

Underpricing of IPOs during Hot and Cold Market Periods on the South African Stock Exchange (JSE)

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Abstract—Underpricing is one anomaly in initial public offerings (IPO) literature that has been widely observed across different stock markets with different trends emerging over different time periods. This study seeks to determine how IPOs on the JSE performed on the first day, first week and first month over the period of 1996-2011. Underpricing trends are documented for both hot and cold market periods in terms of four main sectors (cyclical, defensive, growth stock and interest rate sensitive stocks). Using a sample of 360 listed companies on the JSE, the empirical findings established that IPOs on the JSE are significantly underpriced with an average market adjusted first day return of 62.9%. It is also established that hot market IPOs on the JSE are more underpriced than the cold market IPOs. Also observed is the fact that as the offer price per share increases above the median price for any given period, the level of underpricing decreases substantially. While significant differences exist in the level of underpricing of IPOs in the four different sectors in the hot and cold market periods, interest rates sensitive stocks showed a different trend from the other sectors and thus require further investigation to uncover this pattern.

Keywords—Underpricing, hot and cold markets, South Africa, JSE.

I. INTRODUCTION

REFERENCE [1] define an IPO as “the original sale of a company’s securities to the wider public for the first time in the primary market”. An IPO offers a fresh source of capital that is vital to the growth of the company and provides the company and existing shareholders a liquid market for their shares. Also, from an investor’s perspective, an IPO renders investors an opportunity to share in the rewards of the growth of the company [2]. The transition from a private company to a public company is one of the most important events in the life of a company [3]. Reference [4] highlight that underpricing occurs when the closing price at the end of the first day of trading is higher than the initial offer price, meaning that the value at which the company sold its shares to the public was lower than their actual market value. Underpricing of stocks also takes place with respect to the position of market (i.e. whether the IPO market is hot or cold) and type of industry as evident in a study by [5]. Other studies by [6] and [7] point out that the IPO market usually follows a cycle with dramatic swings, often referred to as hot and cold

markets. Reference [8] examined IPO listed in hot-issue and cold-issue periods to determine whether businesses that launched an IPO during these periods were very different in terms of the nature of their business or the newness of their industry. Findings from this study concluded that there are no dramatic differences in a company’s characteristics for each market type. Other studies [9], [10] also suggest that the up and down swings in the IPO market reflect changes in investor sentiment, changes in factors that affect the decision to issue equity, such as asymmetric information between investors and the issuing company.

Reference [11] found that in South Africa, two complete hot and cold cycles occurred in the 20 year period from 1975 to 1995 on the JSE, one of which was apparent in the ten-year period from 1986 to 1995. Reference [11] further established that the initial returns in hot periods were significantly greater than initial returns in cold periods using a t-test and thus concluded that the aftermarket performance of shares was significantly different for hot and cold periods on the JSE. Likewise [12] in their study also observed that in the period 1972 through 1986, hot issue market cycles occurred at a frequency of approximately 9-10 years each. Reference [13] using data from the period of 1996-1999 demonstrated the emergence of hot issue market during the course of the year 1997 and cooling down during the latter part of the 1999. Moreover, [14] using data for 138 South African IPOs that were listed on the JSE from 2006 to 2010, found significant short run underpricing and that the financial sector had the largest IPO underpricing in 2007. While these studies provide significant information on underpricing on the JSE, there is still a high need for more studies to document this market trend using a wider period of time especially in the post-Apartheid period from the introduction of the JSE all-share index in 1996 as the benchmark for market performance. It is also necessary to identify hot and cold market periods during this time and document the trends in IPO performance in both market types.

The purpose of this study therefore is firstly to determine how IPOs on the JSE performed on the first day, first week and first month, over a period of 1996-2011. Secondly, this study intends to find out how IPOs performed in the hot versus the cold market periods, as well as whether the offer price influences the level of underpricing on the JSE. Lastly, this study groups the IPOs listed on the JSE into four main sectors (cyclical, defensive, growth stock and interest rate), to

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determine if there are any differences in their performance across these sectors in both hot and cold market periods.

II. LITERATURE REVIEW

A. Theories and Evidence of IPO Underpricing across Various Stock Markets

Underpricing is one of the most common phenomena that have been evident in most stock markets around the world and there is a great deal of disparity in underpricing across markets and regions. In the Asian region, [15] reported 145% in China, [16] demonstrated evidence of underpricing for Indonesia (41%), Malaysia (41%), South Korea (44%), Taiwan (13%), and Thailand (26%). Moreover, [17] collected results from various studies in 47 countries around the world on the average first day returns and observed that the highest first day returns were recorded in Jordan (149%) for a sample of IPOs dating from 1999-2008, 96.6% in Malaysia for a sample of IPOs dating from 1980-2006 and 92.7% in India for the sample of IPOs dating from 1990 to 2007.

