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Do IPOs in Cold Markets Provide Better Returns?

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Abstract

Significant listing day returns for IPOs is a phenomenon that is observed when companies go public. Using a larger timeframe (1999-2014), we attempt to determine the long-run performance of underpriced IPOs issued in an emerging economy such as India during the hot and cold IPO markets for 36-months. The results indicate that IPOs perform significantly better when issued during cold markets. We find that the distribution of returns is the same across cold and hot markets at specific periods during the 36-month period of study.

Keywords: IPO, Cold v/s Hot, Returns, Emerging Economy/India, BHAR, Event Study

JEL Classification: G12, G14, G15, G18

Introduction

Over the past two decades, the Indian economy has undergone several structural as well as policy reforms. Globalisation, liberalisation, and strengthened regulations over a period have contributed to the broadening of the securities market (Prakash, 2011). IPOs are a mechanism used by firms to help raise capital in the primary market. These are also referred as primary public offerings to distinguish it as the first sale of stock by a private company to the public.

But does a retail investor gain by investing in IPOs? Retail investors view IPOs as a means to investing in equities. This leads to high over-subscription in the retail investor quota for IPOs. The returns that an investor can make depend on the pricing of an IPO which is definitely one of the key issues. There has to be some amount left for the investors. When companies go public, anywhere between 5% and 20% money is left on the table for investors. The trader usually exits on day one, and unfortunately in some cases, when an investor holds it for a longer period of a year; he or she tends to lose (Shah, 2016). Various literature such as Ritter (2002), Aggarwal, Prabhala, and Puri (2002), Faugeron-Crouzet, Ginglinger, and Vijayraghavan (2003), Guo (2005), Banerjee, Dai, and Shrestha (2011) have concluded that there is ample evidence of underpricing of IPOs. This confirms that firms leave much money on the table due to underpricing of their IPOs.

Given that investment in securities is a long-term investment, any study of IPO performance would not be complete without examining the long-run performance of the shares issued through an IPO in hot and cold markets. The expectation would be that IPOs issued in hot markets would appreciate in value and provide better returns over the long-run. There are spurts in IPO issuing activity that result in hot markets. This paper takes a larger timeframe (1999 -2014) and with a larger sample size for an emerging country like India, to evaluate the 3-year long-run performance of underpriced IPOs in the Indian IPO market listed on the National Stock Exchange (NSE). Specifically, this study aims to examine the long-run performance of IPOs issued in hot and cold markets. This study is further divided as follows. This introduction is followed by looking at patterns to identify hot markets in second section, review of literature in third section, objectives of the study in fourth section, data and techniques in fifth section, testable hypothesis in sixth section, results and discussion in seventh section. Finally, the summary and conclusions are covered in eighth section.

