0.132
RO	0.774	0.750	0.986	0.167	0.153
SR	3.296	1.870	18.694	0.060	3.859
MV	0.054	0.014	1.114	0.006	0.172
Block	0.307	0.210	0.980	0.000	0.337
HHI	0.182	0.124	0.646	0.004	0.164

Note: Table 6.1 presents descriptive statistics of all (total issues) in panel A, state owned in panel B and non-state owned enterprises IPOs in panel C, issued at KSE from Mar 2000-June, 2015. The variables include issue proceeds (IP), after market risk of issue (RK), fraction of shares owned (RO), subscription ratio (SR), Market volatility (MV), block holders (Block), herfindahl index (HHI).

calculated according to formulas given above. Descriptive statistics shows the mean and median values are closer to each other and positive, which means there is less variation in data. As standard deviation shows dispersion from mean, results shows its closer to mean. The results of ownership structure presents on average 57 percent of the shares in SOE and 52 percent shares in non-SOE are detain by the investors owning more than 10,0000 shares issued in KSE. Which means equality of shareholders is more in SOE than non-SOE. On average, about 24 percent of shares in SOE and 31 percent in non-SOE are held

by the block holders (Block) (having more than 5 percent of the shares) of an IPO. The Herfindahl Index (HHI) describes the concentration of ownership of top 5 shareholders, which is 17 percent for SOE and 18 percent for non-SOE according to data which is not so huge difference.

6.2. Short run and Long run IPOs Performance of SOE and Non-SOE

6.2.1. *Short run Initial Return Performance*

Following table 6.2 presents the comparison by descriptive statistics of the short run initial raw returns and market-adjusted initial return for all IPOs, state owned IPOs and non-state owned IPOs.

In initial raw return 23.49 percent of average return shows that if at the offer price investor invests in each IPO equivalent amount of money and then sell it on first trading day, investor would have yielded 23.49 percent raw returns on investment.

Table 6.2

Descriptive Statistics of Initial Return (Raw and Market adjusted) of SOE IPOs and Non-SOE IPOs

	Initial Raw Return			Initial Market Adjusted Return		
	All	SOE	Non-SOE	All	SOE	Non-SOE
Mean	23.485	27.323	22.792	23.320	27.652	22.539
Probability	0.008*	0.687	0.033**	0.015*	0.654	0.048**
Median	9.198	20.943	8.158	8.940	19.763	6.956
Maximum	144.186	75.056	144.186	142.459	74.186	142.459
Minimum	-96.496	-9.531	-96.496	-98.101	-10.107	-98.101
Std.dev	43.114	26.333	45.616	43.377	27.022	45.835
Obs.	72	11	61	72	11	61

Note: All represents total number of issues in sample, SOE stands for state owned enterprises IPOs, Non-SOE stands for privately owned IPOs. Returns are in percentages. The * indicates significance at 1 percent, **shows significance at 5 percent.

In contrast, Investor would have earned 27.32 percent initial raw returns if he had only invested only in the state-owned enterprises IPOs. Whereas, the same policy would have yielded him 22.79 percent initial raw return by allocating only in the private IPOs.

These returns propose that those investors who subscribe and pay the issue price to Pakistani IPOs and hold these shares till first trading day perceive considerable wealth gains. Comparable to initial raw returns, mean market-adjusted initial returns for all samples are positive: 23.32 percent for all, 27.65 percent for SOE IPOs and 22.54 percent for non-SOE IPOs. These results suggest that in case of mean market adjusted initial returns investors earn

substantial wealth gains relative to the market. All issues and non-SOE IPOs average returns reported in Table 6.2 are significantly greater than zero at 5 percent and 1 percent significance level.

All issues and private IPOs average returns are significantly different from zero, in line with the results reported in Farinos, *et al*. (2007). Results also indicate that SOE IPOs are more underpriced than non-SOE IPOs [Aussenegg (2000); Rizwan and Khan (2007)].

