

Analysis of the Determinants of the Initial Public Offering Valuation: Evidence from Pakistan's Stock Exchange

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Abstract

The present study examines the short-term performance of 64 listed Initial Public Offerings (IPOs) in Pakistan's stock exchange for the period of January 2009 to June 2018. The present study has employed six explanatory variables to examine the determinants of underpricing for the 1st, 7th, 15th and 30th trading day. These are the offer price, offer volume, investor sentiment, hot and cold issues, executive directors and non-executive directors. The findings show that in the short term, only two determinants, the offer price and issue size, indicate a significant effect on the underpricing of the IPO respectively. The results show that on a listing day, underpricing is 45.6% and if the investor holds shares till the end of the 30th trading day, they can earn abnormal returns of 51.48% respectively. The study implicates that on average, IPOs are under-priced in Pakistan, and the degree of underpricing varies according to the number of trading days.

Keywords: Underpricing, Short-term, IPO

Introduction

For the last four decades, academicians, researchers, and policymakers have been showing a keen interest in examining the determinants of the valuation of the IPO of private unlisted companies. Extensive research is found on the underpricing aspect of the IPOs, motivated by theoretical contributions (Rock, 1986; Tinic, 1998; Welch, 1989). The underpricing initial public offering depicts that a new issue is underpriced, but the determinants are different in the time horizons of different countries. In Pakistan, in 1949, the Karachi Electric Supply was first to issue IPO in the Pakistani market without a prospectus in the Karachi Stock Exchange, and in 1953, Hussain Industries issued an IPO in the Pakistani market with a prospectus to inspire private firms to go public. During 1953, political instability occurred due to Governor Raj, which encouraged nationalization and blocked the process of IPO issuance. This continued from 1953 to 1990 respectively. After this, Pakistan's government, in 1991, brought reforms in company law and encouraged companies to go public in a move to strengthen the capital market. From 1991 to 1996, several companies went public and a number of IPOs were issued. Through this, many companies diversified their ownership structure and attracted domestic and foreign investment in Pakistan. In the liberalization from 1992 to 1999, 35 average IPOs were issued in the Karachi Stock Exchange, but suddenly IPO issuance fell

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due to security, social and political issues. Also, a sanction was imposed on Pakistan in 1998 because of the nuclear test. Therefore, there was only one IPO in 1998 and none in 1999. In Pakistan's market, IPO has been issued under the fixed method, but in 2008, for the first time, IPO was issued under the book building method. From 2008 to 2013 privatization slowed down. In 2008, Pakistan People's Party stopped the process of privatization due to transparency issues and operating performance. From 2014 to 2018, the Pakistan Muslim League-Nawaz (PML-N) government again started the privatization process to attract domestic and international investment. Reforms were introduced to improve the operating performance and transparency issues.

In Pakistan, several research studies are conducted at different time periods by taking different variables. Sohail and Nasr (2007) analyzed Pakistani IPOs by taking 50 as the sample size and reported 35.66% underpricing between 2000 to 2005, and reported the causes of underpricing as the shares offered, market capitalization, size of firm and ex-ante uncertainty. In another study by Sohail and Rehman (2010), 42.10% underpricing has been reported between 2000 to 2009, by taking 73 as the sample size. After them, in 2011, Kyani and Amjid (2011) analyzed IPOs by taking 59 sample size and reported underpricing of 39.87% between 2000 to 2009 with the causes of underpricing as being market capitalization, ex-ante uncertainty, over-subscription and offer size. Afza *et al.* (2013) reported 28.03% underpricing between 2000 to 2011 respectively. Mumtaz and Ahmed (2014) reported 30.30% underpricing between 2000 to 2011 and the reported causes of underpricing are financial leverage, after-market risk level, offer price. This study reports causes of underpricing as corporate governance and CEO duality.

