

Does Going-Public Decision of the Initial Public Offerings in Pakistan's Hot Issue Market Matter?

Kiran Alim

Faculty of Management (FM), Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia

Shehzad Khan

Assistant Professor, Institute of Business Studies & Leadership, Abdul Wali Khan University Mardan

Javed Iqbal

Assistant Professor, Department of Economics, Abdul Wali Khan University Mardan

Maqsood Haider

Assistant Professor, FATA University, Darra Adam Khel, FR Kohat, Khyber Pakhtunkhwa, Pakistan.

Corresponding author: kshehzad@live.utm.my

Abstract

This study examines the going-public decision of the Initial Public Offerings (IPOs) during hot issue market in Pakistan for the 77 non-financial IPO's firms listed in the Pakistan Stock Exchange (PSX) for a period of 2000-2015. This study also analyses the cyclical patterns of hot and cold issue markets as well as investigates the impact of firm, industry, and country level factors on the going-public decision during hot issue market. This study uses both the *volume* and *initial returns* methods to identify the hot and cold issue markets. Using the Logit regression model, we found that the highest number of listing per year along with the high initial returns generally referred to as the hot issue market occurred in the years 2003-2005, 2007 and 2014-2015 whereas the periods between 2000-2002, 2006, and 2008-2013 were found to be cold issue market. Furthermore, the hot issue market exhibited on average a greater degree of underpricing than the cold issues market. The industry as well as the firm-level condition and overall country level factors played an important role in determining firm's going-public decision during hot issue market. The findings of this study support the conventional wisdom of signaling, changing risk composition, information spill-over, and capital demand hypothesis.

Keywords: Hot issue market, cold issue market, going-public decision, IPO, Pakistan,

The going-public decision is a crucial decision for a business entity to make in its life span. The going-public decision is motivated mainly to raise capital from the general public to finance the firm's current and future business operations (Madura, 2014). According to Boehmer and Ljungqvist (2004), the cost of capital from general public is less than the cost of capital from private investors. However, there may be persistent abnormal behaviours associated with going-public decision such as underpricing, underperformance and hot issue market. The underpricing refers to the high positive returns that an investor earned in the short run. However, underperformance means the poor performance of IPOs in the long run usually up to three years after

listing. Such abnormal returns generated by IPOs in the short and long run are considered against the efficient market hypothesis (EMH) of Fama (1970). The hot issue market refers to the periods of IPO's high volume and high initial returns. Finally, the periods of relatively low volume and low initial return are known as cold issue market. It is well documented in the literature that IPO issued in hot market are more underpriced in the short run and subsequently more underperformed in the long run (Agathee *et al.*, 2014; Agathee *et al.*, 2012a; Agathee *et al.*, 2012b; Lowry and Schwert, 2002; Loughran and Ritter, 1995; Ritter, 1984; Ibbotson and Jaffe, 1975). This abnormal performance of IPOs in hot issue market leads to losses not only for the issuing firm as well as for the investors.

Theoretically, the main purpose of the issuer' firm is to raise optimal funds and leave the least amount of money on the table. Principally, a firm should go public in the periods of low volumes and low initial returns (cold market) to leave a minimum amount of money on the table. However, there is a great deal of evidence in the literature indicating that more firms tend to go public in the periods of high number of IPOs and high underpricing (hot issue periods) and leave more money on the table. Thus, it is puzzling as to why firms go public in a hot market and leave more money on a table instead in cold issue market (Agathee *et al.*, 2012a).

Numerous studies (e.g. Agathee *et al.*, 2012a; Howe and Zhang, 2005; Helwege and Liang, 2004; Loughran and Ritter, 2004; Lowry and Schwert, 2002; Ritter, 1984) studied the effect of firm-specific characteristics such as; underpricing, firm's risk, age of the firm, sale and underperformance of the firm on the going-public decision in hot issue market. Likewise, many studies highlighted that going-public decision of the IPO firms during hot market also depend on the country's overall economic condition (Dittmar and Dittmar, 2008; Pástor and Veronesi, 2005; La Porta *et al.*, 1997; Choe *et al.*, 1993; Fama and French, 1989). Similarly, the past literature (Jain and Kini, 2006; Altı, 2005; Helwege and Liang, 2004) indicated that industry condition is important in estimating and evaluating the growth and risk of the business, henceforth affect the going public-decision. Various information can influence each industry in a different way and thus industries tend to have different issues and challenges which may influence the decision to go-public differently in hot issue market.

Numerous studies have been conducted on the IPO's hot issue market phenomena in different countries. Most of the work on IPO's hot issue market has been thoroughly investigated in the developed countries, mainly in US and European markets. However, this phenomenon is very little discussed in the emerging markets, particularly in Pakistan. The IPO market in Pakistan is less explored in term of research as there are a few studies conducted to investigate the determinants of IPOs aftermarket performance. Sohail and Nasr (2007) investigated aftermarket performance of IPOs in Pakistan issued during 2000-2006 and reported 35.6% underpricing. Similarly, Yar and Javid (2014) documented 51.57% underpricing during 2000-2012. Later on, Kafayat and Farooqi (2014) examined Pakistani IPOs issued during 2006-2013 and documented the highest underpricing of 64%. It is evident from the past literature, that IPO's underpricing and underperformance have been investigated in Pakistan, however, no single study investigated the IPO's hot issue market in Pakistan. To the best of researchers' knowledge, previous studies mainly focused on industry clustering to examine the decision of going-public during hot issue market. However, very little attention has been given to examining the effects of overall industry condition such as munificence, dynamism, and concentration on the going-public decision during hot issue market. Hence, this study contributes to the body of knowledge by examining both the the direct impact of overall industry condition and the firm and country level factors on the going- public decision during hot issue market.

LITERATURE REVIEW

Ibbotson and Jaffe (1975) was a ground-breaking study that highlighted the presence of the "hot issue market". They argued that IPO market follows a persistent pattern characterized by large fluctuations in initial returns and volume, often referred to as hot markets. However, Ritter (1984) argued that the hot issue phases are usually associated with oversubscription of IPOs followed by large underpricing. Moreover, the periods of high underpricing are usually accompanied by high IPO volume and thus many firms tend to go-public during a periods of high

initial returns (Lowry and Schwert, 2002). Furthermore, hot market may occur due to high volume, high underpricing, frequent oversubscription, and concentration in particular industries (Brailsford *et al.*, 2000). Similarly, Khanna *et al.* (2008) explained that a period is characterised as hot when there is underpricing and significantly high returns. Furthermore, hot issue market may occur due to an unusual increase in trading volume and investor's optimism (Ljungqvist *et al.*, 2006; Derrien, 2005). In contrast, cold IPO markets are completely opposite as there are low number of IPOs, lower subscription, investor pessimism, and relatively less underpricing (Ljungqvist *et al.*, 2006; Lowry and Schwert, 2002; Ritter, 1984; Ibbotson and Jaffe, 1975).