6.2.1.1. Mean Difference of Initial Returns of SOE IPOs and Non-SOE IPOs

Table 6.3 shows the comparison of the mean market adjusted initial return and initial raw return of SOE and non-SOE IPOs.

Table 6.3

Mean Difference of SOE and Non-SOE IPOs in Short run

Panel A: Difference between Initial Raw Returns of SOE and Non-SOE IPOs	
Initial Raw Return	4.531
P-values	0.75
Panel B: Difference between Initial Mean MAR of SOE and Non-SOE IPOs	
Initial Mean Market adjusted Return	5.112
P-values	0.72

Note: * indicates significance at 1 percent, ** significance at 5 percent, *** significance at 10 percent.

The result indicates that raw return and market adjusted mean value difference between both sample IPOs are 4.53 percent and 5.11 percent. That means initial returns of SOE are higher than non-SOE IPOs. In spite of this positive initial mean return the difference is not statistically significant. By using the two sample mean difference test with two tailed p-value the result indicates, the null hypothesis which implies that initial return of SOE IPOs is not different from non-SOE IPOs has to be accepted. Results don‘t support asymmetric information theory for initial returns. The hypothesis 1 is rejected, which suspects that the short run initial returns of privatised IPOs are lower than private IPOs (Aussenegg, 2000). Same level of underpricing in both IPOs reveals that Pakistan‘s government is committed to its privatisation policies as they developed capital markets by underpricing of IPOs, or may also building reputation by higher underpricing.

6.2.2. Aftermarket Performance

Table 6.4 presents the long run aftermarket IPOs performance of the three samples (All, SOE, non-SOE) for 5 years.

Table 6.4

Aftermarket Performance of IPOs

			BHR%			BHAR%	
Sample	Period	N	Issues	KSE	WR	Mean	Median
			24.915	0.428	1.34	24.487	19.982
All	1 week	72	(0.547)	(0.138)		(0.263)	
			23.890	1.169	1.31	22.721	18.240
	2 weeks	72	(0.615)	(0.519)		(0.594)	
			23.639	2.323	1.29	21.315	9.431
	1 month	72	(0.164)	(0.310)		(0.451)	
			21.283	2.661*	1.25	18.622	9.260
	2 months	72	(0.206)	(0.000)		(0.439)	
			22.185	4.26	1.24	18.680	2.731
	3 months	72	(0.180)	(0.212)		(0.537)	
	6 months	71	24.456	7.252***	1.22	17.879	-1.427
			(0.362)	(0.091)		(0.748)	
	1 year	66	28.556*	17.540		12.760*	-13.531
			(0.000)	(0.191)	1.13	(0.000)	
	2 year	65	20.905*	4.024***		-18.009*	-18.341
			(0.000)	(0.088)	1.24	(0.000)	
	3 year	62	17.966*	6.856**		-42.496*	-48.516
			(0.000)	(0.048)	1.16	(0.000)	
	4 years	59	8.176*	16.637		-62.740*	-70.182
			(0.000)	(0.129)	0.88	(0.000)	
	5 years	57	36.836*	38.913*		-65.539*	-72.421
			(0.000)	(0.008)	0.97	(0.000)	
SOE	1 week	11	24.797	-0.179		24.977	18.004
			(0.633)	(0.278)	3.30	(0.594)	
	2 week	11	24.541	-0.357		24.898	16.023
			(0.647)	(0.822)		(0.570)	
	1 month	11	26.550	1.663		24.886	16.605
			0.620)	(0.447)	2.97	(0.645)	
	2 months	11	29.929	2.517		27.411	19.390
			(0.680)	(0.642)	3.02	(0.676)	
	3 months	11	28.986	4.272		24.713	18.252
			(0.696)	(0.635)	2.61	(0.642)	
	6 months	11	40.367	12.274		28.093	17.574
			(0.635)	(0.314)	2.20	(0.585)	
	1 year	10	33.951	23.260		10.690	-13.051
			(0.666)	(0.119)	1.32	(0.770)	
	2 year	9	75.634	52.449		23.184	0.000
			(0.572)	(0.869)	1.37	(0.803)	
	3 year	9	90.391	79.439		10.951	-3.771
			(0.473)	(0.222)	1.21	(0.542)	
	4 years		100.841	83.529		17.310	-1.998
		9	(0.538)	(0.469)	1.18	(0.651)	
	5 years	9	130.401	49.942		80.457	
			(0.473)	(0.351)	2.36	(0.492)	-5.357
Non-SOE	1 week	61	24.936	0.538*		24.398	
			(0.183)	(0.000)	1.39	(0.197)	20.952
	2 week	61	23.773	1.445		22.328	
			(0.208)	(0.630)	1.35	(0.301)	18.759
	1 month	61	23.114	2.443		20.671	
			(0.124)	(0.630)	1.32	(0.125)	7.809
	2 months	61	20.053	2.733*		17.036	
			(0.144)	(0.000)	1.27	(0.153)	8.428
	3 months	61	23.051	4.225		17.591	
			(0.248)	(0.624)	1.28	(0.265)	0.724
	6 months	60	24.047	6.578		16.037*	
			(0.126)	(0.318)	1.26	(0.197)	-3.259
	1 year	56	31.906*	17.341		13.133*	
			(0.000)	(0.207)	1.19	(0.000)	-14.01
	2 year	56	12.702*	41.978***		-25.437*	
			(0.000)	(0.071)	0.70	(0.000)	-27.618
	3 year	53	5.868*	68.225**		-52.134*	
			(0.000)	(0.032)	0.49	(0.000)	-51.723
	4 years	50	-10.845*	87.231		-77.175**	
			(0.000)	(0.000)*	0.28	(0.051)	-77.092
	5 years	48	-12.540*	106.692*		91.866***	
			(0.000)	(0.000)	0.22	(0.013)	-83.495