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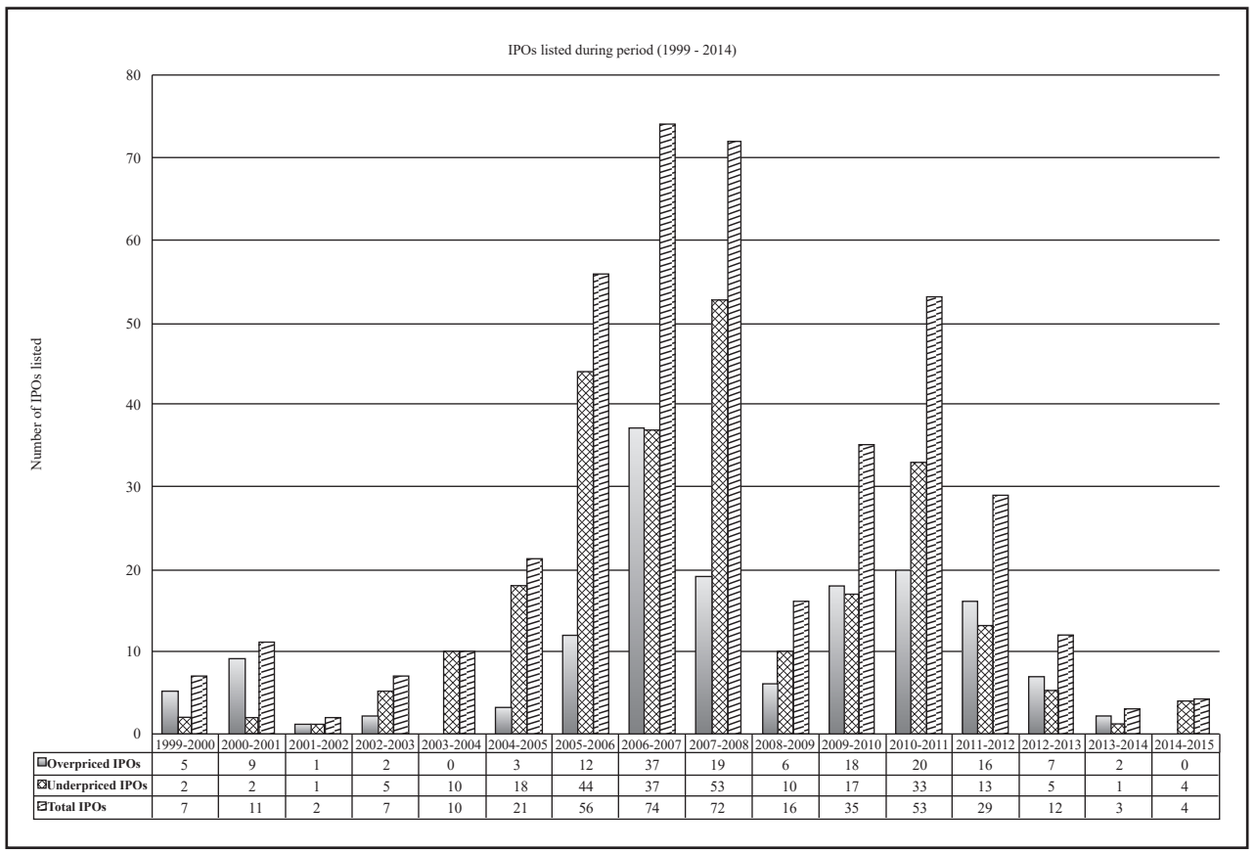
Are Hot Markets Important to IPO Issuing Firms?



	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Overpriced IPOs	5	9	1	2	0	3	12	37	19	6	18	20	16	7	2	0
Underpriced IPOs	2	2	1	5	10	18	44	37	53	10	17	33	13	5	1	4
Total IPOs	7	11	2	7	10	21	56	74	72	16	35	53	29	12	3	4

Fig.1: IPOs listed on the NSE over the Period 1999-2014

Source: Capitaline

Fig. 1 illustrates the volume of IPOs listed on the NSE between 1999 and 2014. Companies choose to go public when markets are receptive to new issues. There are many research papers on timing the IPOs correctly such as Loughran and Ritter (1995), Cook, Jarrell, and Kieschnick (2003), Schaub (2011). From Fig. 1, we notice that there is a very apparent spurt in IPO listing post-2003-2004 and also that the trend with underpricing IPOs starts around 2002-2003 which continues well until 2010-2011. Do such market-timed IPOs perform positively over the long-run or are there no impacts of timing when a firm goes public with its IPO issue? Would underpriced IPOs perform differently in the long-run during periods of high IPO listing activity? To determine this, we study the long-run performance of the underpriced IPOs during hot and cold markets from our selected sample.