Literature Review

An extensive empirical literature explains the factors affecting underpricing based on the theoretical support of the signaling theory, winner curse theory, lawsuit avoidance theory, ex-ante uncertainty theory, underwriter prestige, and monitoring theory respectively. Welch (1989) developed the signaling theory. This theory explains that big firms intentionally underprice their IPOs to give a good signal to the market to attract investors. The winner curse theory, developed by Rock (1986) explains that there are two types of investors - educated and uneducated. Educated investors are those who know, and the uneducated investors are those who have no idea about the market, the existing and new firms in a market. Lawsuit avoidance theory (Tinic, 1998) suggests that mostly firm underprice IPOs to avoid lawsuits from investors due to any errors or omissions. A firm issues its IPOs in the market in ex-ante uncertainty and information asymmetry which leads to the underpricing of IPOs (Beatty and Ritter, 1986; Ritter, 1984). Hoberg (2007) suggests that a high prestige underwriter has valuable information which makes this process profitable for the firms.

Evidence found in the empirical literature, documenting the underpricing of IPOs exists all over the world, but its percentage varies from nation to nation in different time horizons. Ritter (1984) investigated that in the US, 1028 firms went public by issuing IPOs between 1977 and 1982. He documented the price increase of 14% at the end of the 1st trading day, with a mean return of 48.4%. Further, investigation results are related to the positive relationship between uncertainty and underpricing. A study conducted by Reilly and Hatfield (1969) documented that underpricing of around 11% existed in the US IPO market from 1963-1965. Underpricing varies over different periods. In the US, underpricing was just 7% in the 1980s, but almost doubled to 15% during 1990-2000. In UK's market, Brennan and Franks (1997) report that to disperse the ownership of the manager, the underpricing technique is openly used. Huang (1999) investigated the Taiwanese IPOs from 1971 to 1995 and reported the confirmation of abnormal returns at 42.605 due to oversubscription. Kiyamaz (2000) reported a 13.6% underpricing of the Turkish IPO sample during 1990-1995. Khurshed and Mudambi (2002) reported for non-investment IPOs underpricing is restricted. Borges (2007) found 11.12% underpricing in the Portuguese market by examining 41 unseasoned issues. Sohail and Nasr (2007) analyzed Pakistan's 50 IPOs and concluded that there was an average underpricing of 35.66% between 2000-2006.

The key determinants affecting IPO underpricing in Pakistan were ex-ante uncertainty, market capitalization, and oversubscription. Kucukkocaoglu (2008) described that fixed offer and book building techniques caused higher underpricing, by investigating 34 Tunisian IPOs from 1992 to 2008. Quayes and Hasan (2008) utilized 90 IPOs to confirm underpricing from the 1st to the 21st trading day during 1991 to 1997, in Bangladesh's market and concluded that underpricing was around 108% to 119%. They also found that the factors affecting the underpricing in the Bangladeshi IPO market were ex-post price and share offer to the market. After that, they compared the underpricing in Bangladesh's market with other Asian markets and reported that it was the highest in the former, in comparison to other Asian markets. Chamber and Dimson (2009) found that in the UK market, the underpricing was 19% in 1989-2007. According to Zouari *et al.* (2009), offer price, listing delay, post-issue promoter holder holding and oversubscription played a significant role, affecting underpricing in the Tunisian IPO market. Wu, Ng, and Moshirian (2010) investigated underpricing in the major markets of Asia Pacific from 1991 to 2004, and the results of underpricing in China were 202.63%, in Korea 70.30%, in Malaysia 61.81%, in Singapore 33.10%, in Japan 34.04% and Hong Kong 21.43%. According to Liu and Ritter (2010), there was only 12% underpricing of an IPO in the US in the period 2001-2008. It was also documented that the abnormal excess returns differed in different periods. Yan *et al.* (2010) concluded that during the 1993-2003

period, initial underpricing was 16.8%. Samarakoon (2010) conducted a study on the Sri Lankan IPO market and analyzed 105 IPOs. He reported underpricing at 33.5%. Sahoo and Rajib (2010) investigated the existence of underpricing in the Indian IPO market by utilizing 92 IPOs from 2002 to 2006. They concluded it was due to the initial abnormal returns and over-expectation of the Indian investors. Further, Sohail and Rehman (2010) carried a study by taking 73 IPOs in the investigation and reported measured underpricing on the 1st, 5th, 10th, 15th and the 20th trading day as an average between 37% to 42%. Kayani and Amjad (2011) reported a significant factor affecting the degree of underpricing in Pakistan's market, including oversize, aftermarket risk level, oversubscription, and float.