Furthermore, the Latin American emerging markets have the second highest level of underpricing among the regions. Reference [18] reported initial return of 79% in Brazil, 16% in Chile, and 3% in Mexico. Reference [16] found 44% initial returns in Argentina. Additionally, the level of underpricing in European emerging markets shows initial returns of 28% in Greece [16], 13% in Turkey [19], 15% in Hungary and 55% in Poland [20]. In Africa, existing evidence shows very low level of underpricing. For example, [21] established an initial underpricing of 8% in Egypt; [22] reported an initial return of 7% in South Africa. This accentuates that underpricing is one of the most prominent abnormalities that have been acknowledged in almost all financial markets, irrespective of the time period investigated, but the level of underpricing varying across different markets / countries.

B. IPO Underpricing in the Hot and Cold Market

It is well documented that IPO markets follow cyclical patterns with dramatic swings often called hot and cold markets [6], [10]. The hot market issue is defined by periods of rising initial returns and increasing numbers of IPOs [23]. This situation exists when there is a window of opportunity and IPOs are highly valued and companies take advantage of a buoyant market [24]. Prior researches [25], [26] have shown that the hot IPO markets are characterized by extremely high initial returns and by an extraordinarily high variability of initial returns (there is a strong positive correlation between the mean and the volatility of initial returns over time). Reference [9] affirms that hot IPO markets are characterized by an unusually high volume of offerings, severe underpricing, frequent oversubscription of offerings, prevalence of smaller issues, and, to a certain extent, by concentrations in particular industries. In contrast, cold IPO markets have less underpricing, lower issuance, fewer instances of oversubscription, and larger offerings [10]. Cold markets are usually triggered when certain number of low quality IPO companies is observed and the acceptable offer price is low and fewer businesses are willing to go public.

In explaining how IPOs in hot and cold markets differ [11] found that in South Africa, the initial returns in hot periods were significantly greater than initial returns in cold periods, but the IPOs came from similar industries and had similar characteristics. Reference [26] propounds that the hot versus cold market phenomenon can be attributed to information spill-overs. Reference [26] elucidated further by suggesting that many companies do not necessarily go public during 'hot' cycles because of financial reasons at that time, but rather because they want to take advantage of the prevailing market conditions and capitalise on the sentiment by pricing their offers higher. Consistent with this finding is a study by [27] who advocated that companies went public during hot market periods to take advantage of the overpriced IPOs, resulting from the prevailing favourable market conditions.

C. Underpricing and the Offering Price

An extensive body of literature has examined the effect of the offer price on the initial return of IPOs. For example, [28] found that underpricing decreases with the size of the issue and those small IPOs are usually more underpriced than larger IPOs. Reference [29] reported that the size of the issue had an inverse relationship signifying that an increase in issue size reduces underpricing. Furthermore, other studies by [30] observed that smaller IPO were more underpriced than a larger IPO, suggesting that smaller IPOs are riskier than larger IPOs. In addition, [31] established that the average initial return on US IPOs with an offering price of more than \$3.00 was 8.6%, while the average initial return on IPOs with an offering price of less than \$3.00 was 42.8%, thus showing that underpricing is considerably larger when the offering price is smaller. Reference [32] found that South African IPOs with an offer price below 100 cents showed the highest initial returns. Likewise, [14] witnessed that the shares priced below 500 cents on South Africa IPOs were clearly severely underpriced compared to shares priced above 500 cents. Conversely, [33] reported that the issue size had a negative impact on the level of underpricing; suggesting that a large issue size increases the supply of IPO shares, and thus results to lesser underpricing.

D. Underpricing of IPO in Different Sectors

Several studies have investigated if the performance or returns from one sector or industry differed from the returns of IPOs from other sectors or industries. For example [8] in their studies observed that there is more evidence of industry concentration in cold markets contrary to hot markets. Reference [19] studied IPOs listed on the Istanbul Stock Exchange between the period 1990 and 1996 and observed differences in initial returns and after market returns between the different sectors, with the initial returns for financial sector being higher than that of industrial sectors. Other studies by [34] compared the long run aftermarket performance of IPOs in emerging industries (biotechnology, semiconductor and internet IPOs) to those in non-emerging industries during the period between 1993 and 1996. This study found that the returns from IPOs in emerging markets after a year were worse than that of IPOs in more mature markets. Contrary to

the results of [34], [35] observed that IPOs in new industries tend to declared bankruptcy less often and got delisted less often than companies conducting an IPO in established industries.