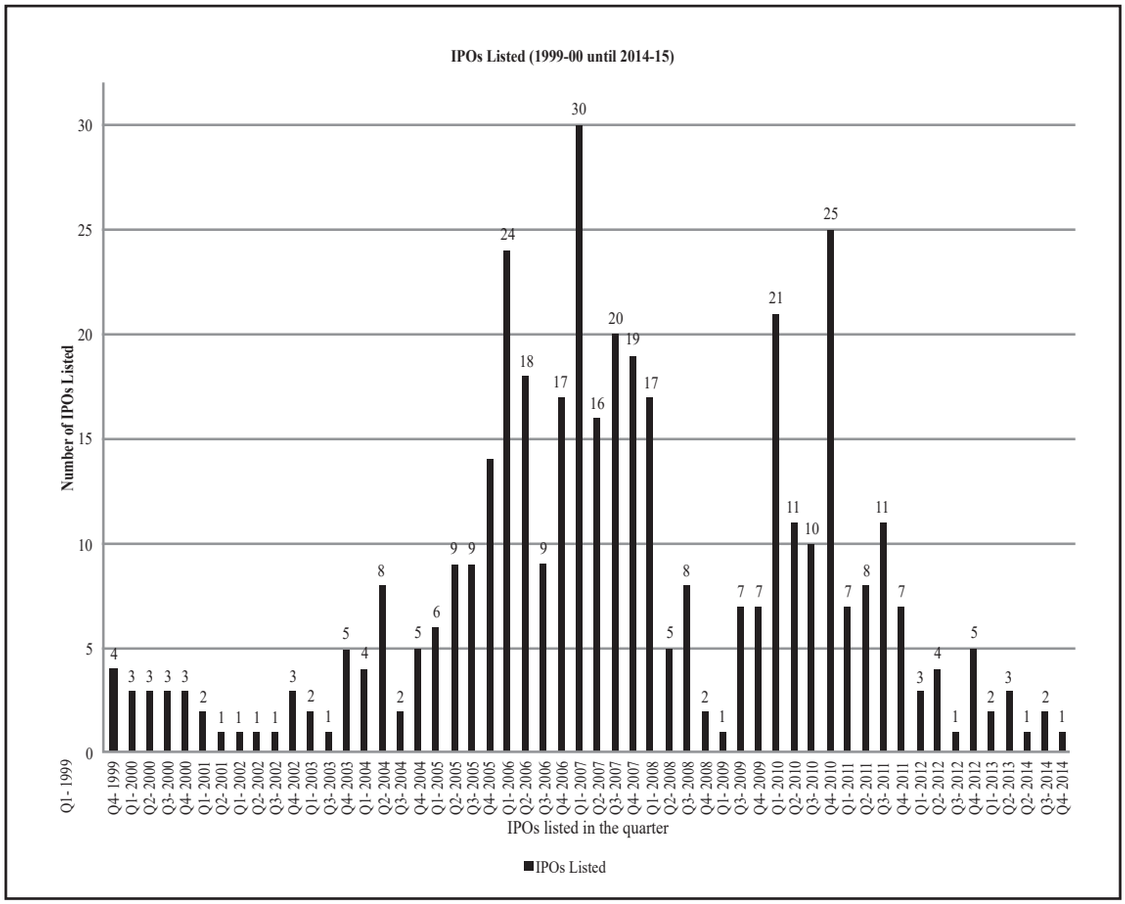


Fig. 2: IPOs listed by quarter (1999-00 until 2014-15)

Source: Capitaline

A hot or cold market is determined by the number of IPOs listed in that corresponding quarter. We identify a market to be hot if there are more than five IPOs are listed in a quarter. This method is similar to the one used by Ritter (1991), Helwege and Liang (2004), Seshadev and Rajib (2010). As shown in Fig. 2, there are 29 quarters where more than five IPOs were listed in a quarter.

Literature Review

Most of the research on the performance of underpriced IPOs point to negative returns when examined over the long-run. This phenomenon of poor returns on IPOs has been studied over the years across the world and has been investigated by many researchers such as Ibbotson (1975), Ritter (1991), Kooli and Suret (2001), Seshadev and Rajib (2010), Dutta and Swain (2012). These IPOs never seem to revert to their fair values in these studies except the study conducted by Purnanandam and Swaminathan (2004) where the IPOs revert to fair values over the long run.

Is there is a relationship between the timing of issue and underperformance? Ritter (1991), and Loughran and Ritter (1995) reason that firms which plan to time out their issues during high valuation periods provide lower returns in the long-run. Firms succeed in over pricing their issues during high IPO activity periods. Many literature document the presence of firm using this window of opportunity of high IPO activity such as Jain and Kini (1994), Loughran, Ritter, and Rydqvist (1994), Helwege and Liang (2004). This study also examines the performance of IPOs issued during periods of high IPO activity on the Indian stock markets.