Note: Buy and hold abnormal returns (BHARs) and wealth relatives (WR) during the first five years of aftermarket trading for all issues (All), State owned enterprises IPOs (SOE) and non- State owned enterprises IPOs (Non-SOE).It is tested whether BHAR of both IPOs are statistically different. To check significance empirical p values are given (see Brock et al. (1992)). BHARs are measured by eq 5.8 , as the difference between the BHR of issue and the BHR of the benchmark over the same period. The * Significant at the 1 percent level, ** Significant at the 5 percent level,*** significant at 10 percent level. The value weighted Karachi Stock Exchange Index (KSE) is used as bench-mark.

In three samples the buy and hold abnormal returns of short run are statistically insignificant that is in consistent with evidence of various other stock markets. The positive and statistically insignificant mean values of BHAR indicate that in short run aftermarket behaviour of Pakistani IPOs there is full price adjustment [Jelic and Briston (1999); Aussenegg (2000)].[3] With regard to dataset, in measurement of aftermarket long run BHAR, the number of observations of IPOs declines with increasing order. For instance, in sample of all issues IPOs are (66 → (1Y) →65 (2Y) →62 (3Y) →59 (4Y) →57(5Y)). The reason of this decay in number of observations is duration of trading for newly listed companies (less than 5 years) is inadequate. Data includes all available returns of listed companies within 5 years after IPO.