III. METHODOLOGY

A. Sample and Data Collection Methods

The population for the study comprise of all 360 IPOs that have been listed on the JSE during a period of 1996 to 2011. This information was sourced from McGregor-BFA database, where information regarding the offering price, closing day prices, number of shares and prospectus of IPO companies were collected. The JSE All Share Index (ALSI) was used as the broad benchmark to assess the abnormal returns from these listings. This study also classified the industries into four main sectors (growth stocks, cyclical stocks, defensives stocks and interest rate sensitive stocks) to ensure that each of the corresponding benchmarks was made up of enough individual stocks. Businesses in the growth stocks comprised of information related industries (content and processing), such as telecom, media and information technology. Cyclical companies comprised of energy, raw materials, capital goods (excluding information technology), business services and cyclical consumer goods. Defensives companies consisted of defensive consumer goods, pharmaceuticals and utilities. Interest rate companies comprised of sensitive group financials like real estate, banks and insurers. References [36] and [23] also used categorization into cyclical, defensives, growth stocks and financials.

B. Measurement Techniques

There are a number of methods available for calculating underpricing. For comparative purposes, this study will adopt the mean market-adjusted abnormal return, which is the standard method for calculating underpricing of new issues.

The mean market-adjusted abnormal return (MAAR) is calculated as follows:

$$R_{x,i} = \frac{P_{x,i} - P_{x,0}}{P_{x,0}}$$

where $R_{x,i}$ = return on stock 'x' at the end of the i^{th} trading period, $P_{x,i}$ = price of stock 'x' at the end of the i^{th} trading period, and $P_{x,0}$ = offer price of stock 'x'. i represents either the first trading day or the first trading week or the first trading month.

The average raw return is calculated as follows:

$$\bar{R}_{x,i} = \frac{1}{N} \sum_{i=0}^n R_{x,i}$$

where $\bar{R}_{x,i}$ = the sum of the returns on the sample IPOs divided by the number of sample IPOs.

The JSE All Share Index (J203) is used as the benchmark and is calculated as:

$$R_{m,i} = \frac{J_{m,i} - J_{m,0}}{J_{m,0}}$$

where $R_{m,i}$ = market return at the close of day i trading period. $J_{m,i}$ = the market index value at the end of the i trading period. $J_{m,0}$ = the market index value on the offer day of stock x .

The market-adjusted abnormal return ($MAAR_{x,i}$) for stock 'x' after i^{th} trading period is calculated as follows:

$$MAAR_{x,i} = 100 \times \left\{ \frac{(1 + R_{x,i})}{(1 + R_{m,i})} - 1 \right\}$$

The market adjusted model measures the initial trading returns in excess market return form. This measurement was used in earlier studies on the short run performance of IPOs by economists such as [18] on Latin American IPOs and by [37] on their Pakistani IPOs.

The average market-adjusted abnormal return for the i^{th} trading period is:

$$\overline{MAAR}_{x,i} = \frac{1}{N} \sum_{i=0}^n MAAR_{x,i}$$

where $\overline{MAAR}_{x,i}$ = the sum of the market adjusted abnormal return of the sample IPOs divided by the number of sample IPOs.

Given these calculations, we test the following hypothesis:

H0. The average market-adjusted abnormal return ($\overline{MAAR}_{x,i}$) for IPOs on the JSE is equal to zero.

H1. The average market-adjusted abnormal return ($\overline{MAAR}_{x,i}$) for IPOs on the JSE is different from zero.

To test the hypothesis that $\overline{MAAR}_{x,i}$ equals zero, the following t-statistic is calculated:

$$t = \frac{\overline{MAAR}_{x,i}}{s/\sqrt{n}}$$

where 's' is the standard deviation of $\overline{MAAR}_{x,i}$ across the companies.

C. Hot and Cold Issues

The hot and cold issue market in this study was defined based upon the highest volume of listings per annum on the JSE. This method of differentiating hot and cold issue markets is per the definition of a hot issue period market by [11], [10] and [9] i.e., based on the annual volume of new listings.

IV. RESULTS

A. Market Adjusted Abnormal Return (MAAR)

The results on the raw return, the average market return and the market adjusted returns are shown in Table I.