After a comparison of the underpricing in the US, Latin America, and European markets, the average underpricing is higher in Asian countries as compared to the US, Latin America, and European countries (Banerjee *et al.*, 2011). Further, Banerjee *et al.* (2011) documented that the average underpricing was 10% in some European countries, while on the other side of Europe, the underpricing was 20% and, in some cases, it was even more than 20%. Further, Banerjee *et al.* (2011) reported an average abnormal returns evidence in 11 Asian countries - in China 57.14%, in Hong Kong 22.21%, in Taiwan 17.25%, in Singapore 12.94%, in India 25.01%, in Indonesia 52.25%, in Thailand 19.15%, in Japan 45.14%, in Korea 54.57%, in Malaysia 31.18%, and in Philippines 45.50%. They further claimed that underpricing could be controlled or reduced by an effective contract enforcement mechanism. In addition, they found the agency cost and information asymmetry factor influencing the underpricing.

Adjasi *et al.* (2011) found that underpricing existed in the Nigerian IPO market from 1990 to 2006. He considered 77 IPOs in the investigation and reported the initial abnormal returns of 43.10%. During this investigation, he found important variables defining IPO underpricing. The variables included the firm-size audit quality as crucial. In a recent study conducted in the Australian market by Perera and Kulendran (2012), the investigators found a 25.47% average initial underpricing. Additionally, they measured the cumulative abnormal returns and reported 23% underpricing on the 10th trading day.

Alqahtani and More (2012) studied the New Zealand market and reported an underpricing of 9.16%. Falck (2013) suggested information theory as the most important theory and inspected underpricing in the Norwegian market (3.14%). Agathee *et al.* (2012) compared the large-capitalization companies with the small capital companies and claimed that in the latter, a more significant percentage of underpricing existed, as compared to the former because the former had a strong financial background. They examined Mauritian IPOs from 1989 to 2005, by analyzing 44 IPOs and reported that

there was a 13.14% underpricing. Additionally, the reported financial strength, the prestige of the auditor and risk affected this underpricing.

Alagidede and Heerden (2012) inspected 138 South African IPOs from 2006 to 2010 and reported abnormal excess returns on the 1st trading day at 108.3%, on the 5th trading day at 102.4%, on the 10th trading day at 195.8%, on the 15th trading day at 201.2% and on the 20th trading day at 197.8%. Jewartowski and Lizinska (2012) report underpricing in the Polish IPOs from 1998 to 2008 of 13.95%. Agathee, Sannassee, and Brooks (2012) inspected underpricing in 44 Mauritian IPOs and reported it at 13.14% from 1989 to 2005. Belghitar and Dixon (2012) inspected 335 United Kingdom IPOs and reported 12.07% underpricing.

Additionally, IPOs sponsored by venture capital firms are less underpriced. In 2012, the study conducted by Abubakar and Uzaki (2012) at the Malaysian IPO market from 2000 to 2011, by taking 476 IPOs for investigation, confirmed that underpricing was 35.87% due to factors such as the age of the firm, issue size and offer price. In another study, Brooks *et al.* (2012) documented that the aftermarket risk level, auditor reputation, and ex-ante uncertainty were the significant factors affecting the Mauritius market's underpricing respectively. Jain and Padmavathi (2012) found that on the first day, the market trading return, along with oversubscription significantly influenced the underpricing in the Indian market.

Loughran *et al.* (2013) measured underpricing in 50 countries, having 11 Asian countries. The initial underpricing in Taiwan was reported to be 37.2%, in Indonesia 27.7%, in India 88.5%, in Singapore 26.1%, in Korea 61.6%, in Thailand 36.6%, in Philippines 21.2%, in Malaysia 62.6%, in Japan 40.2%, in Hong Kong 15.4%, and in China, 137.4% respectively. In a more recent study carried out by Mumtaz and Ahmed (2014), 75 Pakistani IPOs, during the period 2000 to 2011 were considered, and it was found that the initial underpricing was around 30.3%.