Fig. 6.1. Aftermarket Performance of SOE IPOs & Non-SOE IPOs

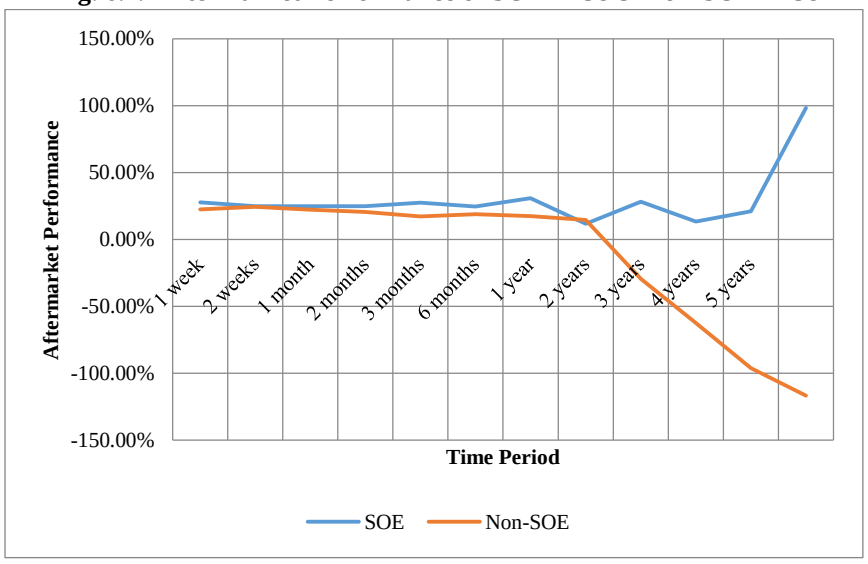


Figure 6.1: After market performance (short run and long run) of SOE and Non-SOE IPOs using value weighted BHAR methodology. Sample consists of 11 SOE IPOs and 61 Non-SOE IPOs listed on KSE from 2000- June, 2015 illustrating average BHAR adjusted by benchmark index for 1 week to 5 years.

In contrast of short run IPOs, the long-run IPOs aftermarket behaviour (for first five years) reveals the difference in the samples. For all IPOs sample the mean (median) of buy and hold abnormal return is – 65.54 percent (-72.42 percent) for five years and the mean values are statistically significant at 1 percent significant level. Wealth relative (WR) is 0.97 which means Pakistan's IPOs underperforms in the long run. The negative BHAR are in consistent with

[3]Jelic and Briston (1999) for Hungary and Aussenegg (2000) for Poland provided its analogical conclusions.

Ljungqvist (1993), Loughran and Ritter (1994) in empirical literature. According to them on of the main reason of negative abnormal returns in long run is that overoptimistic investors push the market prices up by increase in subscription ratio at first trading day, but later on when investors correct misevaluation in long run it causes underperformance.

The results of long run after market IPO performance (5-year abnormal performance) of SOEs shows positive returns. The mean buy and hold abnormal return is +80.46 percent and outperforms in long run but statistically insignificant. Therefore the hypothesis 10, that public IPOs for the 5-years long-run aftermarket performance is non-negative is rejected. This result suggests that government may be following market oriented polices but impact on price behaviour is not significant that is in contrast with some earlier studies [Perotti (1995); Jelic and Briston (2003) and Aussenegg (2000)].

The mean (median) values BHAR of 5-years long-run aftermarket performance of non-SOE is negative –91.86 percent (–83.49 percent) and significant. Hence the private IPOs of Pakistan underperforms in the long run. These results are similar to evidence provided by Jelic and Briston (1999) for Hungarian private sector and Rizwan and Khan (2007) for Pakistan for 2 years of long run performance of private sector.

Figure 6.1 shows the comparison of SOE and non-SOE IPOs by graphically presentation of short and long run after market performance using value weighted BHAR methodology. As it demonstrates that in long run from year 1, the values of public IPOs are positive and out performs while private IPOs underperforms andtheir values are negative in long run. While in short run there is not much difference in underpricing of both SOE and Non-SOE IPOs.

6.2.2.1. Mean Difference of Aftermarket Returns of SOE IPOs and Non-SOE IPO

The following table shows the results of testing the hypothesis 9 that Pakistan‘s public IPOs outperform in long run than private sector IPOs.

Table 6.5

Mean Difference of SOE and Non-SOE IPOs in Long run

	BHR%		BHAR%
Period	Issues	KSE	Mean
1 Year	2.045	5.920	-3.875
	(0.9529)	(0.5804)	(0.908)
2 Year	62.932	10.471	52.461
	(0.112)	(0.650)	(0.115)
3 Year	84.523	11.214	73.309
	(0.111)	(0.734)	(0.207)
4 Year	111.68	-3.701	115.381
	(0.069)	(0.932)	(0.291)
5 Year	142.940**	-56.75**	199.690
	(0.037)	(0.042)	(0.346)

Note: * indicates significance at 1 percent, **significance at 5 percent,*** significance at 10 percent.