Ibbotson (1975) computed excess returns one stock per month for the period 1960-1969. He concluded that there are no departures from market efficiency in the aftermarket. He, however, did find evidence that these stocks exhibited positive performance in the first year,

followed by a negative return for the next three years which then returned positive performance in the fifth year.

Ritter (1991) examined the performance of 1,526 IPOs on the NASDAQ Stock Exchange. These included all IPOs that went public between 1975 and 1984. The three-year performance for these IPOs was measured using holding period returns, and the findings from the study for the sample was that the average holding period return after three years was 34.47%. As opposed to this, a control sample of 1,526 stocks matched by industry and market value produced an average total return of 61.86% over this same three-year holding period. The conclusion in this study was that IPOs underperformed in the long-run and that the underperformance was concentrated among relatively young growth companies. Such a finding would imply that investors are irrationally over-optimistic about the future potential of certain industries.

A study by Cooli and Suret (2001) on a sample 445 IPOs unseasoned (new) issues for the period from 1991 to 1998 conclude that Canadian IPOs underperform significantly compared to a sample of seasoned firms with the same market capitalisation. Using the buy-and-hold returns to measure the long-run performance, they find that investors, who buy immediately after listing and hold their shares for five years will make a loss of 24.66%.

A study by Purnanandam and Swaminathan (2004) shows that IPOs are overvalued at the offer price, increases afterwards and revert to fair value in the long-run, and found that IPO scan be both overvalued and underpriced at the same time. Pandya (2016) studied a total 183 IPOs on the Bombay Stock Exchange (BSE) for the period 2004 - 2013. The index selected for the analysis was the BSE SENSEX. Capital Asset Pricing Model (CAPM) was applied here to find out whether IPOs have generated an abnormal return or not in short to long-term. The results of the research conclude that IPOs underperformed during the immediate period, which eventually turned negative from medium to longer-term time framework.

Seshadev and Rajib (2010) studied the after-market pricing performance on listing day as well as in the long-run (36 months) on 92 IPOs which went public on the National Stock Exchange (NSE India) during the period April 2002-March 2006. i.e., up to 36 months from the listing day.The paper noted that on an average Indian IPOs are underpriced to the extent of 46.55 percent on listing day compared to the market index. The method for determining the performance of the IPOs was by using Buy and Hold Abnormal Returns (BHAR) and Wealth Relatives (WR). Both WR and BHAR were evaluated with reference to the IPO issue price and the listing day closing price. This study documents that the IPO subscribers on listing day had positive returnsfor IPOs, followed by persistent underperformance up to the end of 12 months of trading and after that a positive market-adjusted return after 12 months. Besides underperformance, they also attempted to determine the predictive relationship between the IPO firm characteristics at the time of issue and long-run underperformance. Hot IPO markets were established on the basis of more than five IPOs being issued in a quarter since these would be deemed high activity quarters. Using OLS regression model, the study concludes by saying that variables such as the offer size, underprice, leverage, ex-ante uncertainty, and IPO activity period (i.e., hot/cold markets) significantly explain the under performance. However, variables such as post-issue promoter group holding, the rate of subscription, the age of IPO firm, and offer price-to- book value ratio are statistically insignificant in explaining long-run underperformance.

Dutta and Swain (2012) studied the post-listing behaviour on a sample of 199 underpriced IPOs listed on the Indian Stock Market through equal distance periods of one day, one week, one month,first quarter, and first year. This study also tried to find any correlation between the issue price and periodic return. The study concluded that statistically, there is no relation between the issue price and the returns for any of the periods under study.

Objectives of the Study

Many research papers discuss the timing of the IPOs by issuing firms and their long-run performance such as Loughran and Ritter (1995), Cook et al. (2003), Helwege and Liang (2004), Schaub (2011). This study is focused on the long-run performance of the underpriced IPOs issued on the NSE during hot and cold markets listed over various time periods (1999-2014).

