

Short run underpricing of initial public offerings (IPOs) in the Johannesburg Stock Exchange (JSE)

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Abstract

The underpricing of initial public offerings (IPOs) represents one of the anomalies observed in primary markets worldwide, however, the depth and breadth of it varies from country to country, and sector to sector. This study is an empirical analysis of short run performance of IPOs in the Johannesburg Stock Exchange (JSE). Using data for 138 South African IPOs that were listed on the JSE from 2006 to 2010, we found significant short run underpricing. A sector wise analysis of three broad sectors indicated that the financial sector had the largest IPO underpricing, particularly evident in 2007. The year-wise analysis is also documented.

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1. Introduction

In the IPO literature when the offer price of a new issue is lower than the price of the first trade, the stock is considered to be underpriced. Underpricing is often calculated as the percentage difference between the closing price on the listing date from the offer price of the issue. From the point of view of market efficiency, significant and persistent variations in the returns of new issues over different days, and weeks and months contravenes the basic tenets of an efficient market, and the subject has attracted considerable attention in the academic and professional literature over the last three decades. Although some papers have analysed the issue in African markets, the evidence remains sparse and unconvincing. Moreover, the events of the recent financial crisis have changed both the volume and value of firms going public and this warrants

further investigation. This paper therefore analyses the short run underpricing of IPOs in the JSE, and examines the sectoral distribution of returns and the fundamental reasons that drive the process.

The decision to go public is an important one in the life of the modern firm. In most western countries, IPOs are the major channel through which private firms receive financing from public investors. According to Ritter and Welch (2002), from 1980 to 2001, the number of companies going public in the United States exceeded one per business day, and these IPOs raised \$488 billion (in 2001 dollars) in gross proceeds. Thus, an efficient primary market serves diverse needs of different groups, by allowing access to low cost capital for growing firms, better visibility in terms of coverage for the company, and increased access to capital for the future expansion plans of large corporations. Moreover, investors looking for portfolio diversification opportunities are well served by a well-functioning primary market. All things equal, this process has the potential to stimulate growth in an economy like South Africa, with ramification for poverty reduction.

However, like most economic fundamentals, IPOs are influenced by business cycles. There are “hot markets” and “cold markets” (Ibbotson and Jaffe, 1975). One of the most popular aspects of IPOs is the phenomena of underpricing, the high returns of these IPOs after their first day of trading, and their subsequent low long run performance. Hot IPO markets have been particularly susceptible to unusually high volume of offerings and severe underpricing, while cold IPO markets have much lower issuance and less underpricing.

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A number of academic papers around the world have found evidence to support these phenomena (see Ritter, 1984; Ritter and Welch, 2002). However, in Sub-Saharan Africa in general, and South Africa in particular, research in IPOs, their role in the economy and the underpricing issue has been relatively underexplored. Page and Reyneke (1997) studied South African IPOs before the end of Apartheid (1980–1991) and Alli et al. (2010) concentrates on the immediate post-Apartheid period (1995–2004). The initial return on IPOs was found to be 5.45% (1995–2004), considerably lower than the 32.7% found in the pre-abolition of Apartheid period. There is no evidence of research on South African IPOs after 2004 and therefore no research done on how the recent global financial crash affected IPOs in South Africa. Also, these South African studies do not relate underpricing to sectors in the economy. This indicates a definite missing link in South African IPO literature with a gap for potential research. The contributions of this research are therefore three-fold. First, we examine the issue of short run underpricing in the JSE in the period 2006–2010. We decompose the effects of underpricing among sectors. Second, we document many patterns regarding the evolution of the JSE IPO market and analyse the effect of the 2008/2009 financial crisis on the listing of new issues and performance of the primary market. Third, we investigate the relativities of underpricing sector-wise, and examine the underlying reasons for short run underpricing in the JSE.

The results of the study are as quite revealing: the average market-adjusted returns for new issues show underpricing for the first few days of trading. This was observed in the boom phase of the economy in 2007, indicating that in an upswing, investors could do well by holding on to an IPO. Similarly, a downswing signals a sell off after the first trading day. It was found that the average IPO price increased histrionically during the financial crash in 2008, even though the total proceeds had decreased: an important indication of investor's preference for well established firms in volatile times. Moreover, the study found significant evidence of short run underpricing of firms in the financial sector relative to other sectors of the economy, and this was particularly unambiguous prior to the 2008 recession.