All the studies above were carried out to examine the underpricing in Pakistan's market on an opening day and over the 30 trading days. The most recent study conducted by Wahid and Mumtaz (2019), taking 238 IPOs in an alternative investment market from 2007 to 2016, reported 12.58% underpricing on the first day, which decreased to 7.57% on the 30th trading day. The study confirms the theoretical evidence of the signaling hypothesis, underwriter prestige, and investor sentiment respectively.

In the literature above, researchers have analyzed different determinants in different time periods in the context of Pakistan. This study attempts to examine the short-term valuation of the IPOs in the Pakistani stock market for the period of January 2009 to June 2018 by incorporating the explanatory variables of the executive directors,

non-executive directors, offer price, offer volume, hot and cold market and investor sentiment.

Research Methodology

The measurement of the underpricing of the IPO is conducted through an examination of the initial returns, market returns, and market-adjusted abnormal returns as expressed below:

Measurement of Return

$$\overline{Raw\ Return} = \ln P1 - \ln P0 \quad (1)$$

P1 stands for the closing price at the end of a trading day of an IPO and P0 stands for the offer price at which the IPO is offered to the general public for book building.

Measurement of Market Return

$$\overline{Market\ Return} = \ln KSE\ 100\ Index\ 1 - \ln KSE\ 100\ index0 \quad (2)$$

Where KSE-100 index 1 represents the trading day closing index, and KSE-100 index 0 represents the closing index at the subscription day of an IPO issue.

Measurement of Market Adjusted Abnormal Return

$$\overline{MAAR} = \frac{(1+raw\ return)}{(1+market\ return)} * 100 \quad (3)$$

Regression Equation

$$\overline{Y} = \beta_0 + \beta_1 OPrice + \beta_2 OVolume + \beta_3 H\&C\ issue + \beta_4 E.D + \beta_5 Non\ E.D + \beta_6 IS \quad (4)$$

Where y is the dependent variable, and the Oprice is offer price at which IPO is offer to the market mentioned in the prospectus. OVolume is offer volume number of IPOs offer to the market mentioned in prospectus, IS is the investor sentiment which is calculated from the 3 months previous KSE-100 index before the subscription of the IPO. H&C is hot and cold issues calculated by dividing total number of years to the total number of IPOs. The variable E.D is the executive director known as dependent directors of the company and the variable Non-E.D is non-executive director(s) is known as independent directors as mentioned in the company's prospectus.

Results & Discussion

Table 1 reports that the raw return on the first day of listing was 46.04%, the market return was 1.04% and the market-adjusted abnormal return was 45.6%. The results give evidence of the underpricing on the first trading day in the Pakistani market. In the Pakistani market, on average, IPOs are underpriced on the first day to give incentive to the investor. If it increases, the investor holds the newly issued shares for up

to 30 trading days. This allows the investor to get a higher than abnormal return than if they sell on the 1st, 7th or 15th trading day. The returns guarantee that the investor can earn positive abnormal returns from the 1st trading day to the 30th trading day.

Table 1: *IPO Performance in Pakistan*

Trading Day	Raw Returns (%)	Market Returns (%)	MAAR (%)	S.D
1 st Trading Day	46.044	1.043	45.600	79.370
7 th Trading Day	50.748	1.743	49.210	79.640
15 th Trading Day	53.581	1.978	51.200	79.160
30 th Trading Day	54.242	2.043	51.480	79.080