The difference of BHAR between public IPOs and private IPOs is positive for 2-years to 5-years period, but negative in first year. BHR in year 5 is statistically significant at 5 percent significance level. The difference of BHAR is statistically insignificant. So the hypothesis 9, that positive mean difference of public IPOs and private IPOs in long run is rejected. The evidence is in accordance with the findings of Paudyal, *et al*. (1998) for Malaysia but contradicts the evidence for Hungary presented by Jelic and Briston (1999).

6.3. Multivariate Cross sectional Regression Analysis

6.3.1. *Short run IPOs Underpricing Determinants of SOE and Non-SOE Firms*

To analyse relation between several independent variables with dependent variable and to ascertain more comprehensive results multiple regression analysis is conducted. One day market adjusted initial returns is regressed on dummy of public owned firms, market volatility, issue proceeds, firm size, retained ownership, level of risk of company, subscription ratio. Ordinary least square regression is used to estimate coefficients. For adjustment of regression from heteroscedasity White (1980) heteroscedastic consistent variance covariance matrix is used.

Table 6.6

Results of First Day Underpricing Determinants of SOE and Non-SOE IPOs

	Dependent Variable: First day market adjusted return		
Independent Variables	Coefficient	t-Statistic	
DPB	0.0838	0.63	R square = 0.482
MV	-0.3707	-1.19	Adj R-squared = 0.425
IP	-0.0517	-1.25	Prob F-stat = 0.000
FS	-0.0417**	-2.15	DW stat = 1.984
RO	-0.2485	-0.76	
RK	1.3942**	2.10	
SR	0.0365**	2.04	
Constant	-0.4549***	-1.68	

Note: * indicates significance at 1 percent, **significance at 5 percent, significance at 10 percent.

The regression exhibits the following outcomes reported in Table 6.6. The most important independent variable is dummy of public a owned firms, that is used for comparison of privatised and private initial public offerings. As the p value of DPB denotes that as an independent variable it is not significant to effect the first day market adjusted return. Hence the results demonstrates that first day market adjusted returns or anomaly of underpricing is same in both IPOs of public and private in Pakistan in period of last 15 years. Result is again in contrast of asymmetric information theory. This result is consistent with Lee,

Taylor and Waltor (1996), Choi and Naam (1998) and Haung and Levich (1998).

There is positive significant relation between the risk which is ex ante uncertainty of issued IPO, and level of underpricing at 5 percent level. So thel hypothesis 4 is accepted. This outcomes substantiates Ritter (1984) and Beatty and Ritter (1986) argument that to compensate the fear about future performance of IPOs, stockholders demand higher returns. Further the regression results illustrates the significant positive influence of subscription ratio (SR) on first day market adjusted initial return at 5 percent significance level. This result supports the absorption capacity of the market [Paudyal, *et al*. (1998)] and winner's curse model [Rock (1986)]. Hence, hypothesis 3 is also accepted.

The findings of firm size depicts the negative coefficient and significant impact on first day initial market adjusted return at 5 percent level. Various other researchers [Teker and Ekit (2003); Tian (2011); Megginson and Weiss (1991); Ibbotson, *et al*. (1994)] also find the same relation between first day market adjust return and firm size. Therefore, the null hypothesis 2 is also rejected. The retained ownership is the proportion of share capital hold at initial offer, Hypothesis 5 forecasts a positive relationship of in perspective of signalling theory but negative relation of public between the retained ownership and the under-pricing level in hypothesis 6. Regression results show the negative but insignificant relationship, so both 5 and 6 hypothesis are rejected. These results are in consistent with Schindele and Perotti (2001). Menyah and Paudyal (1996) for UK find a negative and significantly relationship of public owned firms and underpricing.