The rest of the article proceeds as follows: Section 2 reviews the literature on IPOs, by looking at evidence specific to African countries, and analyses the various arguments for the anomalous underpricing of stocks in the first few days of trading. Section 3 presents the methodology for calculating returns and adjusted abnormal returns following a company going public. Section 4 gives a background to the data construction and their sources and the main empirical evidence, looking particularly at sector and market wide results. Section 5 concludes.

2. Literature review

The underpricing of IPOs is a stylized fact in stock markets worldwide. However, the depth and breadth of it, varies from country to country, and sector to sector. The vast majority of the literature on IPOs has been carried out using US data. One seminal study, Ritter (1984) examined over 5000 IPOs occurring from 1960 to 1982 and reports initial return to be 18.8% higher than

the offering price shortly after public trading started. Further, during the 15-month period, the mean return on IPOs of common stock purchased at the offering price and sold at the closing bid price on the first day of public trading was 48.4%. This is in contrast to a mean return on IPOs of 16.3% during the remainder of the 6-year period 1977 through 1982. In the UK, Dimson (1979), Buckland et al. (1981), and Levis (1993) indicate average first day returns ranging from 8.5% to 17%. Internationally, Loughran et al. (1994) showed significant underpricing for 28 countries.

Although the phenomenon of IPO underpricing has received a lot of attention in stock markets worldwide, Africa seems to lag behind. The relative paucity of company data on listing and trading, the small size and the low liquidity of stock markets, coupled with the undeveloped states of capital markets typically accounts for the less volume of research on African IPOs (see Alli et al., 2010; Alagidede, 2010). However, in recent times African countries have witnessed a considerable amount of change in their political and economic systems. These changes have resulted in the liberalization of their economies, the privatization of state-owned enterprises and boost to capital markets. Attention has thus been turning gradually to the role of the stock markets in capital accumulation and corporate financing. Consequently a few studies have emerged examining underpricing of IPOs in African markets.

In South Africa, Barlow and Sparks (1986) study of 105 unseasoned equity issues on the JSE during 1972–1986 indicated a simple weighted mean initial return of 32.1%. Bradfield and Hampton (1989) found average opening premia of 48% in hot issue markets and 25% in cold issue periods from May 1975 to August 1986. Agathee et al. (2012) studied 44 IPOs listed on the Mauritian stock exchange between 1989 and 2005. They found the initial first day return to be 14.29% on average. The average returns are highest if the investors buy and hold every IPO until the end of their first month. Two recent studies found significant underpricing in Nigeria and Egypt. Adjasi et al. (2011) examined the first day returns of 125 IPOs in Nigeria between 1990 and 2006. They found very high initial returns of 43.1%, on average during that period. Relating underpricing to the quality of audit report the authors found firm size and audit quality to be important factors in IPO underpricing in Nigeria. Omran (2005) researched 53 IPOs listed in Egypt between 1994 and 1998. He found the average raw return on these IPOs to be 8%. This is lower than the raw returns found in Mauritius and Nigeria. However, the time period for the Egyptian study was considerably smaller.

Numerous theories have been proposed for the IPO underpricing phenomenon, from asymmetric information, to signalling and winners curse but none is mutually exclusive. One of the most documented theories asymmetric information advanced by Rock (1986). Rock (1986: 187) posits that: “the argument depends upon the existence of a group of investors whose information is superior to that of the firm as well as of all other investors. If new shares are priced at their expected value, these privileged investors crowd out the others when good issues are offered and they withdraw from the market when bad issues are offered. The offering firm must price the shares at

a discount in order to guarantee that the uninformed investors purchase the issue". Beatty and Ritter (1986) agree with Rock (1986) and describe the phenomenon as the 'winner's curse' that uninformed investors face. Informed investors have the advantage to bid for shares that are underpriced, while uninformed investors do not. This means that informed investors have a larger probability of buying shares that are underpriced than uninformed investors do, and hence see larger returns on their investments.

However, not all economists agree with the information asymmetry thesis. Ritter and Welch (2002) explain that too much emphasis has been placed on asymmetric models and found that empirical evidence in favour of these models is rather mixed. They felt that the model is unable to explain extremely high returns and that more research needs to be done on agency conflicts and allocation of share issues.