Note: MAAR is Market adjusted abnormal return and S.D is Standard Deviation

There is very low variation in the underpricing from the 1st trading day to the 30th trading day. As compared to others, the overall underpricing in the Pakistani market is lower than other Asian countries' stock markets. Further, as compared to the other Asian countries in South Africa and Asia Pacific, the degree of underpricing is low due to the fewer number of IPOs and low volume offered to the market as compared to other markets respectively. For example, Alagidede and Heerden (2012) reported that underpricing on a listing day was 108.3%, on the 5th trading day was 102.4%, on the 10th trading day was 195.8%, on the 15th trading day was 201.2% and on the 20th trading day, the underpricing declined and was reported as 197.8% in the South African IPOs, during 2006 to 2010, by investigating 138 IPOs. In Asian countries like China and India, underpricing was 137.4% and 88.5% (Loughran *et al.*, 2013). During 2001 to 2006, Omran *et al.* (2010) documented that the gulf firms' new issues were 290% underpriced.

Table 2 shows the sector-wise IPO performance from January 2009 to June 2018. The 9 IPOs in oil, gas, and lubricant sector shows the underpricing to be 85% on the 1st day, which then decreases on the 7th day to 79%, and at the end of the 15th day, it again decreases to 78% and increases on the 30th trading day. In the power sector 8 IPOs, the underpricing is just 24% on the 1st day and increases at the end of the 7th day to 32%, only to fall again on the 15th trading day by about 30%. At the end of the 30th trading day, it again decreased to 24%. The 8 IPOs in food and fertilizer sector shows underpricing to be 6% on the first trading day and increases at the end of the 7th trading day to 9%. It doubles at the end of the 15th trading day to 15% and again doubles at the end of the 30th trading day. Only 7 IPOs in banking sector, the underpricing reported on the first day was 81%, which remained constant on the 7th trading day, and increased a little at the end of the 15th trading day to 82% and decreased again at the end of the 30th trading day to 77%.

The 10 IPOs in steel sector shows underpricing on the 1st trading day at 52%, which increases to 62% on the 7th trading day. There is a decrease in the underpricing to 61% at the end of the 15th trading day, with a further decrease to 60% at the end of the

30th trading day. The 2 IPOs in insurance sector has showed underpricing of 3% on the 1st trading day, 2% on the 7th trading day, around 1.5% at the end of the 15th trading day, and 5% at the end of the 30th trading day respectively. The 24 IPOs in other sector includes miscellaneous firms and report underpricing at 42%, which increases at the end of the 7th trading day to 47% respectively. It again increases on the 15th trading day and remains the same at the end of the 30th trading day.

Table 2: *Sector wise IPOs performance in Pakistan January 2009 to June 2018*

MAAR	Oil, Gas & Lubricant	Power	Food & Fertilizer	Banking	Steel	Insurance	Other
1 st Trading Day	85.960	24.070	6.010	81.040	52.700	3.250	42.320
7 th Trading Day	79.020	32.040	9.760	81.950	62.380	- 1.950	47.180
15 th trading Day	78.690	30.910	14.740	82.170	61.700	1.620	52.100
30 th Trading Day	79.710	24.800	27.750	77.920	60.430	.070	52.050

Note: values are in percentages.

Table 3 below shows the descriptive statistics of the explanatory variables. On the 1st trading day, the average underpricing is 45.6%, and the median turned out to be 6.6%. The lowest underpricing on the first trading day is -19.8%. The standard deviation is 79.37, which shows the consistency between the returns. The skewness and kurtosis of 1.94 and 6.09 respectively, show that the thickness in the tail of a probability density function. On 7th trading day, underpricing has been 49.2%, with a median value of 17.27 and the minimum underpricing being -31.86% respectively. The standard deviation is 79.63, which represents that there is continuity in the returns. The skewness and kurtosis value are near to the normal.