The regression results of the model indicates that there is negative insignificant relation among market volatility and initial underpricing. Thus the hypothesis 8, that there is positive relation between market volatility and underpricing has to be rejected too. Though these findings are in line with Omran (2005) that coefficient shows less influencing power on initial underpricing with negative sign. The results of issue proceeds (IP) shows negative and insignificant relation on initial underpricing, which is in line with Setiobudi et al. (2011). Hence, the hypothesis is rejected. The values of R square shows that 48 percent of the variation can be explained by the independent variable which is not weak in cross section regression.. The value (0.000) of prob (f-statistic) means that in model equation no parameters are zero and equation is highly fitted in the data. The Durbin-Watson stat is near to 2, demonstrates that on average, successive residuals values are different from each other.

6.3.2. *After-Market Long Run Determinants of SOE and Non-SOE IPOs*

Following Table 6.7 shows the results of long run after market determinants, with dependent variable of buy and hold abnormal return over 5

years. With an additional variable of first day market adjusted abnormal return, all other explanatory variables are same as in initial underpricing determinant model. The multiple cross sectional analysis results are estimated by using OLS regression technique. For adjustment of regression from heteroscedasity, White (1980) heteroscedastic consistent variance covariance matrix is used.

Table 6.7

Results of After-Market Long Run Determinants of SOE and Non-SOE IPOs

	Dependent variable: First day market adjusted return		
Independent Variables	Coefficient	t-Statistic	
MAR_1	-1.1280*	-3.19	R square = 0.28
DPB	0.8176	1.27	Adj R-squared =0.19
MV	1.5816*	2.81	Prob F-stat = 0.004
IP	-0.1148	-0.68	DW stat = 1.96
FS	-0.0211	-0.27	
RO	1.8757**	2.53	
RK	1.6160	1.05	
SR	0.0623	0.84	
Constant	-1.2836	-1.18	

Note: * indicates significance at 1 percent, **significance at 5 percent, significance at 10 percent.

In accordance with our previous findings, results of public owned firm dummy again demonstrates that aftermarket long run performance of SOE and non-SOE IPOs is similar as it is insignificant. The results reveals the negative and significant relation between first day initial underpricing and aftermarket long term performance at 1 percent significance level. [Ritter (1991); Kooli, *et al*. (2006)].

The results support the signalling theory and information asymmetry hypothesis that overoptimistic investors misevaluates stock prices and get higher initial returns which consequently accurate in long run resulting underperformance. Subscription has a positive relation with long run performance, and emphasising that higher subscription ratio increase initial underpricing which later cause‘s poor long run performance but not significant. So the hypothesis 12, which is regarding investor sentiments is rejected.

Regression results unveils that retained ownership is positive and significantly related to long term performance at 5 percent significance level [Gounopoulos, *et al*. (2012)]. So the hypothesis 11 is accepted, as result denotes that positive value of retained ownership shows that low retention in government enterprises is because of efficient restructuring, and less political influence which will result in better long run performance. But in conventional IPOs high retention will increase underperformance, as long run performance can be improve by large proportion of flotation of shares. Firm size

demonstrates negative but insignificant relation with long run performance. There is positive and insignificant relation between after-market risk of issue and long run underperformance [Omran (2005)]. MV represents positive and significant relation with long run performance at 1 percent significance level. This indicates higher market volatility and after-market issue‘s risk causes increase in underperformance in long run which supports the ex-ante uncertainty hypothesis.

6.3.3. *Effect of Underpricing on Ownership Structure of SOE and Non-SOE IPOs*

To measure the concentration and inequalities in ownership structure this study used two proxies which are block and Herfendhal Index (HHI). Block and HHI are used as an explained variables while first day market adjusted return and firms characteristics risk, size, ROA, subscription as an explanatory variables for separate OLS regression models. The multiple regression model is used with the standard errors adjusted for hetero-scedasticity using White (1980) heteroscedasticity-consistent covariance matrix.