In the IPOs literature, hot issue presents a puzzling phenomena that affect IPO aftermarket performance both in the short-run and in the long-run. Majority of the studies on IPO's hot issue phenomena have been conducted in developed countries mainly in US and UK markets. With regard to US market, Ibbotson and Jaffe (1975) investigated IPO's during 1960s to 1970 and found that IPO's high initial returns during some issuance periods to be characterized by higher IPO volume (hot periods) compared to low volume periods (cold periods). In the same way, Lowry and Schwert (2002), analyze the relationship between IPO underpricing and volume and found more firms go-public during periods of severe underpricing (hot issue periods).

Loughran and Ritter (2004) found that the level of initial underpricing in the US market increased substantially across different periods, such as; 7.4% in 1980-89, 14.8% in 1990-98 to 65.0% in 1999-2000. However, companies that adopted gopublic policy in a hot issue market performed poorly in the long run as compared to the IPOs that went public in cold issue market (Loughran and Ritter, 1995; Ritter, 1991). Banerjee *et al.* (2013) examined 250 IPOs in the UK during 1995-2010 and found that the average monthly initial returns in the UK exhibited substantial time variation and reached to 100% variation during the high-tech boom (hot) period of the 2000s while averaged only 10% in 2001s following the boom of dot-com bubble (cold periods). Similarly, Moorman (2010) reported IPO's high initial returns of 22.46% in the hot market as compared to 15.42% in the cold issue market in the UK.

In developing market, Neneh and Smit (2013) reported a high level of underpricing of 96% during hot market of South Africa against 4.8% of underpricing in cold periods. Similarly, Agathee *et al.* (2012a) demonstrated that the hot issues showed on aggregate higher levels of underpricing of 15% than 6.94% of underpricing in cold periods in Mauritius stock market. In the same way, Warganegara and Warganegara (2014) found that initial underpricing in hot issue periods was 36.8% more as compared to cold issue periods in Indonesia. Moreover, Zaier and Abdelmoula (2014) examined the IPO's hot and cold period in Tunisia, and concluded that the levels of underpricing during hot periods were much higher than those in cold periods. Thus, it can be concluded from the past studies that IPOs issued in hot market are more underpriced and underperformed than IPOs issued in cold market. Moreover, the degree of underpricing and underperformance during hot issue market are relatively high in the developing markets than in the developed markets.

HYPOTHESES DEVELOPMENT

DETERMINANTS OF FIRM' GOING PUBLIC DECISION

UNDERPRICING: Loughran and Ritter (2004) explained that if firms use underpricing as a signal of their quality then good quality firms should go public in hot issue periods. Following the signaling hypothesis, firms pass its signals of good quality by going public during periods of high initial returns and high volume (hot issue market). Numerous studies have documented a significant positive association between underpricing and IPO volume during hot issue market (Peterle and Berk, 2016; Agathee *et al.*, 2012a; Lowry and Schwert, 2002; Ritter, 1984; Ibbotson and Jaffe, 1975). Benveniste *et al.* (2003) and Ibbotson *et al.* (1994) observed that the IPO volume and initial returns are positively associated. Similarly, Agathee *et al.* (2012a) also found a significant positive relationship between underpricing and hot issue market. Therefore, based on the studies discussed above, the relationship between the underpricing and firms decisions to go public is tested through the following null hypothesis:

H₀₁: Underpricing does not have any effect on the firms' decision to go public during hot market.

POST-IPO RISK: Ritter (1984) argued that the hot issue market phenomenon in the US during the 1980s was due to the changing risk composition of the IPO firms. The riskier firms are generally more underpriced, and the hot issue market occurs when riskier firms go public. Furthermore, Ritter (1984) found a positive relationship between the issuing firm's risk level and the expected initial returns which is generally followed by high IPO volume (hot market). Lowry *et al.* (2010) documented that a "hot-issue" market is not only specified by high initial returns and high IPO volume but also the disparity (risk) in the initial returns. Thus, firm-specific risk can affect the decision of an IPO's firm to go public during hot issue market which can be tested as follows:

H₀₂: The post-IPO risk does not have any influence on the firms' decision to go public in hot issue market.

UNDERPERFORMANCE: In conjunction with the windows of opportunity hypothesis, extensive literature has documented an inverse association between IPO's underperformance and IPO's high volume (hot issue market) (Coakley *et al.*, 2008; Trauten *et al.*, 2007; Lowry and Schwert, 2002). Loughran and Ritter (1995) found that IPOs during high volume periods generates poor returns in the long term. Similarly, Trauten *et al.* (2007) and Coakley *et al.* (2008) argued that the firms that tends to go public in hot markets underperform more than firms that goes public in cold issue market. Based on these arguments, we can test the following hypothesis:

H₀₃: The underperformance of IPOs doesn't have any influence on the decision to go public during a hot market.

INDUSTRY CLUSTERING: Benveniste *et al.* (2002) argued that clustering of IPOs within the industry determines the hot and cold markets. In hot issue periods, usually, a bunch of similar firms go public than they do in cold issue periods. Information spill-over results in the industry clustering of IPO's during hot issue periods (Alti, 2005; Hoffmann-Burchardi, 2001; Subrahmanyam and Titman, 1999; Persons and Warther, 1997). A large number of studies on the IPO's found that hot markets occur when several firms from particular industries goes public (Westerholm, 2006; Alti, 2005; Hoffmann-Burchardi, 2001; Subrahmanyam and Titman, 1999; Persons and Warther, 1997). Helwege and Liang (2004) documented a *positive* relationship between industry clustering and hot issue periods. Therefore, we can test the relationship between industry clustering and the going-public decisions as follows:

H₀₄: Industry clustering *does not matter* for the decision of an IPO firm to go public during hot issue market.

INDUSTRY CONCENTRATION (HHI): Industry concentration (HHI) is the sum of the squared market shares of all the firms within the industry at a certain time. Several studies found an association between 'industry concentration' and the choice between an IPO versus takeover by a public company (Brau *et al.*, 2003; Sharma and Kesner, 1996; Audretsch, 1995). Brau *et al.* (2003) argued that the probability of an IPO is greater than takeover in low concentrated industries. Since, the low survival possibilities for a private firm in low concentrated industries make it more attractive to go public rather than being takeover (Sharma and Kesner, 1996; Audretsch, 1995). Therefore, the following hypothesis is developed to test the same:

H₀₅: The HHI is significantly related the firm decision to go public in hot issue market.

STOCK MARKET RETURN: Extensive literature (Brzeszczynski, 2014; Ameer, 2012; Tran and Jeon, 2011; Pagano *et al.*, 1998; Rees, 1997; Rydqvist and Högholm, 1995; Loughran *et al.*, 1994) documented a significant positive influence of stock returns on IPO volume (hot issue market). Ameer (2012) found that there was a significant positive relationship between the extent of stock market returns and the number of IPOs. Similarly, Tran and Jeon (2011) found evidence that there existed a strong positive relationship between IPO activities and stock market returns. In contrast, Li and Shi (2016) found a negative association between stock returns and number of IPOs in China. They explained that the negative relationship between stock market and the number of IPOs is due to the investor over-pessimism and the complex regulatory framework of the Chinese market. Thus, the following hypothesis can be tested:

H₀₆: There is no relationship between stock market return and the the decision of IPO's firm to go public during hot issue market.