Data and Techniques

Table 1: Sample Selection

Total number of IPOs offered during the period	412
Exclusion of overpriced IPOs	157
Remaining	255
Exclusion of IPOs due to incomplete history	41
Remaining total number of IPOs eligible for study	214
Percentage of available IPOs for study in the sample	51.94%
Sectoral Breakup	
Automotive	2
Banking/Finance	25
Cement/Construction	16
Chemicals	4
Engineering	20
Food/Beverages	2
Manufacturing	18
Media	16
Metals/Mining	14
Miscellaneous	17
Non-Con. Durables	4
Oil/Gas	3
Pharmaceuticals	12
Real Estate	12
Services	9
Technology	30
Telecom	4
Utilities	6
Total	**214**

Source: Capitaline

A universe of IPOs of firms listed from 1999-00 until 2014-15 on the National Stock Exchange (NSE) is under study. We exclude all 'Small and Medium Enterprise (SME)' IPOs as well as any Follow-on Public Offerings (FPOs) also referred to as Secondary Equity Offerings (SEO). Access to listing information as well as historical price data for each issue is retrieved from the Capitaline database. As shown in Table 1, from this sample of 412 IPOs issued, 255 IPO issues are underpriced. Out of the 255 issued, 41 IPOs are excluded due to insufficient trading history or breaks in the trading. Finally, there are 214 IPOs that are considered for long-run performance analysis over a period of 36 months. The selected sample represents 51.94% of the IPO activity from 1999-2000 until 2014-15. Trading history for each of the 214 IPOs was analysed from the date of listing for 36 months to evaluate their long-run price performance. For this study, a month here represents 21 consecutive trading days (excluding days when the stock exchange was closed) as is used in some of the financial literature.

This study measures long-run abnormal performance as measured by the Buy and Hold Abnormal Return (BHAR) and subsequently, the Average BHAR (ABHAR). Research

papers such as Lyon, Barber, and Tsai (1999), Fama (1998) prefer the BHAR methodology which is often the most cited method for studies of long-run performance. Barber and Lyon (1997) cite that the appropriate measure of long-run performance is BHAR rather than the long-run cumulative abnormal return (CAR). This position has been taken since BHAR provides a measure of long-run investor experience whereas the CAR instead measures average periodic performance and is a biased estimator of the BHAR. One of the issues inherent with BHAR is the skewness bias and the use of standard statistical tests (predominantly t-statistics). Skewness is a result of the long-run holding-period return of an individual security that is highly skewed. Barber and Lyon (1997) demonstrate in simulations that the BHARs positive skewness causes the null hypothesis to be rejected too often when it is true. To overcome this issue, we use skewness-adjusted t-statistics as introduced by Hall (1992).

We measure Average Buy and Hold Abnormal Returns (ABHAR) to evaluate long-term performance for 36 months from the listing date. Besides, we also measure Wealth Relative(WR) to compare how the IPOs performed relative to the market. While ABHAR is calculated with reference to the list price, WR is calculated with reference to the offer price.

Wealth Relatives (WR)

Wealth relative is a measure used to evaluate the performance of IPOs at a point in time. Levis (1993) studied the long-run performance of 712 IPOs issued in the UK for the period 1980-88 by calculating the wealth relatives (WR), which he defined as:

$$WR_{it} = \frac{1+\frac{1}{N}\sum_{i=1}^{N} R_{it}}{1+\frac{1}{N}\sum_{i=1}^{N} R_{mt}} \quad \text{.....(1)}$$

where, R_{it} is the return of the individual IPO stocks i on day t from the offer day; Rmt is the market index return for NSE NIFTY for the corresponding period. We calculate the wealth relatives for all periods from the offer price. The total size of IPOs in the portfolio for discussion is represented by N. The methodology for the computation of WR is consistent with Ritter (1991). The WRs of more than one indicates better performance of IPOs over the market index, while a value of less than one indicates an underperformance of IPOs.