Signalling games is an alternative theory that economists have developed to explain the underpricing phenomenon. Signalling occurs when the managers or owners know the true value of the firm, while outsiders (potential investors) do not. Allen and Faulhaber (1989), Grinblatt and Hwang (1989), and Welch (1989) argue that a firm possesses the most valuable information about the prospects of a new project, and that the issuers explicitly consider the possibilities of future equity issues when deciding IPO prices. By signalling, high-quality firms attract a true value of their shares by offering them at a discount, and then retain some of the shares of the new issues in their personal portfolio. Underpricing creates a good impression in investors' minds, which helps the firm to sell the subsequent seasoned equity offerings (SEOs) at attractive prices. Low-quality firms are deterred from mimicking the high-quality firms, because they are less likely to reap the benefits of IPO underpricing by selling their seasoned issues at higher prices. The evidence supporting signalling theory is rather mixed. Whereas Su and Fleisher (1999) found their data on Chinese IPOs to be consistent with the signalling model, Jegadeesh et al. (1993) found a weak association between IPO underpricing and subsequent seasoned equity offerings for the US. More recently, Elston and Yang (2010) found no evidence of signalling using German data, although, they did find that insiders are still the majority shareholders after an IPO. Some countries governments regulate the offering prices of shares. This is sometimes viewed as the reason why some countries see abnormally large returns on their IPOs. The Securities and Exchange Commission in the US is more concerned about companies' full disclosure than their 'fairness', so they do not set a regulatory price. An example of a country that uses regulation is Japan. Before the reform in 1989, Japanese firms were required to have offer prices based upon the multiples of three comparable companies. In practice this does not work as it does not account for a company's potential growth, and companies with low multiples may have been chosen as the comparison (Ibbotson and Ritter, 1995).

Loughran and Ritter (2002) argue that the reasons why IPOs are underpriced depend on the environment. They thought that the winner's curse was the best explanation for the 1980s in the US, but that during the Internet bubble in the 1990s, this was not the main reason. Instead they found that other alternatives

such as analyst coverage, side payments to CEO's and venture capitalists are better explanations.

3. Methodology

We adopt the standard method for calculating underpricing of new issues namely: mean market-adjusted short run performance and the wealth relative method.

The mean market-adjusted short run return is calculated as follows:

$$R_{x,d} = \frac{P_{x,d} - P_{x,0}}{P_{x,0}} \quad (1)$$

where $R_{x,d}$ is the return on stock 'x' at the end of the d th trading day. $P_{x,d}$ is the price of stock 'x' at the end of the d th trading day and $P_{x,0}$ is the offer price of stock 'x'.

The average raw return is calculated as follows:

$$\bar{R}_{x,d} = \frac{1}{N} \sum_{i=1}^n R_{x,d} \quad (2)$$

This is the sum of the returns on the sample IPOs divided by the number of sample IPOs.

The return on the stock market of the country of the IPOs is used as the benchmark and is calculated as:

$$R_{m,d} = \frac{I_{m,d} - I_{m,0}}{I_{m,0}} \quad (3)$$

where $R_{m,d}$ is the market return at the close of day 'd'. $I_{m,d}$ is the market index value at the end of the d th trading day and $I_{m,0}$ is the market index value on the offer day of stock 'x'.

The market-adjusted short run performance (MASRP) for stock 'x' after day 'd' is calculated as follows:

$$MASRP_{x,d} = 100 \times \left\{ \frac{(1 + R_{x,d})}{(1 + R_{m,d})} - 1 \right\} \quad (4)$$

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 Aggarwal et al. (1993) on Latin American IPOs and by Sadaqat et al. (2011) on their Pakistani IPOs.

The sample mean market-adjusted short run performance for the d th trading day.

$$\overline{MASRP}_{x,d} = \frac{1}{n} \sum_{i=1}^n MASRP_{x,d} \quad (5)$$

This is the sum of the market adjusted short run performance of the sample IPOs divided by the number of sample IPOs. Given these calculations, we test the following hypothesis:

H0. The mean market-adjusted short run performance ($\overline{MASRP}_{x,d}$) is equal to zero.

H1. The mean market-adjusted short run performance ($\overline{MASRP}_{x,d}$) is different from zero.

Table 1
Adjusted short run returns.