GDP GROWTH RATE: According to capital demand hypothesis, fluctuations in the number of IPOs are determined by changes in the aggregate demand for private firm's equity financing. Nevertheless, such demand for capital is the outcome of changes in economic conditions as well as overall business cycle. Thus, a better economic environment provides more business opportunities and lower cost of capital compared to debt financing (Lowry, 2003). Henceforth, private firms prefer to go public to raise equity financing instead of debt. Numerous studies have been conducted to investigate the relationship between GDP growth rate and IPO volume (hot issue) (Peterle and Berk, 2016; Dayaratne and Awgcn, 2015; Du and Rau, 2014; Meluzin and Zinecker, 2014; Ritter *et al.*, 2012; Lowry, 2003; La Porta *et al.*, 1997). Meluzin and Zinecker (2014) found that GDP growth rate has significantly positive impacts on the number of IPOs. They concluded that the business cycle in term of GDP growth rate has a direct impact on the IPO activity in the Poland during hot issue market. Recently, Peterle and Berk (2016) showed that GDP growth rate has a positive and significant impact on the number of IPOs, indicating that GDP growth is the most relevant drivers for the IPOs to go public in Central and Eastern Europe. In contrast, Walker and Lin (2007) documented negative but statistically insignificant relationship between GDP growth rate and number of IPOs in hot issue market. They concluded that their result does not support the conventional theory of capital demand hypothesis but are more relevant to support investor sentiment hypothesis. Based on the above arguments, a relations between the GDP and the firms decision to go public is tested through the following hypothesis:

H₀: GDP growth rate does not affect the decision of an IPO's firm to go public during hot issue period.

INDUSTRIAL PRODUCTION GROWTH: Hosley and Kennedy (1985) argued industrial production growth indicates the overall requirements of capital demand in a market and thereby affect the decision of a firm to go public. Based on the capital demand hypothesis, several studies documented positive relationship between industrial production growth and IPO's issuance activity (Meluzin *et al.*, 2014; Du and Rau, 2014; Ameer, 2012; Tran and Jeon, 2011). Therefore, the following hypothesis is tested:

H_a: There is no relationship between industrial production growth and the IPO's firm going public decision during hot issue market.

RESEARCH METHODS

This study includes all the seventy-seven non-financial IPOs firms that issued shares during 2000 to 2015 in order to examine the significant determinants of going public decision during hot issue market in Pakistan. This study does not include financial firms because of behavioral difference. Data on share prices, market prices and firm specific factors are obtained from the Eikon DataStream while GDP, and industrial production data are collected from World Bank database.

SEGREGATION OF HOT AND COLD ISSUE MARKET

The IPO's cyclical patterns of hot and cold issue market on the Karachi Stock Exchange (KSE) as well as the time-series patterns of initial returns and volume are analyzed. The dependent variable of this study is "Hot" issue market, a dichotomous variable, which takes the value of "1" if the firm went public in hot issue market and takes the value of "0" if the firm went in cold issue market. However, before deciding that which firm went public in hot or cold issue market, it is important to identify which year is to be considered hot or cold market. In the literature, there are two techniques used to identify the hot and cold issue periods: (i) volume-based method, and (ii) initial returns-based method. The volume-based method segregates the hot and cold issue periods on the basis of number of IPOs per year. However, the initial returns-based method segregates the hot and cold issue periods based on average initial returns per year. Following Agathe *et al.* (2012a), and Loughran and Ritter (1995), this study adopts both approaches (i.e. volume and initial returns) to segregate the hot and cold issue markets in Pakistan.

MODELS SPECIFICATION

Owing to the dichotomous nature of the dependant variable, this study uses binary logit regression model to determine the IPO's decision to go in hot issue market. More specific formulation of the model for firm-level, industry-level and country-level is given in equation 1 as follows: $Hot_i = \beta_0 + \beta_1 \ln(MAAR_i) + \beta_2 RISK_i + \beta_3 \ln(BHAR_i) + \beta_4 IndClus_i + \beta_5 HHI_i + \beta_6 SMI_i + \beta_7 GDP_i + \beta_{10} IndProd_i + \varepsilon_j$ (1)

All the variables used in estimating the equation 1 are exhibited in the table 1.

Table 1: List of Variables Used in the Study

Variable	Explanation	Previous Studies that used it
Dependent Variable		
Hot	“Hot” is a dummy variable that takes the value of “1” if the firm tends to go public in hot issue market and takes the value of “0” otherwise. The period of high volume and high initial returns are termed as hot issue market otherwise cold issue market.	Agathee <i>et al.</i> (2012a), Ghosh (2004), Helwege and Liang (2004), Helwege and Liang (2001), Ritter (1984).
Independent Variable		
Underpricing (MMAR)	Underpricing is measured by market adjusted abnormal returns (MAAR). MAAR is calculated as the abnormal returns an IPO earned on the first trading in correspondence to market return.	Agathee <i>et al.</i> (2012a)
Post-IPO Risk (Risk)	Post-IPO risk is calculated as the standard deviations of the first 30-days returns excluding the initial return	Beaulieu and Mrissa Bouden (2015), Ritter (1984), Agathee <i>et al.</i> (2012a), Chiu (2008)
Underperformance (BHAR)	Underperformance is calculated by Buy-and-hold Adjusted Return (BHAR). BHAR is an investment approach in which an investor purchases shares and retain it for a long time.	Ritter (1991), Loughran and Ritter (1995), Trauten <i>et al.</i> (2007) and Coakley <i>et al.</i> (2008), Agathee <i>et al.</i> (2012a), Schultz (2003)
Industry clustering	The %age of IPOs in each industry comparative to the IPOs in that industry for the whole sample period.	Hoffmann-Burchardi (2001), Jain and Kini (2006), Helwege and Liang (2004), Persons and Warther (1997), Westerholm (2006)
Industry concentration (HHI)	HHI is the total sum of squaring the percentage of market shares of a firm as compared to overall industry.	Jain and Kini (2006), Chen <i>et al.</i> (2015)
Stock market return	Stock stock market returns is measured as the three months cumulative market returns of KSE-100	Loughran <i>et al.</i> (1994), Ameer (2012), Lowry <i>et al.</i> (2010), Meluzin and Zinecker (2014), Rees (1997)
GDP growth rate	GDP growth rate is growth in Gross Domestic Production.	Ameer (2012), Lowry <i>et al.</i> (2010), Meluzin and Zinecker (2014), Peterle and Berk (2016), Du and Rau (2014), Dayaratne and Awgcn (2015)

Variable	Explanation	Previous Studies that used it
Industrial production growth	Industrial production growth is the growth in aggregate industrial production	Ameer (2012), Meluzin and Zinecker (2014), Rees (1997), Lowry and Schwert (2002), Du and Rau (2014), Bilson <i>et al.</i> (2001)

RESULTS & DISCUSSION

AGGREGATE NUMBER OF IPOs (VOLUME) AND INITIAL RETURNS

Table 2 present the descriptive statistics of firms in Pakistan that went public per year and their initial returns during the sample period 2000-2015. On average five firms per year went public with a maximum of 11 firms and with the standard deviation of 3.16. The period where number of IPOs is equal or greater than the average (i.e. 5 IPOs per year) is categorized as hot issue market and that where they are less than average, is termed as cold issue market. Similarly, table 2 also shows that the average initial returns per year was 25.31 % with the the median initial return per year is 19.63%. The highest initial return per years was recorded as 87.72%, while lowest initial return was -22.19%, with the large variation among initial return per years with the standard deviation of 30.12. The period of high initial returns is determined from the average initial returns per year. The period where initial returns per year is equal or greater than the average (i.e. 25.31% per year) is categorized as hot issue market. However, the periods where the initial returns are equal or less than average is categorized as cold issue market.