Table 3: *Descriptive Statistics of Variables*

Descp	1 st MAAR	7 th MAAR	15 th MAAR	30 th MAAR	E.D	Hot & cold	Issue Size	Inv. Sent.	Non- E.D	Offer Price
Mean	45.6	49.2	45.6	51.47	7.04	0.671	1.030	.06	2.671	2.91
Med.	6.649	17.27	6.64	30.77	7	1	3.690	.06	3	2.63
Max.	315.75	317.07	315.75	293.26	12	1	6400M	.24	5	5.41
Min.	-19.8	-31.86	-19.8	-32.71	1	0	25M	-.14	0	2.28
S.D	79.37	79.63	79.37	79.08	2.05	.47	2.830	.07	1.422	.67
Skew.	1.94	1.82	1.94	1.56	-.93	-.75	4.972	-.082	-.69	1.43
Kurt.	6.09	5.75	6.09	5.04	4.811	1.571	26.746	3.25	2.841	5.26

On the 15th trading day, on average, underpricing was 45.6%, with the median value 6.64. The highest underpricing possibility is of 315.75, and the minimum underpricing of -19.80 is reported in the table. The standard deviation of 79.37 represents that the return is constantly high. The skewness and kurtosis values are near to the normal.

At the end of the 30th trading day, the average underpricing reported was 51.47, with a median value of 30.77. The high underpricing value was 293.26, and the minimum underpricing value was -32.71; the standard deviation was 79.08, showing that the returns were continually high if the investor held IPOs up to the 30th trading day. The skewness and kurtosis value are near to the normal.

The executive director average in a firm is 7.04%, with a median value of 7. The minimum executive directors have been 1, with the maximum being 12, having a standard deviation of 2.05, which shows the low variability in underpricing. Hot and cold market activity on average is .67% with 1 as the median. The minimum value of the IPO firm represents 0 and the maximum shows 1, with a standard deviation of .47, representing that there are fewer chances that hot and cold market activity participated in underpricing. The skewness and kurtosis indicate that the value is near to the normal. The issue size on average is 1.03, with median 3.69. The highest value of the issue size is 6,400,000,000 and the minimum offer size is 25,000,000. Market return on average is .06%; the maximum reported is 5 and the minimum is 0, with a standard deviation of 1.42, representing their low variability. The non-executive director shows an average of 2.67, with the maximum being 5 and the minimum being 0. The offer price on average is 2.91, with 2.28 as the minimum and 5.41 as the maximum.

Regression Results

Table 4 indicates the regression results of the IPO underpricing for the 1st, 7th, 15th, and 30th day. The determinant of the offer price, offer size turns out to be significant at the 1% level on the 1st day of the IPO underpricing in the Pakistani market.

Table 4: *Regression Results for the Sample Period*

Regression(s)	1	7	15	30
Constant	145.223 (2.659) *	151.532 (2.655) *	145.684 (2.405) *	114.495 (1.861) **
<u>Variables</u>	1	7	15	30
Investor	14.450	32.205	10.322	27.715
Sentiment	(.079)	(.191)	(.061)	(.168)
O Price	-57.716 (-3.115) *	-55.078 (-2.934) *	-49.454 (-2.640) *	-38.885 (-1.976) *
O Size	.000 (2.017) *	.000 (1.926) *	.000 (1.595)	.000 (1.018)
E D	7.204 (1.042)	6.514 (.948)	5.550 (.826)	5.849 (.869)
Non-E D	-.107 (-.015)	-2.178 (-.312)	-1.094 (-.158)	-1.782 (-.256)
H &C	5.705 (.665)	14.556 (.583)	11.153 (.441)	12.734 (.485)

Note: The values in brackets shows the t-statistics*, ** and *** represents significant level at 1%, 5% and 10% respectively

The other determinants turned out to be insignificant. Pakistani market is considered to be the most volatile market by its nature. The most recent study, conducted by Mumtaz and Ahmed (2014) reported underpricing in Pakistan at 30.3, and the determinants of underpricing were the offer price, underwriter's prestige, financial leverage, and oversubscription. Current study's result also shows that the offer price is significant and affect underpricing in the short term. In another study conducted by Song *et al.* (2014), underpricing in China was 66% and the determinants included the issue size, EPS and firm age. So, the current study results show that both the offer price and issue size have a significant effect on the 1st day underpricing. Other studies by Adjasi *et al.* (2011) in Nigeria and Abubakar and Uzaki (2012) in Malaysia report that the offer price and issue size significantly affect underpricing internationally. Kyani and Amjid (2011) verified in their study that offers price effect underpricing in the Pakistani market. The market return, executive director, non-executive director, and hot and cold markets have no significant effect on the underpricing in Pakistan's market on the 1st day. However, the study conducted in Poland by Jewartowski and Lininska (2012) concluded that the market returns affected underpricing in Poland, which is not the case in Pakistan's market. This means that the determinants affecting underpricing vary from nation to nation in different time horizons. Darmadi and Gunawan (2013) reported that in Indonesia, the number of board of directors and the number of independent directors (non-executive directors) affected underpricing, but in Pakistan's market, the number of board of directors has no significant effect on underpricing. Samarakoon (2010) studied