	Days	Raw return (%)	Average market return (%)	Average market adjusted return (%)	<i>t</i> -Statistic	Wealth relative
2006	1st	29.440	0.415	66.828	1.6959*	1.666
	5th	40.769	0.528	69.948	1.9152*	1.705
	10th	39.980	1.958	66.159	1.8417*	1.668
	15th	36.887	2.531	65.819	1.8593*	1.667
	20th	31.599	3.452	64.208	1.765*	1.633
2007	1st	183.062	0.267	181.836	1.517	2.666
	5th	170.171	0.371	166.674	1.581	2.546
	10th	387.871	0.205	372.917	1.626	4.536
	15th	395.117	0.461	386.631	1.620	4.591
	20th	400.402	1.297	380.413	1.641	4.604
2008	1st	3.247	0.212	3.044	0.766	1.024
	5th	−0.585	0.200	−0.909	−0.196	0.990
	10th	−4.680	1.057	−5.818	−1.345	0.953
	15th	−10.840	−0.573	−10.339	−2.155**	0.920
	20th	−11.197	0.053	−11.581	−2.354**	0.911
2009	1st	73.912	2.186	69.109	1.036	1.529
	5th	82.359	2.176	79.521	1.179	1.592
	10th	81.341	2.815	76.544	1.147	1.577
	15th	82.626	5.907	72.240	1.137	1.551
	20th	83.292	6.075	72.689	1.130	1.554
2010	1st	7.543	0.82	6.71	0.397	1.058
	5th	10.985	1.11	10.18	0.580	1.086
	10th	1.978	0.68	1.712	0.157	1.011
	15th	−1.490	−0.64	−0.38	−0.043	0.993
	20th	0.535	−0.026	1.230	0.135	1.005
2006–2010	1st	109.371	0.44	108.3	1.8972*	2.085
	5th	104.707	0.59	102.4	2.0343**	2.035
	10th	204.409	1.035	195.8	1.8180*	3.013
	15th	207.046	1.12	201.2	1.7945*	3.036
	20th	209.052	1.939	197.8	1.8155*	3.032

* Significant at the 10% level.

** Significant at the 5% level.

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

$$t = \frac{\overline{MASRP}_{x,d}}{s/\sqrt{n}} \quad (6)$$

where 's' is the standard deviation of $MASRP_{x,d}$ for a 'n' number of firms.

The performance measurement for a group of IPOs is assessed by the following wealth relative model:

$$WR_d = \frac{1 + (1/n)\sum_{x=1}^n R_{x,d}}{1 + (1/n)\sum_{m=1}^n R_{m,d}} \quad (7)$$

where WR_d is the wealth relative for the *d*th trading day and 'n' is the total number of IPOs in the sample. A wealth relative of greater than 1.00 can be interpreted as IPOs outperforming the market in that period; a wealth relative of less than 1.00 indicates that IPOs underperformed (Ritter, 1991). The wealth relative model can also be applied to assess the long run performance.

4. Data and results

This section provides an analysis of the mean market-adjusted short run returns and wealth relatives during the period 2006 and 2010 on trading days 1, 5, 10, 15 and 20. Secondly, a sector-wise analysis of IPOs is discussed followed by an analysis on the number and value of IPOs during this period.

Data for this study consists of 138 South African IPOs that were listed on the JSE during the period 2006–2010. This number was further reduced to 114 due to data inconsistencies from the JSE and missing data on the Thomson Datastream. The JSE provided data on IPOs listed between 2006 and 2010, listing the companies' names, offer price, number of shares and sector in the economy. There appeared to be some data inconsistencies with the shares that were listed with an IPO price of one cent. Further research showed that some of these IPOs had in fact gone public for a larger amount. To correct for these data inconsistencies the IPOs that were valued by the JSE at one cent were excluded from this analysis. Subsequent daily share prices as well as the JSE All Share Index were obtained from Thomson Datastream.

4.1. Short run analysis

The results for the short estimates of the raw return, the average market return and the wealth relative return are shown in Table 1.

As can be seen in Table 1, the average IPO value was R11.55 which ranged from R0.10 to R271.42, while the JSE All Share Index was used as the benchmark for the period 2006–2010. The JSE All Share Index ranged from 18368.70 points to 33191.80 points during this five year period. The average market-adjusted return for the first trading day was 108.33% which ranged from a minimum of –78.62% to a maximum of 6123.70% with a standard deviation of 609.67.