Table 2: Descriptive Statistics of the Yearly IPO's Volume in Pakistan for the Period 2000-2015

	No. of firms	Years	Mean	Median	Max	Min	Std.Dev
IPO's Volume	77	16	5	4	11	0	3.16
Initial returns	77	16	25.31	19.63	87.72	-22.19	30.12

IDENTIFICATION OF HOT AND COLD ISSUE MARKET BASED ON BOTH IPO'S VOLUME AND INITIAL RETURN

As discussed earlier that the hot and cold issue markets are classified based on both IPO's volume and initial returns. The period where the number of IPOs and initial returns are jointly greater than the average volume (i.e. 5 IPOs per year) and initial returns (i.e. 25.31%) are categorized as hot is market. However, the period where the number of IPOs or the initial returns are less than the average volume and initial returns are categorized as cold issue market. Figure 1 provides the number of IPO per year in Pakistan during 2000-2015, along with the average initial returns per year.

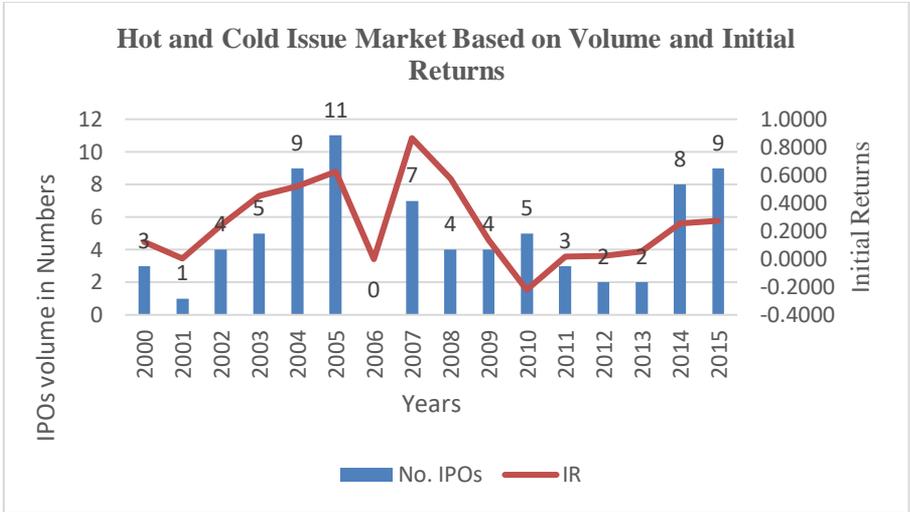


Figure 1: IPOs volume and Underpricing in Hot and Cold Issue Market in Pakistan

It is evident from the Figure 1, that in years 2000 to 2002, 2006, and 2008 to 2013, the IPO issuing activity in Pakistan remained low as the number of IPOs per year were less than the average. Similarly, in the same years the initial returns also remain low indicated that this period may be classified as cold issue markets. On the other hand, the period in between 2003 to 2005, 2007 and 2014 to 2015 could be classified as hot issue market as the number of IPOs and initial returns per years were greater than the average volume and initial returns. Similarly, Table 3 more vividly summarizes the hot and cold issue markets based on both IPO's volume and initial returns.

Table 3: Segregation of Hot and Cold Issue Markets Based on Both IPO's Volume and Initial Returns

Years	Volume	IR (%)	Hot/Cold
2000	3	11.50	Cold
2001	1	3.00	Cold
2002	4	24.66	Cold
2003	5	46.91	Hot
2004	9	51.83	Hot
2005	11	52.24	Hot
2006	0	0.00	Cold
2007	7	87.72	Hot
2008	4	75.18	Cold
2009	4	14.61	Cold
2010	5	-22.19	Cold
2011	3	1.20	Cold

Years	Volume	IR (%)	Hot/Cold
2012	2	2.20	Cold
2013	2	2.72	Cold
2014	8	25.94	Hot
2015	9	27.45	Hot

SEGMENTATION OF HOT AND COLD MARKETS BY INDUSTRIES

In order to assess whether the industries are clustered in hot or cold issue markets, the percentage of the total number of IPOs for each industry is given in figure 2. The fuel and energy, technology, and textile are hot issues as majority of the firms from these industries are clustered in hot market. This may indicate that the firms from these industries are likely to go public in order to diversify their investment in response to the favourable economic and pricing conditions. On the other hand, the offerings from chemical, construction, food and producers, and power and distribution are cold issues where many of the firms from these industries are clustered in cold periods.

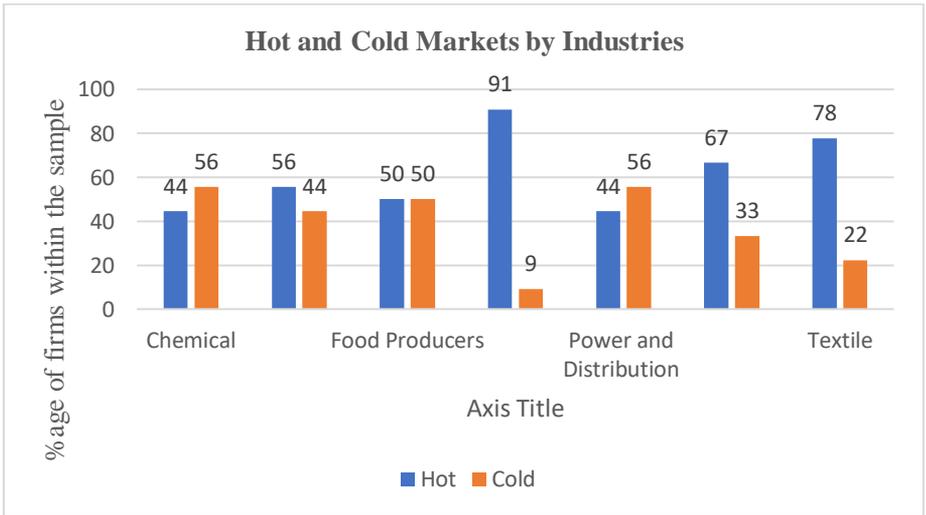


Figure 2: Hot and Cold Markets by Industries

EMPIRICAL ESTIMATION OF THE GOING-PUBLIC DECISION IN HOT ISSUE MARKET

This study uses logit model to evaluate the factors affecting the firm’s going-public decision in hot issue market and the results are presented in the Table 4. The logit model measures the probability of whether firms decide to go public in hot issue market against the probability the firm go public in cold issue market. The coefficient of each variable is given along with t-ratios in parentheses using a robust method to account for any heteroscedasticity. The Likelihood ratio (LR) test shows that the all the models are fit and significant at 1%. Table 4 shows that the underpricing, post-IPO risk, industry clustering, GDP growth rate and market return index are the significant factors that influence the firm going public decision during hot issue market in Pakistan.