Buy and Hold Abnormal Returns (BHAR)

BHAR assumes that an amount of money is passively invested in the first day and held for a specified period (excluding the first day). This return is then corrected using returns on the NIFTY to get a market-adjusted BHAR. Market-adjusted BHAR has been computed with reference to list price. Market-adjusted BHAR is computed as:

$$BHAR_{iT} = \prod_{t=1}^{T}(1 + R_{it}) - \prod_{t=1}^{T}(1 + R_{mt}) \quad \text{.....(2)}$$

Average BHAR (ABHAR)

The Average BHAR (ABHAR) for the entire sample is also calculated to find out the overall performance of the portfolio of IPOs for a specific period for the sample of size N. This is computed as:

$$ABHAR = \frac{1}{N}\sum_{i=1}^{N} BHAR_{iT} \quad \text{.....(3)}$$

A positive ABHAR for a specific period is interpreted as a better performance for the IPOs compared to the benchmark return for the same period.

A standard t-test is prone to cross-sectional correlation and volatility changes. An additional issue occurs when calculating t-statistics for skewed distributions. The skewness adjusted t-test, introduced by Hall (1992), corrects the cross-sectional t-test for skewed abnormal return distributions. We implement this test which is applicable for average abnormal returns, cumulative average abnormal return and average buy-and-hold abnormal returns. The cross-sectional standard deviation (unbiased by sample size) is calculated as

$$S^2_{ABHAR} = \frac{1}{N-1}\sum_{i=1}^{N}(BHAR_i - ABHAR)^2 \quad \text{.....(4)}$$

The skewness estimation γ (unbiased by sample size) is calculated as

$$\gamma = \frac{N}{(N-2)(N-1)}\sum_{i=1}^{N}\frac{(BHAR_i - ABHAR)^3}{S^3_{ABHAR}} \quad \text{.....(5)}$$

Further, let S be defined as

$$S = \frac{ABHAR}{S_{ABHAR}} \quad \text{.....(6)}$$

Skewness adjusted test statistics for ABHAR is calculated as

$$t_{skew} = \sqrt{N}\left(S + \frac{1}{3}\gamma S^2 + \frac{1}{27}\gamma^2 S^3 + \frac{1}{6N}\gamma\right) \quad \text{.....(7)}$$

This calculated value of t_{skew} is asymptotically standard normal distributed.

We now continue with the data selection and categorisation techniques used for the study.

A cold or hot market is determined by the number of IPOs listed in that corresponding quarter. We identify a market to be hot if there are more than five IPOs listed in a quarter. This method is similar to the one used by Ritter (1991), Helwege and Liang (2004), Seshadev and Rajib (2010). As shown in Fig. 2, there are 29 quarters where more than five IPOs were listed in a quarter.

Testable hypothesis

For this study of the long-run performance test on a comparison of ABHAR between cold and hot markets, we hypothesise that the distribution of BHAR is same across cold and hot markets at distinct periods during the 36-month period of study. This hypothesis will be tested using the Mann-Whitney U-test.