TABLE I
MARKET ADJUSTED ABNORMAL RETURN FOR THE PERIOD 1996-2011

Return	Raw Return	Avg. Market Returns (%)	Market Adj. Abn. Return (%)	Std. Dev.	T - Statistics
First day	67.41%	-0.05%	67.51%	3.5357	3.6227*
First week	65.42%	-0.48%	67.82%	3.1858	4.0388*
First month	68.69%	2.58%	70.43%	3.6581	3.6530 *

*Significant at 1%

From Table I, it is established that IPOs on the JSE are underpriced with average market-adjusted returns of 67.51%, 67.82% and 70.43% for the first day, first week and first month respectively and these results are significant at 1% for a sample of 360 companies listed on the JSE from 1996-2011. Also observed is the fact that the first month return show the highest return, followed by the first week and then the first day. These finding indicate that the investors can profit buying the new issues at the offer price and sell them at the end of the first month trading period. However, the abnormal return on the first day is only marginally lower than the first month return, indicating little incentive not to sell on the first day of trading. Using a sample of 118 IPOs on the JSE for the period 1980-1991, [38] established that the average market adjusted return was 32.7%. Likewise, [14] using data for 138 South African IPOs that were listed on the JSE from 2006 to 2010, found significant short run underpricing on the JSE, with an average market-adjusted return for the first trading day of 108.33%. Comparing the level of underpricing in South Africa of 67.41% to other developing countries such as 92.7% in India for the sample of IPOs dating from 1990 to 2007 and 96.6% in Malaysia for a sample of IPOs dating from 1980 to 2006 [17], it is quite similar for emerging countries. The t-values measured confirm that the hypothesis can therefore be rejected and one can conclude that the average market-adjusted return is significantly different from zero.

From Fig. 1, it is observed that 113 IPOs were listed in a cold market period while 247 of the IPOs were listed in a hot market period. Also evident is the fact that IPOs on the JSE are substantially more underpriced in the hot markets as their first day, first week and first month average market-adjusted returns are much higher than in the cold market. These findings are consistent with similar studies conducted on the JSE by [11] for a period of 1975 to 1995; [12] for a period 1975 to 1999 and [13] for a period of 1996-1999.

B. Hot and Cold Markets

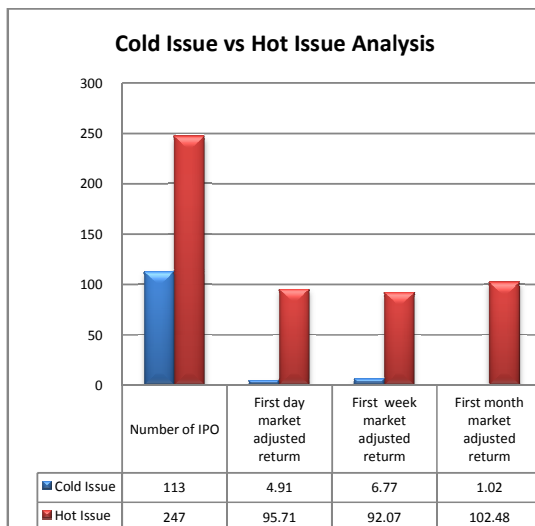


Fig. 1 Descriptive statistics of cold and hot issues

TABLE II
MARKET ADJUSTED ABNORMAL RETURN FOR HOT AND COLD MARKET PERIODS

		Raw return	Average Market return	MAAR (%)	T - Stats
1996 (Cold market)	First day	11.04%	-0.22%	11.29%	1.7538
	First week	7.78%	-0.29%	8.01%	1.2782
	First month	4.34%	-1.73%	5.94%	0.9233
1997-1999 (Hot Market)	First day	87.37%	-0.26%	87.92%	6.1362*
	First week	84.58%	-0.61%	85.79%	5.9474*
	First month	92.99%	4.44%	97.67%	5.1187*
2000-2005 (Cold Market)	First day	8.20%	0.06%	8.17%	2.7355
	First week	14.42%	0.09%	14.43%	2.0060
	First month	9.51%	1.03%	8.30%	1.2506
2006-2007 (Hot Market)	First day	113.73%	0.28%	113.01%	1.4655
	First week	108.27%	0.38%	105.93%	1.5719
	First month	113.63%	1.81%	112.36%	1.4849
2008-2011 (Cold Market)	First day	-1.06%	0.04%	-1.04%	-0.4699
	First week	-2.30%	-0.24%	-1.88%	-0.5766
	First month	-9.92%	0.55%	-10.29%	-3.4832*

*Significant at 1%; ** Significant at 5%, *** Significant at 10%

The results in Table II show that for the period 1996-2011, two hot market and three cold market periods were identified on the JSE based on the number of IPOs issued during those periods. The two hot market periods (1997-1999) and (2006-2007) recorded the highest levels of underpricing, with the period (2006-2007) recording the highest value, though the t-statistics are not significant, while the period (1997-1999) being statistically significant at the 1% level. The cold market periods (1996) and (2000-2005) recorded the lowest level of underpricing, though only the t-statistics results of their first day average adjusted returns are statistically significant at the 5% level. Furthermore, the cold market period (2008-2011) showed that the IPOs during these periods were overpriced, with the t-statistics results of first month being significant at the 1% level. These findings are consistent with studies by [9] and [10] which affirm that hot IPO markets are characterized by severe underpricing while cold IPO markets have less underpricing. Conversely, other studies by [39] found that overpriced IPOs are issued in cold market conditions.