Table 4: Maximum likelihood estimations of the logit model for the Firm, Industry and Country Level Determinants of the firms going-public decision in hot issue market

	Firm Level1	Industry Level	Country Level
Constant	-1.40 (-2.24)**	-10.67 (-1.92)*	-216.08 (-3.83)***
Underpricing	3.12 (2.35)**	2.86 (1.97)**	2.35 (1.65)*
Underperformance	28.68 (1.73)*	-0.33 (-0.97)	-0.33 (-0.55)
Post-IPO risk	-0.22 (-0.78)	35.34 (2.08)**	27.53 (2.03)**
Industry Clustering		4.95 (1.63)	14.37 (2.90)***
HHI		1.38 (1.84)*	0.01 (0.02)
Stock Market Returns			11.22 (2.16)**
GDP growth rate			2.25 (2.53)**
Industry Production			0.61 (0.32)
LR test	29.28	42.57	66.04
P-value(F)	0.00	0.00	0.00
McFadden R ²	0.29	0.42	0.65
Adj. R ²	0.21	0.28	0.43
Obs.	77	77	77

*** Significant at the 1% level ** Significant at the 5% level, *Significant at the 10% level

DISCUSSION

UNDERPRICING AND DECISION TO GO PUBLIC IN HOT ISSUE MARKET

As expected, the under-pricing in table 4 has a positive and significant relationship with going public in hot issue market. This shows that in Pakistan, firms that went public in hot issue market are relatively high underpriced than firms that went public in cold issue market. In simple words, highly underpriced firms are probable to go public in hot issue market than cold issue market and in line with the results from previous studies conducted elsewhere (Peterle and Berk, 2016; Agathee *et al.*, 2012a; Lowry and Schwert, 2002; Ritter, 1984; Ibbotson and Jaffe, 1975). Allen and Faulhaber (1989) also argued that many good companies tend to go public in hot issue market and thereby underprice the shares to attract more investors. Thus, based on this, the empirical result in Pakistan further infers that the firms are more likely to go public in hot issue market by accepting the underpricing as a signal of good quality.

POST-IPO RISK AND DECISION TO GO PUBLIC IN HOT ISSUE MARKET

The post-IPO risk has been found to be significantly positively associated with the going public decision during hot issue market at the industry and country level, albeit not at the firm level. This implies that the IPO firms having high return volatility are more likely to go public in hot issue market than cold issue market. Nevertheless, Ritter (1984) explained that the high risky firms to be more underpriced and that the hot issue market may occurs when more riskier firms go public. Thereby, this empirical evidence in Pakistan shows that the firm having more valuation uncertainty as indicated by post-IPO risk are more likely to go public in hot issue market than cold issue market. Furthermore, this statistical result are strongly supported by the findings of previous studies (Peterle and Berk, 2016; Bouden, 2015; Agathee *et al.*, 2012a; Lowry *et al.*, 2010; Lowry, 2003).

INDUSTRY CLUSTERING AND DECISION TO GO PUBLIC IN HOT ISSUE MARKET

The results of the study confirm positive association between industry clustering and going public decision during hot issue market. It can be inferred that in Pakistan a bunch of similar firms from a similar industry go public during hot issue market. This result is in line with the studies of Walker and Lin (2007), Jain and Kini (2006), Westerholm (2006), Altı (2005), and Helwege and Liang (2004). The industry clustering is the outcome of information spillover, where an IPO impart information about industry environment pushing other similar firms to float IPOs (Westerholm, 2006). Thus, based on this, the empirical results in Pakistan also specifies that similar firms tend to go public from similar industries in hot issue market due to the information spillover effect.

MARKET RETURN AND DECISION TO GO PUBLIC IN HOT ISSUE MARKET

As expected, the market returns are found to have a positive relationship with going public decision during hot issue market in Pakistan. This implies that in Pakistan, at the time of high market returns, the IPOs tend to go public in hot issue market than cold issue market. This finding is in line with the previous literature (Brzezczynski, 2014; Ameer, 2012; Tran and Jeon, 2011; Pagano *et al.*, 1998; Rees, 1997; Rydqvist and Högholm, 1995; Loughran *et al.*, 1994). As such, the period where the market is performing well, and the equity cost is lower, such a scenario may result in hot issue market.

GDP GROWTH RATE AND DECISION TO GO PUBLIC IN HOT ISSUE MARKET

In case of GDP growth rate, this study shows a positive relationship between GDP growth rate and going public decision in hot issue market. This indicates that in Pakistan, IPOs firms are more likely to go in hot issue market at the time of better economic environment. This result is similar to the previous studies (Peterle and Berk, 2016; Dayaratne and Awgcn, 2015; Du and Rau, 2014; Meluzin and Zinecker, 2014; Ritter *et al.*, 2012; Lowry, 2003; La Porta *et al.*, 1997). Better economic environment provides more business opportunities and lower the cost of capital compared to debt financing (Lowry, 2003). Favorable economic conditions offer new investment opportunities for private firms and motivate them to go public which subsequently causes hot issue market.

CONCLUSION

This study examined the going-public decision of IPOs during hot issue market in Pakistan. The study firstly identified the hot and cold issue periods in Pakistan. Secondly, the study analysed the impact of firm-, industry and country level factors on the going public decision during hot issue market in Pakistan. This study found that the highest number of listing per year were during the 2003-2005, in 2007 and 2014-2015, followed by the high initial returns, referred as hot issue market. The findings further revealed that the high and low IPO's volume and initial returns fluctuation in Pakistan were observed during 2000-2015. In particular, the hot issue periods were categorized by high economic growth as compared to the cold issue period i.e. the period from 2000-2002, 2006, and 2008-2013. Further, our empirical logit model estimation revealed that in Pakistan the firm's going-public decision in hot issue market is mainly influenced by underpricing, post-IPO risk, industry clustering, stock market returns and GDP growth rate. Furthermore, the findings of the study strongly supported the conventional wisdom of signaling, changing risk composition, information spill-over and capital demand hypothesis. However, the findings of this study did not find any support for the windows of opportunity hypothesis in Pakistan.

The study offers several implications for policy makers and regulators. The result confirmed that the going-public decision in hot or cold issue market is driven by the country-specific economic conditions. Further, the economic conditions directly affect the financial market and henceforth the going public decision in hot or cold issue market. Finally, future research may be undertaken to account for the the financial sector as well to determine the going-public decision in hot issue market along with non-financial sector.