Results and Discussions

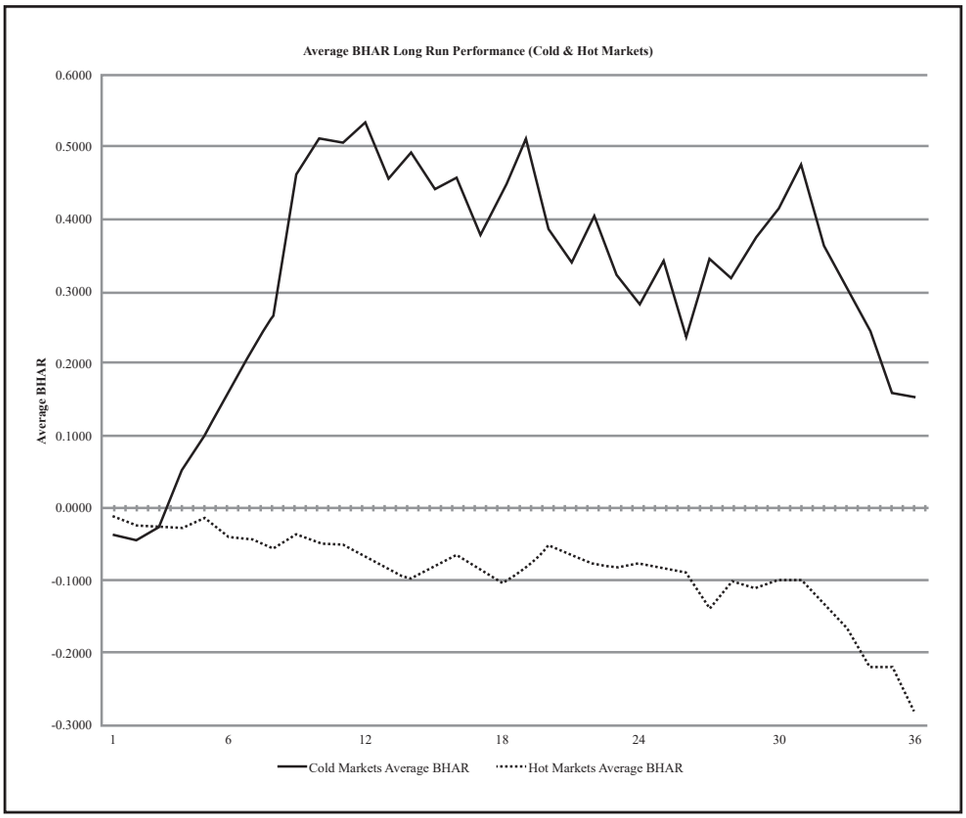


Fig. 3: Average BHAR Performance during Hot and Cold Markets

Source: Computed

Fig. 3 highlights one significant difference in the long-run performance of IPOs during hot and cold markets. That difference lies in how IPOs issued in cold markets have far out performed IPOs issued in hot markets. IPOs in the cold market exhibit negative performance for the first three months but then provide positive abnormal returns for the remaining duration of the periods under study. The best performance for IPOs in cold markets delivers a return in the 12th month of 53.52%.

As opposed to this, IPOs issued in hot markets never provide positive abnormal returns during the entire period under study. The losses accelerate from -9.80% in the 31st month to -28.41% in the 36th month.

Table 2: Mann-Whitney U test: Long-run performance in Hot & Cold Markets

Month	Median		Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
	Hot	Cold				
1	-.0261	-.0390	2,005.00	2,236.00	-.0800	0.936
6	-.1334	-.0558	2,309.00	2,540.00	1.0480	0.294
12	-.2505	-.0745	2,445.00	2,676.00	1.5530	0.120
18	-.2866	-.1152	2,305.00	2,536.00	1.0330	0.301
24	-.3026	-.2059	2,241.00	2,472.00	.7960	0.426
30	-.3778	-.1500	2,261.00	2,492.00	.8700	0.384
36	-.5298	-.6125	2,041.00	2,272.00	.0540	0.957

As shown in Table 2, Mann-Whitney U test was run to determine if there were differences in IPO BHAR between cold and hot markets during specific time periods. Distributions of IPO BHAR in cold and hot markets were not similar, as assessed by visual inspection. For the months examined, distribution of BHAR was not statistically significantly different between cold and hot markets.

Table 3: Long-run Performance of IPOs Issued in Cold Markets

Cold Market (21 IPOs)

Month	Average BHAR	t-skew ABHAR	Sig.	WR		Month	Average BHAR	t-skew ABHAR	Sig.	WR
1	-0.0363	-0.5528		1.022		19	0.5121	1.7415	*	1.352
2	-0.0441	-0.4972		1.034		20	0.3854	1.4262		1.286
3	-0.0249	-0.2609		1.025		21	0.3391	1.2288		1.218
4	0.0539	0.4458		1.081		22	0.4053	1.3711		1.232
5	0.1017	0.7674		1.168		23	0.3216	1.1248		1.160
6	0.1645	1.0788		1.146		24	0.2816	0.9792		1.154
7	0.2190	1.4577		1.232		25	0.3430	1.0886		1.193
8	0.2677	1.8472	*	1.354		26	0.2361	0.8137		1.148
9	0.4636	2.4179	**	1.431		27	0.3459	1.0411		1.231
10	0.5118	2.3859	**	1.466		28	0.3181	0.9697		1.201
11	0.5062	2.1213	**	1.473		29	0.3727	1.0951		1.216
12	0.5352	1.8927	*	1.454		30	0.4125	1.1509		1.210
13	0.4551	1.7001		1.400		31	0.4761	1.2163		1.214
14	0.4936	1.8696	*	1.404		32	0.3609	0.9466		1.180
15	0.4413	1.7013		1.360		33	0.3021	0.7702		1.129
16	0.4579	1.6457		1.416		34	0.2480	0.6239		1.085
17	0.3769	1.3944		1.336		35	0.1591	0.4088		1.013
18	0.4374	1.5415		1.322		36	0.1532	0.3817		1.021