The results from Fig. 2 show the levels of underpricing based on median IPO offer price. The median was chosen as the best measure of central tendency due to the existence of numerous outliers in the IPO offer price. The median is used to determine how the level of underpricing is affected by the offer price. The calculated medians were 100 cents, 200 cents and 200 cents for the hot period, cold period and entire sample respectively. The results from both the hot market IPOs, cold market IPOs and the combined sample from 1996-2011 show that IPO with an offer price less than or equal to the median are highly underpriced (approximately 6 to 9 times higher) compared to those issued at an offer price above the median. The results indicate that as the offer price increases above the median for any given period, the level of underpricing drastically decreases. This is in line with prior studies [28], [29] that also identified a decreasing trend in the level of underpricing as the offer price increased. With this trend in mind investors can maximize their short term return focusing on IPOs with the smallest offer price.

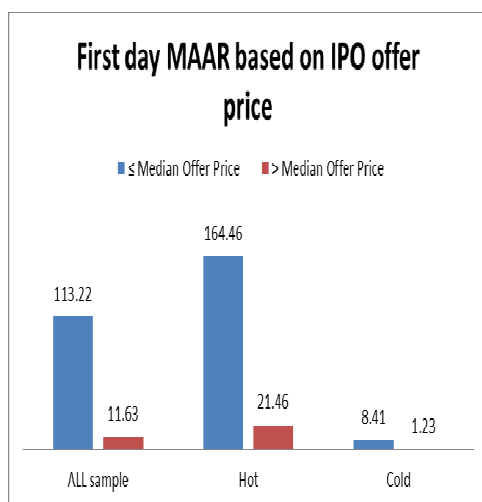


Fig. 2 First day market adjusted returns based on IPO offer price

C. Sectorial Analysis

In Fig. 3 IPOs were classified as cyclical, defensive, growth and interest sensitive shares with the intent to assess whether the level of underpricing is influenced by sectors.

From Fig. 3, the results depict that the highest number of IPO listings were recorded in the cyclical sector both in the hot and cold market periods, while the least number of listings were found in the defensive sector and growth stock, both in the hot and cold market periods. It is evident that issuers of specifically cyclical and growth shares attempt to time their listings with the majority of the IPOs listed in the hot market periods. In contrast, the timing of IPOs in the defensive and interest rate sensitive sectors are not really influenced by hot and cold market periods. This finding is consistent with a study by [23] on the Dutch IPOs, which observed the hot market period was dominated by cyclical stocks and growth stocks.