REFERENCES

- Agathee, Ushad Subadar, Brooks, Chris, & Sannasse, Raja Vinesh. (2012a). Hot and cold IPO markets: The case of the Stock Exchange of Mauritius. *Journal of Multinational Financial Management*, 22(4), 168-192.
- Agathee, Ushad Subadar, Sannasse, Raja Vinesh, & Brooks, Chris. (2012b). The underpricing of IPOs on the Stock Exchange of Mauritius. *Research in International Business and Finance*, 26(2), 281-303.
- Agathee, Ushad Subadar, Sannasse, Raja Vinesh, & Brooks, Chris. (2014). The long-run performance of IPOs: the case of the Stock Exchange of Mauritius. *Applied Financial Economics*, 24(17), 1123-1145.
- Ahmad, Tanveer, & Shahzad, Syed Jawad Hussain. (2014). Industry Premiums and Systematic Risk under Terror: Empirical Evidence from Pakistan: University Library of Munich, Germany.
- Aldrich, Howard. (2008). *Organizations and environments*: Stanford University Press.
- Aldrich Howard, E. (1979). Organizations and environments. *Englewood Cliffs, NY: Prentice Hall*.
- Allen, Franklin, & Faulhaber, Gerald R. (1989). Signalling by underpricing in the IPO market. *Journal of financial Economics*, 23(2), 303-323.
- Altı, Aydoğın. (2005). IPO market timing. *Review of Financial Studies*, 18(3), 1105-1138.
- Ameer, Rashid. (2012). Macroeconomic factors and initial public offerings (IPOs) in Malaysia. *Asian academy of management journal of accounting and finance*, 8(1), 41-67.
- Aragon-Correa, J Alberto, & Sharma, Sanjay. (2003). A contingent resource-based view of proactive corporate environmental strategy. *Academy of management review*, 28(1), 71-88.
- Attari, Muhammad Irfan Javaid, Taha, Roshaiza, & Farooq, Muhammad Imran. (2014). Tax Revenue, Stock Market and Economic Growth of Pakistan. *Acta Universitatis Danubius. Œconomica*, 10(5).
- Audretsch, David B. (1995). Innovation, growth and survival. *International journal of industrial organization*, 13(4), 441-457.
- Banerjee, Shantanu, Güçbilmez, Ufuk, & Pawlina, Grzegorz. (2013). IPO waves and hot markets in the UK. In M. Levis & S. Vismara (Eds.), *Handbook of Research on IPOs* (pp. 22).
- Bayar, Onur, & Chemmanur, Thomas J. (2012). IPOs versus acquisitions and the valuation premium puzzle: a theory of exit choice by entrepreneurs and venture capitalists. *Journal of Financial and Quantitative Analysis*, 46(06), 1755-1793.
- Benveniste, Lawrence M, Busaba, Walid Y, & Wilhelm, William J. (2002). Information externalities and the role of underwriters in primary equity markets. *Journal of Financial Intermediation*, 11(1), 61-86.
- Benveniste, Lawrence M, Ljungqvist, Alexander, Wilhelm Jr, William J, & Yu, Xiaoyun. (2003). Evidence of information spillovers in the production of investment banking services. *Journal of Finance*, 577-608.
- Bernstein, Shai. (2015). Does going public affect innovation? *The Journal of Finance*, 70(4), 1365-1403.
- Boehmer, Ekkehart, & Ljungqvist, Alexander. (2004). On the decision to go public: Evidence from privately-held firms.
- Bouden, Habiba Mrissa. (2015). *The Impact of Risk on Three Initial Public Offerings Market Anomalies: Hot-issue Market, Underpricing, and Long-run Underperformance*. Université Laval.
- Brailsford, Timothy, Heaney, Richard, Powell, John, & Jing, Shi. (2000). Hot and cold IPO markets: identification using a regime switching model. *Multinational Finance Journal*, 4(1/2), 35-68.
- Brau, James C, Francis, Bill, & Kohers, Ninon. (2003). The Choice of IPO versus Takeover: Empirical Evidence*. *The Journal of Business*, 76(4), 583-612.
- Brzezczynski, Janusz. (2014). IPOs in Emerging Markets. *QFinance [online]*.
- Burki, Abid A, & Khan, Mushtaq A. (2010). Spatial inequality and geographic concentration of manufacturing industries in Pakistan. *The Pakistan Development Review*, 49(4).
- Chemmanur, Thomas J, & Fulghieri, Paolo. (1999). A theory of the going-public decision. *Review of Financial Studies*, 12(2), 249-279.
- Chemmanur, Thomas J, He, Shan, & Nandy, Debarshi K. (2009). The going-public decision and the product market. *Review of Financial Studies*, hhp098.
- Chen, Hongquan, Zeng, Saixing, Lin, Han, & Ma, Hanyang. (2015). Munificence, Dynamism, and Complexity: How Industry Context Drives Corporate Sustainability. *Business Strategy and the Environment*.