Table 6.8

Results of Effect of Underpricing on Ownership Structure SOE and Non-SOE IPOs

Independent Variables	Dependent Variable: Block			
	Coefficient	t-Statistic	Prob.	
DPB	0.058	0.65	0.52	R square = 0.148
FS	-0.037**	-2.46	0.016	Adj.R square=0.07
MAR	-0.136**	-2.40	0.019	Prob(F-stat) = 0.04
RK	-1.014**	-2.57	0.012	DW stat = 2.04
ROA	0.063***	1.80	0.076	
SR	0.020	1.34	0.185	
Constant	1.080*	3.11	0.003	
Independent Variables	Dependent Variable: HHI			
	Coefficient	t-Statistic	Prob.	
DPB	0.056	1.07	0.290	R square = 0.174
FS	-0.022**	-2.50	0.015	Adj.R square=0.09
MAR	-0.074*	-2.69	0.009	Prob(F-stat) = 0.04
RK	-0.434990**	-2.18	0.033	DW stat = 2.03
ROA	0.020	1.14	0.257	
SR	0.005	0.61	0.546	
Constant	0.643*	3.28	0.002	

Note: * indicates significance at 1 percent, **significance at 5 percent, significance at 10 percent.

Table 6.8 reveals the results of testing the relation between ownership structure and level of underpricing in public and privately owned firms. Dummy of public owned is insignificant which means ownership concentration is similar

in both SOE and non-SOE initial public offerings. Further, it is anticipated by researchers that the sign of first day mean market adjusted return (MAR) should be positive with the proxies of ownership concentration in accordance with signalling theory, Table shows that MAR is negative and significantly related to ownership concentration at 5 percent and 10 percent respectively. Hence the hypothesis 13, that underpricing is more correlated with concentrated ownership of public owned IPOs than private IPOs is rejected. Our results are against signalling theory, according to which high quality firms give signals of more concentrated ownership as a result higher level of underpricing. These results are in consistent with the studies by Michealy and Shaw (1994), Brennan and Franks (1997), and Pham, *et al*. (2003).

Results also reveals that firms characteristics such as firm size, aftermarket risk level of a firm in both ownership proxies and firm‘s growth (return on asset) in block are significantly influencing the ownership concentration. Demsetz and Lehn (1985) and Shleifer and Vishny (1986) also find significant influence of these firm‘s characteristics on ownership concentration. The results about oversubscription are not significant and in contrast of Booth and Chua (1996). According to him over subscription is one of the opportunities for firm‘s owners to achieve desired level of ownership structure.

This study examines the comparison of short and long run-aftermarket performance of SOE and non-SOE IPOs issued at Karachi Stock Exchange during the period of Mar 2000- June, 2015, with the total sample of 72 IPOs out of which 61 are Non-SOE and 11 are SOE. Study finds that both groups of IPOs outperforms on first trading day, as average initial market adjusted returns of SOE and non-SOE IPOs are 27.65 percent and 22.53 percent respectively. But the mean difference of both IPOs is not statistical significant and in contrast of asymmetric information theory. In long run after market performance buy and hold abnormal returns of SOE and non-SOE IPOs 80.457 percent and -91.866 percent respectively, which shows outperformance of SOE while underperformance of non-SOE in long run. Values of SOE and the mean difference values of both groups of IPOs are not statistically significant. By using cross sectional multiple variables with OLS estimation technique, this research also reveals the factors that can significantly influence the underpricing, aftermarket long run performance of IPOs and comparison of association between underpricing and ownership structure of public and private IPOs. Regression results unveils that firm size, after market-risk level of IPO and subscription ratio are significant factors of underpricing while, first day return, market-volatility and retained ownership are significant factors of aftermarket over 5 years long run performance. Study examines that ownership concentration in both public and private owned IPOs is similar, which is against signalling theory in context of ownership concentration and underpricing is positive and significantly related with ownership concentration while firm size and after market risk of issue and ROA also affects ownership concentration.