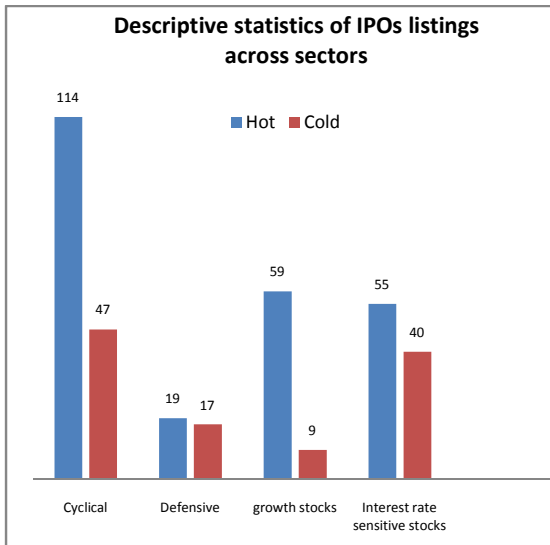


Fig. 3 Descriptive statistics of IPO listings across sectors

TABLE III
SECTORIAL ANALYSIS OF HOT AND COLD MARKET IPOs

Industry	Returns	Market periods	MAAR (%)	Standard deviation	T statistics
Cyclical	First day	Hot market period	47.0	168.2	2.9850*
		Cold market period	3.5	19.3	1.2580
	First week	Hot market period	48.1	173.2	2.9264*
		Cold market period	8.5	48.4	1.1974
Defensive	First month	Hot market period	58.0	242.2	2.5558***
		Cold market period	-0.1	40.6	-0.1522
	First day	Hot market period	14.2	36.4	1.6944
		Cold market period	6.4	26.3	0.9996
Growth stock	First week	Hot market period	16.1	48.0	1.4574
		Cold market period	5.1	28.9	0.7297
	First month	Hot market period	9.5	59.6	0.6951
		Cold market period	-3.4	27.8	0.5016
Interest rate sensitive	First day	Hot market period	109.1	167.1	5.0116*
		Cold market period	21.96	34.7	1.8961***
	First week	Hot market period	100.6	140.2	5.5117*
		Cold market period	24.6	44.8	1.6442
Interest rate sensitive	First month	Hot market period	106.4	186.2	4.3894*
		Cold market period	25.7	57.5	1.3414
	First day	Hot market period	212.4	841.0	1.8733***
		Cold market period	2.06	12.2	1.0724
Interest rate sensitive	First week	Hot market period	201.6	740.3	2.0197**
		Cold market period	1.5	22.9	0.4011
	First month	Hot market period	222.6	830.0	1.9893**
		Cold market period	-5.3	23.4	-1.4345

*Significant at 1%; ** Significant at 5%, *** Significant at 10%

The results in Table III show the sectorial analysis of hot and cold market IPOs on the JSE. It is clear that the level of underpricing differs substantially in the different sectors and specifically in the hot market periods. The level of underpricing for interest rate sensitive stock at 212.2% (average for one day, one week and one month) in hot market periods was statistically significant at a 5% level. It is, however, worth noting that the exceptionally high level of underpricing of interest rate sensitive stock in hot market

periods was predominantly influenced by only two of the 55 shares with underpricing of in excess of 1 000%. If these two shares were excluded, the level of underpricing would be 79.9% for interest rate sensitive stock in hot market periods. In contrast, at -0.58% there are no signs of underpricing for interest rate sensitive stock in cold market periods.

The second highest level of underpricing was growth stock (105.4%) in the hot market periods (1% sig.). These results are confirmed by [23] who established that growth stock IPOs

were highly underpriced during hot periods (35.8%) compared to 9.2% during the cold periods. Although only statistically significant for first day MAAR at 10%, growth stock with an average mean market-adjusted abnormal return of 24.1% shows by far the highest level of underpricing in cold market periods. It could be reasonable to assume that growth stocks are predominantly younger companies in emerging industries, which could explain the relatively high level of underpricing in both hot and cold markets.

Cyclical stocks are significantly underpriced with, on the average, a MAAR of 51.0%, although much less than interest rate sensitive or growth stock. With a MAAR of 4.0% the cyclical stock are not underpriced in cold market periods. Defensive stocks are the only shares which are not significantly underpriced in either hot (13.3%) or cold (2.7%) market periods.

V. CONCLUSION

The empirical findings obtained in this study indicate that IPOs on the South African Stock Exchange (JSE) are underpriced, which is consistent with similar findings across various stock markets around the world. The mean market-adjusted abnormal return of IPOs with an average of 67.5% on the first day of trading confirms substantial levels of underpricing in South Africa, similar to other emerging countries. Only five (1997-1999 and 2006-2007) of the 16 years (1996-2011) investigated were regarded as hot market periods with 68.6% of the IPOs listed in these two hot market periods, clearly indicating that companies are attempting to time their initial listings. Regardless of this attempt to time the initial listings, the level of underpricing in hot market periods was substantially higher than in the cold market periods.

Investors could earn substantial first day abnormal returns investing in IPOs in hot market periods (95.7%) as oppose to in cold market periods (4.91%). There is, however, very little incentive for investors in both hot and cold market periods to keep the stock for one week or one month. Although not significant, the level of underpricing in hot market periods has increased from the hot market in 1997-1999 to hot market in 2006-2007. In addition, the offer price also impacts substantially on the level of underpricing. The findings clearly indicated that specifically in hot market periods, IPOs with offer prices equal or lower than the median offer price had significantly higher levels of underpricing (164.46%) than IPOs with higher offer prices (21.46%). Focusing on the IPOs in different sectors, it seems if issuers of specifically growth and cyclical stock attempt to time their listings in hot market periods. Interest rate sensitive, growth and cyclical stock companies also have significantly high levels of underpricing in hot markets. There is almost no evidence that any of these sectors show any signs of underpricing in cold market periods.