- Choe, Hyuk, Masulis, Ronald W, & Nanda, Vikram. (1993). Common stock offerings across the business cycle: Theory and evidence. *Journal of Empirical finance*, 1(1), 3-31.
- Coakley, Jerry, Hadass, Leon, & Wood, Andrew. (2008). Hot IPOs can damage your long-run wealth! 1. *Applied Financial Economics*, 18(14), 1111-1120.
- Colak, Gönül, & Günay, Hikmet. (2011). Strategic waiting in the IPO markets. *Journal of Corporate Finance*, 17(3), 555-583.
- Cridge, Stella. (2009). *The role of founder experience in industrial development: Firm entry, growth and diversification in Pakistan's textile industry during trade liberalisation*. London School of Economics and Political Science (United Kingdom).
- Dayaratne, Dai, & Awgcn, Wijethunga. (2015). The Dynamic Relationship Between Initial Public Offerings (IPOs) and Macroeconomic Variables: Evidence From Emerging Stock Market Of Sri Lanka. *International Journal of Liberal Arts and Social Science*, 3(9), 76-83.
- Derrien, Francois. (2005). IPO pricing in "hot" market conditions: who leaves money on the table? *The Journal of Finance*, 60(1), 487-521.
- Dess, Gregory G, & Beard, Donald W. (1984). Dimensions of organizational task environments. *Administrative science quarterly*, 52-73.
- Dittmar, Amy K, & Dittmar, Robert F. (2008). The timing of financing decisions: An examination of the correlation in financing waves. *Journal of Financial Economics*, 90(1), 59-83.
- Doeswijk, Ronald Q, Hemmes, Hemmo SK, & Venekamp, RH. (2006). 25 Years of Dutch Ipos: an examination of frequently cited IPO anomalies within main sectors and during hot-and cold-issue periods. *De Economist*, 154(3), 405-427.
- Du, Lishan, & Rau, Raghavendra. (2014). What Explains the IPO Cycle? *University of Cambridge*, 1-30.
- Fama, Eugene F. (1970). Efficient capital markets: A review of theory and empirical work*. *The journal of Finance*, 25(2), 383-417.
- Fama, Eugene F, & French, Kenneth R. (1989). Business conditions and expected returns on stocks and bonds. *Journal of financial economics*, 25(1), 23-49.
- Ferreira, Daniel, Manso, Gustavo, & Silva, André C. (2014). Incentives to innovate and the decision to go public or private. *Review of Financial Studies*, 27(1), 256-300.
- Field, Laura C. (1995). Is institutional investment in initial public offerings related to long-run performance of these firms? *Finance*.
- Flannery, Mark J, & Protopapadakis, Aris A. (2002). Macroeconomic factors do influence aggregate stock returns. *Review of Financial Studies*, 15(3), 751-782.
- Ghosh, Saurabh. (2004). Boom and slump periods in the Indian IPO Market. *Reserve Bank of India Occasional Papers*, 25, 39-56.
- Grinblatt, Mark, & Hwang, Chuan Yang. (1989). Signalling and the pricing of new issues. *The Journal of Finance*, 44(2), 393-420.
- Guo, Haifeng, Brooks, Robert, & Shami, Roland. (2010). Detecting hot and cold cycles using a Markov regime switching model—Evidence from the Chinese A-share IPO market. *International Review of Economics & Finance*, 19(2), 196-210.
- He, Ping. (2007). A theory of IPO waves. *Review of Financial Studies*, 20(4), 983-1020.
- Helwege, Jean, & Liang, Nellie. (2004). Initial public offerings in hot and cold markets. *Journal of Financial and Quantitative Analysis*, 39(3).
- Hoffmann-Burchardi, Ulrike. (2001). Clustering of initial public offerings, information revelation and underpricing. *European Economic Review*, 45(2), 353-383.
- Hosley, Joan D, & Kennedy, James E. (1985). Revision of the Index of Industrial Production, A. *Fed. Res. Bull.*, 71, 487.
- Hussain, Muzammil, Zaman, uz, Bedi, & Ahmad, Nisar. (2015). Relationship between stock market volatility and macroeconomic volatility: Evidence from Pakistan. *Pakistan Business Review*, 21.
- Ibbotson, Roger G, & Jaffe, Jeffrey F. (1975). "Hot issue" markets. *The journal of finance*, 30(4), 1027-1042.
- Ibbotson, Roger G, Sindelar, Jody L, & Ritter, Jay R. (1988). Initial public offerings. *Journal of Applied Corporate Finance*, 1(2), 37-45.
- Ibbotson, Roger G, Sindelar, Jody L, & Ritter, Jay R. (1994). The market's problems with the pricing of initial public offerings. *Journal of Applied Corporate Finance*, 7(1), 66-74.
- Iqbal, Javed. (2012). Stock market in Pakistan: an overview. *Journal of Emerging Market Finance*, 11(1), 61-91.

- Ivanov, Vladimir, & Lewis, C. (2004). The determinants of issue cycles for initial public offerings: Working paper, Owen Graduate School of Management.
- Ivanov, Vladimir, & Lewis, Craig M. (2008). The determinants of market-wide issue cycles for initial public offerings. *Journal of Corporate Finance*, 14(5), 567-583.
- Jain, Bharat A, & Kini, Omesh. (1994). The post-issue operating performance of IPO firms. *Journal of Finance*, 1699-1726.
- Jain, Bharat A, & Kini, Omesh. (2006). Industry clustering of initial public offerings. *Managerial and Decision Economics*, 27(1), 1-20.
- Jegadeesh, Narasimhan, Weinstein, Mark, & Welch, Ivo. (1993). An empirical investigation of IPO returns and subsequent equity offerings. *Journal of Financial Economics*, 34(2), 153-175.
- Kafayat, Atif, & Farooqi, Abdul. (2014). The Factors Affecting the Money Left on the Table by Pakistani IPO Issuers. *Acta Universitatis Danubius. Œconomica*, 10(4).
- Khanna, Naveen, Noe, Thomas H, & Sonti, Ramana. (2008). Good IPOs draw in bad: Inelastic banking capacity and hot markets. *Review of Financial Studies*, 21(5), 1873-1906.
- La Porta, Rafael, Lopez-de-Silanes, Florencio, Shleifer, Andrei, & Vishny, Robert W. (1997). Legal determinants of external finance. *Journal of finance*, 1131-1150.
- Lee, Seung-Hyun, Bach, Seung B, & Baik, Yoon-Suk. (2011). The impact of IPOs on the values of directly competing incumbents. *Strategic Entrepreneurship Journal*, 5(2), 158-177.
- Lerner, Joshua. (1994). Venture capitalists and the decision to go public. *Journal of financial Economics*, 35(3), 293-316.
- Li, Xiaole, & Shi, Xuhui. (2016). The Impact of IPO on the Secondary Stock Market—An Empirical Research. *Modern Economy*, 7(03), 299.
- Ljungqvist, Alexander, Nanda, Vikram, & Singh, Rajdeep. (2006). Hot Markets, Investor Sentiment, and IPO Pricing*. *The Journal of Business*, 79(4), 1667-1702.
- Loughran, & Ritter. (2004). Why has IPO underpricing changed over time? *Financial Management*, 33(3), 5-37.
- Loughran, Tim, & Ritter, Jay R. (1995). The new issues puzzle. *The Journal of finance*, 50(1), 23-51.
- Loughran, Tim, Ritter, Jay R, & Rydqvist, Kristian. (1994). Initial public offerings: International insights. *Pacific-Basin Finance Journal*, 2(2), 165-199.
- Lowry, Michelle. (2003). Why does IPO volume fluctuate so much? *Journal of Financial economics*, 67(1), 3-40.
- Lowry, Michelle, Officer, Micah S, & Schwert, G William. (2010). The variability of IPO initial returns. *The Journal of Finance*, 65(2), 425-465.
- Lowry, Michelle, & Schwert, G William. (2002). IPO market cycles: Bubbles or sequential learning? *The Journal of Finance*, 57(3), 1171-1200.
- Lucas, Deborah J, & McDonald, Robert L. (1990). Equity issues and stock price dynamics. *The journal of finance*, 45(4), 1019-1043.
- Madura, Jeff. (2014). *Financial markets and institutions*: Cengage learning.
- Meluzín, Tomáš, & Zinecker, Marek. (2014). Macro-and Microeconomic aspects of going Public in the Czech Republic and Poland. *Procedia-Social and Behavioral Sciences*, 156, 558-563.
- Meluzín, TOMÁŠ, Zinecker, MAREK, & Kovandová, SYLVIA. (2014). Macroeconomic Factors and Initial Public Offerings in Poland: Mathematical Methods in Finance and Business Administration. WSEAS. Athens, GREECE: WSEAS Press.
- Moorman, Ernst. (2010). *Are IPO's more underpriced in a hot or cold market?* (Master), University of Amsterdam
- Mumtaz, Muhammad, & Ahmed, Athar. (2014). Determinants of Underpricing of Initial Public Offerings: Evidence from Pakistan. *Journal of Business & Economics*, 6(1), 47-80.
- Mumtaz, Muhammad Zubair, & Ahmed, Ather Maqsood. (2016). Long-run Pricing Performance of Initial Public Offerings (IPOs) in Pakistan. *Working Paper, School of Social Sciences and Humanities (S3H, National University of Sciences and Technology (NUST) Pakistan*.
- Mumtaz, Muhammad Zubair, Smith, Zachary A, & Ahmed, Ather Maqsood. (2016). The Aftermarket Performance of Initial Public Offerings in Pakistan. *The Lahore Journal of Economics*, 21(1), 46.
- Nanda, Vikram, & Yun, Youngkeol. (1997). Reputation and financial intermediation: An empirical investigation of the impact of IPO mispricing on underwriter market value. *Journal of Financial Intermediation*, 6(1), 39-63.
- Nasir, Marjan. (2013). Agglomeration and Firm Turnover: Centre for Research in Economics and Business, The Lahore School of Economics.