Some economists argue that using the first day initial return is not significant enough as the market may have been irregular on that particular day and may have distorted the results. Therefore, a number of days are used to examine if IPOs are underpriced. Sadaqat et al. (2011) used days 1, 5, 10, 15 and 20 in their study. To be consistent with the literature these same days have been selected to conduct the analysis on the South African data.

The average market-adjusted returns for the 1st, 5th, 10th, 15th and 20th trading days were 108.33%, 102.43%, 195.89%, 201.22% and 197.82% respectively. According to the literature the first trading day is said to receive the highest returns. Looking at the results for this period one can see that this is clearly not the case with the 15th trading day showing the highest return followed by the 20th, 10th, 1st and 5th day respectively. Therefore, during this period an investor would ideally have preferred to have held onto his IPO for 15 days. This result is similar to what Agathe et al. (2012) reported on their study on Mauritian IPOs, where the investor saw the best return on their IPO after a month holding period.

During this five year period the results for each trading day are significant at the 10% level, while trading day 5 is significant at the 5% level. The hypothesis can therefore be rejected and one can conclude that the mean market-adjusted short run performance ($\overline{MASRP}_{x,d}$) is different from zero.

Taking a more specific look at the results one can take a year-on-year analysis. One can point out that the only years that show the 1st trading day with the highest return is 2008 and 2009 and was in fact the only day in 2008 that showed a positive return. 2006 and 2010 both show trading day 5 with the highest return and 2007 shows trading day 15. Therefore, one can draw from this analysis that during an economic upswing, such as was seen in 2007, it is better to hold onto the IPO for a longer period. Conversely, during an economic downturn, such as was seen in 2008, it is better to sell after the first trading day. It is also interesting to note that trends in these returns conform to our a priori expectations with exceptionally large returns in 2007, and negative returns in 2008 due to the global financial crisis.

The results from our wealth relative model correlate with the results seen from the mean market-adjusted returns. The wealth relative is greater than 1.00 when the mean market-adjusted returns are positive and are less than 1.00 when they are negative as seen in 2008 and day 15 in 2010.

4.2. Sector analysis

The JSE is very specific when classifying its shares into sectors and therefore a vast number of different sectors exist, making it difficult for the researcher to analyse. These sectors were therefore simplified into three broader categories, namely: financials, mining and ‘other’ (see Appendix A for all sectors). Mining has been substituted for the industrial sector in this study due to the significance of the mining sector in South Africa and the JSE. The results for the sector analysis are displayed in Table 2.

Generally, if an investor had invested in any one particular new sub-sector during this 5 year period they would have seen positive returns, with the financial sector showing the highest returns during this period followed by mining and then ‘other’. In Table 2, it must be noted that the average market-adjusted return on mining during the 5 year period appears to show an increasingly large return from the 10th trading day. This was in fact due to one company, namely African Eagle Resources PLC, where the offer price was R1.89 and closed at R219.52 after the 10th trading day. This company was then subsequently excluded in the 5 year summary where an asterisk is placed next to the mining heading to get a more accurate overview of this sector without being influenced by one extreme outlier.

On average, during the five-year period, financials showed by far the largest returns. However, taking a closer look, this can be attributed to the year 2007 during the bubble. This sector subsequently went on to show negative returns in 2009 and 2010. This may be attributed to a lack of investor confidence in this sector.

Analysing the results year-on-year, there is not a sector that particularly outperforms consistently each year. However, since 2008, the ‘other’ sector clearly performed the best followed by mining and then financials. The same is evident in 2006. These results are to be expected with the growing of the bubble in 2007 and the subsequent crash in 2008. The ‘other’ sector appeared to show the most stable return and was the only sector to show a positive return in 2010. This would be the type of sector a risk adverse investor would be interested in.

In Kiyamaz’s (2000) study on Istanbul he found the ‘other’ sector to show the highest return of 16.6%. The financial sector showed an initial return of 16% and the industrial sector showed an initial return of 11.7%.