From an investor point of view, it is evident that IPOs in an emerging country such as South Africa are significantly underpriced with huge profit potential. The results also confirm that investors could benefit significantly more investing in IPOs only during hot market periods, focusing on

the IPOs with relatively low offer prices, and interest sensitive, growth and cyclical stock. There are also minor differences between mean market-adjusted abnormal return for the first day, first week and first month, indicating some form of market efficiency. The focus with this paper was primarily on the short term return and underpricing of IPOs in hot and cold market periods. Further research is, however, needed to compare these high levels of underpricing in hot markets to the three and five year long term performance of IPOs in South Africa. In conclusion, the level of underpricing of IPOs in South Africa during hot market periods (more than 92%) creates a speculative opportunity for investors to buy stock at the offer price, but, at the same time, indicates major losses for existing shareholders of these IPO companies. The question remains whether these high levels of underpricing in hot market periods are caused by conservative issuers / underwriters not pricing the IPO stock aggressively enough, or the worldwide high failure rates and unattractiveness of IPO markets.

REFERENCES

- [1] A.R. Brealey. And C.S Myer. "*Principles of Corporate Finance.*" 7th edition, McGraw Hill, 2003, pp. 15.
- [2] S. Foerster. "IPOs: The Short and Long of What We Know". [Internet]: http://www.investmentreview.com/files/2009/12/field_notes17.pdf. 5th Oct. 2012 [2003].
- [3] F.S. Latham and R.M. Braun. "Jilted? The manager's little book for keeping customers in a recession". *Journal of Business Strategy*, vol.31 (1), pp. 4 – 10, 2010.
- [4] M.B. Heeley, F.M, Sharon and Neelam, J. "Innovation, Appropriability, and the Underpricing of Initial Public Offerings". *Academy of Management Journal*, 50, pp. 209-225, 2007.
- [5] F. Allen and G. Faulhaber. "Signaling by Underpricing in the IPO Market". *Journal of Financial Economics*, vol.23, pp. 303-323, 1989.
- [6] R. Ibbotson and J. Jaffe. 1975. "Hot issue markets", *Journal of Finance*, 30, pp. 1027-1042, 1975.
- [7] J. Ritter. "The hot issue market of 1980". *Journal of Business*, 32: 215-240, 1984.
- [8] J. Helwege and N. Liang, N. "Initial public offerings in hot and cold markets", *Journal of Financial and Quantitative Analysis*, vol.39, pp. 541-569, 2004.
- [9] S. Aggarwal. "The New Issue Puzzle: IPO Pricing in the Hot and Cold Markets in India". MA thesis in Finance and Investment, India, 2006.
- [10] J. Helwege and N. Liang. "Initial Public Offerings in Hot and Cold Markets. Working paper". [Internet]:<http://www.federalreserve.gov/pubs/feds/2003/200304/200304pap.pdf>. 5th January, 2013 [2002].
- [11] R. Lawson and M. Ward. "Price performance of newly listed shares on the Johannesburg Stock Exchange". *Investment Analysts Journal*, vol. 47, pp. 17-31, 1998.
- [12] H.R. Barlow and R.J. Sparks. "A study of the pricing of new equity issues listed on the Johannesburg Stock Exchange" M.B.A. Research report, Cape Town: University of Cape Town, 1986.
- [13] C.B. Lattimer. "The short-run equity underpricing puzzle in South Africa with an emphasis on the winner's curse hypothesis". A thesis submitted in fulfilment of the requirements for the degree of Master in Commerce, University of the Witwatersrand, 2006.
- [14] G. Van Heerden and P. Alagidede. "Short run underpricing of initial public offerings (IPOs) in the Johannesburg Stock Exchange (JSE)". *Review of Development Finance*, vol.2 (3-4), pp. 130-138, 2012.
- [15] G. Chen, M. Firth and K. Jeong-Bon. "IPO underpricing in China's new stock markets". *Journal of Multinational Financial Management*, 14: 283-302, 2004.
- [16] T. J. Boulton, S.B. Smart and C.J. Zutter. "IPO underpricing and international corporate governance". Working paper, Miami University, Oxford, 2007.