- Nelson, Richard R, & Winter, Sidney G. (2009). *An evolutionary theory of economic change*: Harvard University Press.
- Neneh, Brownhilder N, & Smit, A Van Aardt. (2013). *Underpricing of IPOs during hot and cold market periods on the South African Stock Exchange (JSE)*. Paper presented at the Proceedings of World Academy of Science, Engineering and Technology.
- Neumeyer, Pablo A, & Perri, Fabrizio. (2005). Business cycles in emerging economies: the role of interest rates. *Journal of monetary Economics*, 52(2), 345-380.
- Nishat, M, & Shaheen, N. (2004). Macroeconomic factors and Pakistani equity market. Department of Finance and Economics. *Institute of Business Administration Karachi*.
- Nishat, Mohammed. (2001). Industry risk premia in Pakistan. *The Pakistan Development Review*, 929-949.
- Pagano, Marco, Panetta, Fabio, & Zingales, Luigi. (1998). Why do companies go public? An empirical analysis. *The Journal of Finance*, 53(1), 27-64.
- Palmer, Timothy B, & Wiseman, Robert M. (1999). Decoupling risk taking from income stream uncertainty: A holistic model of risk. *Strategic Management Journal*, 20(11), 1037-1062.
- Pástor, Ľuboš, & Veronesi, Pietro. (2005). Rational IPO waves. *The Journal of Finance*, 60(4), 1713-1757.
- Peller, Adrian. (2013). *Survivability and Intra-Industry Effects of Initial Public Offerings—An Empirical Analysis*. University of St. Gallen.
- Persons, John C, & Warther, Vincent A. (1997). Boom and bust patterns in the adoption of financial innovations. *Review of Financial Studies*, 10(4), 939-967.
- Peterle, Polona, & Berk, Ales S. (2016). IPO Cycles in Central and Eastern Europe: What Factors Drive these Cycles? *Finance a Uver*, 66(2), 113.
- Rahman, Mafizur, Mohammad, & Salahuddin, Mohammad. (2010). *The determinants of economic growth in Pakistan: Does stock market development play a major role?* Paper presented at the International Conference On Applied Economics—ICOAE.
- Rees, William P. (1997). The arrival rate of initial public offers in the UK. *European Financial Management*, 3(1), 45-62.
- Ritter, Jay R. (1984). The "hot issue" market of 1980. *Journal of Business*, 215-240.
- Ritter, Jay R. (1991). The long-run performance of initial public offerings. *The journal of finance*, 46(1), 3-27.
- Ritter, Jay R, Signori, Andrea, & Vismara, Silvio. (2012). Economies of scope and IPO activity in Europe. Available at SSRN 2169966.
- Rydqvist, Kristian, & Högholm, Kenneth. (1995). Going public in the 1980s: Evidence from Sweden. *European Financial Management*, 1(3), 287-315.
- Schultz, Paul. (2003). Pseudo market timing and the long-run underperformance of IPOs. *the Journal of Finance*, 58(2), 483-518.
- Shahbaz, Muhammad, Ahmed, Nadeem, & Ali, Liaquat. (2008). Stock market development and economic growth: ARDL causality in Pakistan. *International Research Journal of Finance and Economics*, 14(1), 182-195.
- Sharma, Anurag, & Kesner, Idalene F. (1996). Diversifying entry: Some ex ante explanations for postentry survival and growth. *Academy of Management Journal*, 39(3), 635-677.
- Smit, A Van Aardt. (2015). *Two Consecutive Hot Market Periods: Is the IPO Market in South Africa Changing Over Time?* Paper presented at the European Academic Research Conference on Global Business, Economics, Finance and Social Sciences (EAR15Italy Conference), Italy.
- Sohail, Muhammad Khalid, & Nasr, Mohamed. (2007). Performance of initial public offerings in Pakistan. *International Review of Business Research Papers*, 3(2), 420-441.
- Subrahmanyam, Avaniidhar, & Titman, Sheridan. (1999). The going-public decision and the development of financial markets. *The Journal of Finance*, 54(3), 1045-1082.
- Swaminathan, Bhaskaran, & Purnanandam, Amiyatosh K. (2004). Are Ipos Really Underpriced? *Review of Financial Studies*, 17, 811-848.
- Tran, Anh L, & Jeon, Bang Nam. (2011). The dynamic impact of macroeconomic factors on initial public offerings: evidence from time-series analysis. *Applied Economics*, 43(23), 3187-3201.
- Trauten, Andreas, Schulz, Roland, & Dierkes, Maik. (2007). The performance of IPO investment strategies and pseudo market timing—Evidence from Germany. *Working Paper, Westfälische Wilhelms-Universität Münster*.

- Walker, Thomas J, & Lin, Michael Y. (2007). Dynamic relationships and technological innovation in hot and cold issue markets. *International Journal of Managerial Finance*, 3(3), 200-228.
- Warganegara, Doni S, & Warganegara, Dezie L. (2014). Do IPO Hot and Cold Markets Exist at the Indonesia Stock Exchange? *Binus Business Review*, 5(2), 484-496.
- Welch, Ivo. (1989). Seasoned offerings, imitation costs, and the underpricing of initial public offerings. *The Journal of Finance*, 44(2), 421-449.
- Welch, Ivo. (1996). Equity offerings following the IPO theory and evidence. *Journal of Corporate Finance*, 2(3), 227-259.
- Westerholm, P Joakim. (2006). Industry clustering in Nordic initial public offering markets. *International Review of Finance*, 6(1-2), 25-41.
- Yar, Malik Muhammad Shehr, & Javid, Attiya Yasmin. (2014). Liquidity Benefits From Underpricing: Evidence from Initial Public Offerings Listed at Karachi Stock Exchange: Pakistan Institute of Development Economics.
- Yung, Chris, Çolak, Gönül, & Wang, Wei. (2008). Cycles in the IPO market. *Journal of Financial Economics*, 89(1), 192-208.
- Zaier, L Hedhili, & Abdelmoula, A Kammoun. (2014). Hot and Cold Cycles for African Emerging Share IPO Market Evidence from Tunisia. *Asian Economic and Financial Review*, 4(11), 1691.
- Zingales, Luigi. (1995). Insider ownership and the decision to go public. *The Review of Economic Studies*, 62(3), 425-448.