7. CONCLUSION AND POLICY IMPLICATIONS

This study explains the IPOs performance of state owned enterprises (SOE) and non-state owned enterprises (non-SOE) by examining their short and long run price behaviour up to 5 years. The Study reveals the performance analysis for the sample of total 72 IPOs out of which 11 SOE and 61 non-SOE IPOs issued in KSE from the period of 2001-June, 2015. Results of this analysis explains that Pakistan‘s state owned and non-state owned IPOs are under-priced for first trading day and in aftermarket trading up to 6 months. Results depicts that for all IPOs first trading day underpricing is 23 percent while initial underpricing level of SOE IPOs are above than non-SOE IPOs with a mean value of initial market adjust return of almost 28 percent and 23 percent respectively. But the mean difference of both IPOs is not statistically significant. Same level of underpricing in both IPOs reveals that Pakistan‘s government is committed to its privatisation policies as they developed capital markets by underpricing of IPOs. This is in consistent with Perotti (1995) and Ausenegg (2000).

The determinants of underpricing at first day for publicly and privately owned IPOs by OLS technique is used in multivariate cross sectional regression analysis. The results indicate that underpricing in both cases. Further regression results describes that firm size, after market risk level of IPO and subscription ratio are significant factors that can influence initial under-pricing and supports winner‘s curse model (Rock, 1986).For the long run performance BHAR adjusted with market index (KSE-100) is used. The behaviour in the long run after market IPOs trading shows mix results. In a sample of all 72 issued IPOs and 61 private IPOs, results reveals the positive buy and hold abnormal returns up to one year period and yield negative buy and hold abnormal returns or underperforms in long run over 3 and 5 years period. For all issued and private IPOs BHAR are -65.53 percent and -91.86 percent respectively. The negative BHAR results are in parallel with the studies of Ljungqvist (1993), Loughran and Ritter (1994). According to them on of the main reason of negative abnormal returns in long run is that overoptimistic investors push the market prices up by increase in subscription ratio at first trading day, but later on when investors correct misevaluation in long run it creates underperformance. However in a sample of 11 public IPOs buy and hold abnormal returns are positive (80.45 percent) or outperforms in long run up to 5 years. Consistently with Perotti (1995) the non-negative long-run abnormal return of Polish PIPO can be evidence for a market-oriented government. But the positive mean difference in long run of publicly and privately owned IPOs is statically insignificant. This evidence for Pakistan is in accordance with the findings of Paudyal et al. (1998) for Malaysia.

The determinants of aftermarket long run over 5 years in publicly and privately owned IPOs, OLS technique is used in multivariate cross sectional regression analysis. The results indicate that aftermarket performance is not

different in both publicly and privately owned IPOs. Further regression results describes that first day market adjusted abnormal returns, market volatility and proportion of shares owned are significant factors that can influence aftermarket long run performance. First day market adjusted return supports the signalling theory and information asymmetry hypothesis, that overoptimistic investors misevaluates stock prices and get higher initial returns which consequently accurate in long run resulting underperformance(Ritter, 1991; Kooli *et al*., 2006).

The study also investigates the degree of association between concentration of ownership structure and first day underpricing level of SOE and non-SOE IPOs. Two proxies block holders (Block) and herfindahl-hirschmann Index (HHI) are used to measure ownership concentration and inequalities. The results reveals that concentration of ownership structure is similar in both group of IPOs, which is against the signalling theory in context of ownership structure. First day market adjusted initial return has negative and significant impact on concentration of ownership. While firm size, after mark risk of IPO and ROA also significantly influence on ownership concentration. These results are also consistent with the studies done by Michealy and Shaw (1994), Demsetz and Lehn (1985) and Shleifer and Vishny (1986).

On the bases of above stated results, the study proposes some implications. Market forces need to allow to determine initial IPO price instead of valuation by investment banks. It would make system efficient in long run. Regulatory authorities are also required to take some steps to minimise concentration in ownership structure of new issues. To make dispersion in ownership structure, and to involve more small investors that are mostly uninform of IPO prices, there should be some specific range of underpricing by issuers and Securities and Exchange Commission of Pakistan (SECP).

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