- [17] T. Loughran, J.R. Ritter and K. Rydqvist. "Initial Public Offerings: International insights". *Pacific –Basin Finance Journal*, vol. 2, pp. 1-2, 2010.
- [18] R. Aggarwal, R. Leal and L. Hernandez. "The aftermarket performance of initial public offerings in Latin America". *Financial Management*, vol. 22, pp. 42-53, 1993.
- [19] H. Kiymaz. "The initial and aftermarket performance of IPOs in an emerging market: evidence from Istanbul stock exchange". *Journal of Multinational Financial Management*, vol. 10, pp. 213-227, 2000.
- [20] E.O. Lyn and E.J. Zychowicz. "The performance of new equity offerings in Hungary and Poland". *Global Finance Journal*, vol. 14, pp. 181-195, 2003.
- [21] M. Omran. "Underpricing and long-run performance of share issue privatizations in the Egyptian stock market". *Journal of Financial Research*, vol.28, pp. 215-234, 2005.
- [22] K. L. Alli and V. Subrahmanyam, K.C. Gleason. "Short and long-run performance of IPOs in post-apartheid South Africa". Working paper, Mercer University, Atlanta, 2006.
- [23] R.Q. Doeswijk, H.S.K. Hemmes and R.H. Venekamp. "25 years of Dutch IPOs: an examination of frequently cited IPO anomalies within the main sectors and during hot and cold issue periods". *De Economist*, vol. 154, pp. 154-405, 2006.
- [24] P. Jaskiewicz, M.V. Gonzalez, S. Menendez and D. Schiereck. 2005. "Long-Run IPO Performance Analysis of German and Spanish Family-Owned Businesses". *Family Business Review*, vol. 18(3), pp.179-202.
- [25] A.M. Almisher, G.S. Buell and J.R. Kish. "The relationship between systematic risk and underpricing of the IPO market". *Research in Finance*, vol.19, pp.87 – 107, 2002.
- [26] A. Altı. "IPO market timing". *Review of Financial Studies*, vol.61, pp. 1681-1709, 2005.
- [27] F. Derrien. "IPO pricing in 'hot' market conditions: Who leaves money on the table?" *The Journal of Finance*, vol. 60 (1), pp. 487-521, 2005.
- [28] M. Kooli and J. Suret. 2002. "The underpricing of initial public offerings: further Canadian evidence". [Internet]: [http://sustainableenterpriseacademy.com/ssb-extra/financialpolicyresearch.nsf/Lookup/CapitaltoNewTechnology_Suret3/\\$file/CapitaltoNewTechnology_Suret3.pdf](http://sustainableenterpriseacademy.com/ssb-extra/financialpolicyresearch.nsf/Lookup/CapitaltoNewTechnology_Suret3/$file/CapitaltoNewTechnology_Suret3.pdf). 5th January, 2013, [2002].
- [29] A.V. Kumar. "Venture backed IPO's in India: Issues of certification and underpricing". *Journal of Entrepreneurial Finance*, vol.9 (2), pp. 93-108, 2004.
- [30] P. Clarkson and J. Merkley. "Ex ante uncertainty and the underpricing of initial public offering: Further Canadian evidence". *Canadian Journal of Administrative Sciences*, vol.11, pp. 54-67, 1994.
- [31] R.G. Ibbotson, J.L. Sindelar and J.R. Ritter. "The market's problems with the pricing of initial public offerings". *Journal of Applied Corporate Finance*, 7 (1), pp. 66–74, 1994.
- [32] C. M'kombe and M. Ward. "Aftermarket price performance of initial public offerings on the JSE". *Investment Analysts Journal*, vol.55, pp. 7–20, 2002.
- [33] S.S. Deb and M.B. Vijaya. Information content of IPO grading. *Journal of banking & Finance*, vol. 34, pp. 2294-2305, 2010.
- [34] T.A. Finkle and R.P. Lamb. "A comparative analysis of the performance of emerging v. non-emerging industry initial public offerings". *New England Journal of Entrepreneurship*, vol. 5(1), 2002.
- [35] J. Ang and C. Boyer. "Performance differences between IPOs in new industries and IPOs in established industries". *Managerial Finance*, vol.35 (7), pp.606-623, 2009.
- [36] J.G. Taylor. "Investment Timing and the Business Cycle: Wiley Frontiers in Finance." Canada: John Wiley & Sons, 1998.
- [37] M.S. Sadaqat, M.F. Akhtar and K. Ali. "An Analysis on the Performance of IPO – A Study on the Karachi Stock Exchange of Pakistan". *International Journal of Business and Social Science*, vol.2 (6), pp. 275-285, 2011.
- [38] M. Page and I. Reyneke. "The Timing and Subsequent Performance of Initial Public Offerings (IPOs) on the Johannesburg Stock Exchange". *Journal of Business, Finance and Accounting*, vol. 24 (9-10), pp. 1401-1420, 1997.
- [39] J. Joshy and K.S. Agarwalla. "Mandatory IPO Grading: Does It Help Pricing Efficiency?" Indian Institute of Management Ahmedabad, Research and Publication Department, working paper. [Internet] <http://www.iimahd.ernet.in/assets/snippets/workingpaperpdf/5627045722012-12-07.pdf>. 5th January, 2013, [2012].