Sri-Lankan IPOs and reported that the determinants significantly affecting underpricing were hot markets, offer size, privatized issues, and market sentiments, but in Pakistan, hot markets have no significant effect on the underpricing because there is an overall low number of IPOs. The 7th day underpricing is affected both by issue size and offer size. Both determinants are significant at the 1% level. Zouari *et al.* (2009) reported that the offer price, underwriters, capital retention, and oversubscription affected underpricing in Tunisia. In the study by Deng and Dorfleitner (2008), the issue size, P/E ratio, net assets per share and cost of offering affected underpricing in China, while the other determinants such as market returns, executive directors, non-executive directors, and the hot and cold markets had no significant effect on the 7th day underpricing. Kiymaz (2000) studied 138 IPOs in Turkey and reported that market return, firm size, and self IPOs affected underpricing.

The 15th trading day offer price has determinants that only have a significant effect on the underpricing on a 1% level. Kyani and Amjid (2011) studied 59 Pakistani IPOs from 2000 to 2009 and reported that underpricing was 39.87. They documented that the offer price, market capitalization, ex-ante uncertainty and oversubscription had a significant effect on the underpricing, while the other determinants (market return, issue size, executive directors, non-executive directors, and the hot and cold market) had no significant effect on the 15th trading day underpricing. Chuanrommanee and Booch (2013) studied Thailand's IPOs and reported that issue size, institutional investors and look-up periods significantly affected underpricing. The 30th trading day underpricing was significantly affected by the offer price at the 1% significance level. Other determinants have no significant effect on the underpricing on the 30th trading day underpricing. Afza *et al.* (2013) studied Pakistani IPOs and reported that corporate governance, including the board of directors and the CEO's duality, affected underpricing in Pakistan. Avelino (2013) studied Brazilian IPOs and reported firm assets and market returns as the main determinants of underpricing, while the market return is not seen to have any significant effect on the underpricing in Pakistan in the short-run period.

Conclusion and Policy Implications

This study investigates 68 IPOs listed on KSE-100 from Jan 2009 to June 2018 by using regression to the determinants of IPOs to measure underpricing on the 1st, 7th, 15th, and 30th days. The results confirm that IPOs outperform in a sample period and report 46.044% underpricing on the 1st trading day. If the investor keeps the IPOs till the 30th trading, he will get abnormal returns of 52%.

The result shows that on the 1st and 7th trading day, offer price and offer size affect underpricing and on the 15th and 30th trading, only offer price affects underpricing. Hence, this study helps policymakers in considering those IPOs that have a higher offer

price, but are less underpriced and offer size reduce the underpricing. By decreasing the impact of these determinants on the new issues in Pakistan's market, underpricing can be minimized in Pakistan's capital markets. Hence, following the issuance over the thirty-trading day period of trading, data show that Pakistan's new issues outperform over the sample period. A higher offer price decreases the degree of underpricing as the market return increases. Over the 30th trading day considering the short-term performance of new issues in Pakistan, findings predict and suggest that the determinants of short-term underpricing consist of the offer price and issue size in Pakistan's stock market between Jan 2009 to June 2018. We think that future research can focus on the short and long-term performance of IPOs, by applying extreme bound analysis and other approaches such as the error correction model to identify the robustness and accuracy of the variables in the selection process, and also to motivate future research to measure the short and long-term performance in other emerging market by applying such techniques.

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