Sig. column denotes significance at 90% (*), 95% (**) and 99% (***)

As it can be observed from Table 3, during cold markets, the wealth relative values are always greater than one for the period of study. This indicates better performance of IPOs during cold markets over the market index.

Table 4: Long-Run Performance of IPOs Issued in Hot Markets

Hot Market (193 IPOs)

Month	Average BHAR	t-skew ABHAR	Sig.	WR		Month	Average BHAR	t-skew ABHAR	Sig.	WR
1	-0.0107	-0.6040		1.002		19	-0.0836	-1.0840		0.861
2	-0.0232	-0.8020		0.968		20	-0.0526	-0.5804		0.877
3	-0.0273	-0.6850		0.937		21	-0.0640	-0.6994		0.875
4	-0.0259	-0.5048		0.923		22	-0.0783	-0.8265		0.858
5	-0.0132	-0.2976		0.980		23	-0.0816	-0.7412		0.829
6	-0.0394	-0.9829		0.951		24	-0.0767	-0.5692		0.823
7	-0.0426	-1.0022		0.947		25	-0.0832	-0.6800		0.818
8	-0.0552	-1.1674		0.916		26	-0.0887	-0.7784		0.819
9	-0.0370	-0.6623		0.942		27	-0.1382	-1.1479		0.800
10	-0.0479	-0.9142		0.928		28	-0.1023	-0.7966		0.819
11	-0.0503	-0.9479		0.919		29	-0.1100	-0.9360		0.814
12	-0.0670	-1.2207		0.898		30	-0.0984	-0.7123		0.804
13	-0.0881	-1.5692		0.887		31	-0.0980	-0.6340		0.795
14	-0.0970	-1.6769	*	0.868		32	-0.1306	-0.9075		0.777
15	-0.0812	-1.3451		0.870		33	-0.1653	-1.2254		0.770
16	-0.0646	-0.9332		0.886		34	-0.2193	-2.0012	**	0.766
17	-0.0869	-1.2013		0.857		35	-0.2185	-1.8282	*	0.759
18	-0.1026	-1.3890		0.840		36	-0.2841	-2.6651	***	0.749

Sig. column denotes significance at 90% (*), 95% (**) and 99% (***)

Tables 3 and 4 contain the *'skew* and wealth relatives for each month of the appropriate cold/hot periods as shown in Fig. 3. As can be observed from Table 4, during hot markets, the wealth relative values are always less than one for the period of study. This indicates the poor performance of IPOs during hot markets over the market index.

Summary and Conclusion

With regards to IPO performance during hot or cold IPO markets, the median return for IPOs issued in cold markets is 34.45% while for the IPOs issued in hot markets is a dismal -8.14%. This would intuitively mean that it is more profitable to invest in IPOs during a cold IPO market. The decline in average returns accelerates after the 31st month for IPOs issued in either market.

Based on the performance of IPOs issued for the entire sample, it would make more sense for investors to determine the presence of a cold market before investing. The risk of investing in IPOs during cold markets seems very tiny with maximum losses in the third month of -2.49% (as compared to losses during the same period during hot markets of -2.73%).

As seen from Tables 3 and 4, there were many months where the returns are statistically significant. During cold IPO markets, there statistical significance (significance at 90%) in the returns during the 12th month when abnormal returns are at their highest at 53.52%. Similarly, during hot IPO markets, there is statistical significance in the performances between the 34th and 36th month when abnormal returns are at their lowest and greater than -20%. Also, the wealth relative values of IPOs during cold markets are always greater than one as opposed to IPOs in hot markets where they are always less than one.

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