4.3. Size

Studies done by Chalk and Peavy (1987) and Ibbotson et al. (1994) on U.S. data, in the short run, reported that underpricing is found to occur more often on smaller offerings than larger offerings, on average. They found that the underpricing phenomenon is overstated in the U.S. as the average initial returns use equal weights on all IPOs, irrespective of their size. Ibbotson et al. (1994) did their study on 2439 IPOs during the period 1975–1984. They found the average initial return on IPOs with an offering price of \$3.00 or more to be 8.6%, and the average initial return on IPOs with an offering price of less than \$3.00 to be 42.8%. This illustrates that underpricing is considerably larger on smaller offerings.

Table 2
Sector-wise analysis of IPOs listed at the JSE.

Sector	Number of IPOs	Market adjusted returns (%)				
		1st	5th	10th	15th	20th
<i>2006</i>						
Financial	3	15.33	64.55	45.847	57.798	70.502
Mining	10	29.28	39.039	43.461	43.102	36.26
Other	20	93.32	86.210	80.554	78.37	77.23
<i>2007</i>						
Financial	3	2038.776	1770.677	1752.81	1875.44	1942.481
Mining	7	204.542	205.287	1782.01	1822.87	1745.221
Other	43	48.585	48.481	47.256	48.952	49.253
<i>2008</i>						
Financial	2	0.2112	2.4757	-4.3267	-7.1654	-10.47
Mining	6	3.8191	6.7956	1.9121	1.6311	-0.325
Other	7	3.1835	-8.2815	-13.298	-21.654	-21.326
<i>2009</i>						
Financial	2	-38.758	-36.469	-35.728	-38.184	-40.383
Mining	2	52.33	72.00	71.42	68.56	71.15
Other	2	193.75	203.03	193.94	186.35	187.30
<i>2010</i>						
Financial	1	-49.06	-49.25	-49.83	-48.65	-45.50
Mining	1	-1.98	-3.04	-3.55	-1.62	-2.16
Other	5	19.60	24.71	13.07	9.52	11.25
<i>2006–2010</i>						
Financial	11	548.743	489.860	478.730	514.581	535.61
Mining	26	71.163	77.221	502.40	512.98	489.06
Mining*	25	73.345	79.727	83.702	79.269	75.349
Other	77	57.967	55.591	51.990	51.1851	51.223

Note: Mining* represents the mining sector with the exclusion of the company African Eagle Resources PLC.

M'kombe and Ward (2002) witnessed a similar result in their research on South African IPOs. They found that IPOs with an offer price below 99 cents showed the highest initial returns. These low priced shares are viewed as high risk, so one would expect high returns to be associated with them to compensate for the risk. They found that shares listed between 200 and 400 cents showed moderate initial returns. Therefore, in the short run these results agree with those seen in the U.S. that underpricing is greater on lower priced IPOs. Following these studies we examined underpricing in relation to size in the JSE for the most recent period. We used 500 cents as the benchmark as it was found to be quite close to the median IPO price during this 5 year period. The results for the short run analysis are shown in Table 3.

The evidence from Table 3 indicates that shares priced below 500 cents during this period are clearly severely underpriced compared to shares priced above 500 cents. The first trading day showed mean market-adjusted returns of 9.521% for IPOs over 500 cents and 161.744% for IPOs under 500 cents.

Taking a more specific year-on-year approach, one can see from Table 3 that this trend is evident in every year except for 2008 where the inverse appears to be true. IPOs priced below 500 cents all show negative returns, whereas IPOs priced above 500 show positive returns for the first and fifth trading days with a return of 8.472% and 2.327% respectively.

Table 3
Size of IPO shares exceeding 500 cents.

	Number of IPOs	Market adjusted returns (%)				
		1st	5th	10th	15th	20th
<i>2006</i>						
>500c	11	26.108	38.313	39.091	36.342	27.207
≤500c	22	87.189	85.765	79.693	80.557	82.709
<i>2007</i>						
>500c	14	8.711	9.675	7.354	6.453	7.128
≤500c	39	243.983	223.032	504.144	523.105	514.413
<i>2008</i>						
>500c	8	8.472	2.327	-2.297	-8.059	-7.114
≤500c	7	-3.160	-4.607	-9.842	-12.944	-16.687
<i>2009</i>						
>500c	3	-12.856	2.625	-4.072	-2.723	-3.246
≤500c	3	151.073	156.417	157.160	147.204	148.623
<i>2010</i>						
>500c	5	-10.468	-10.640	-10.858	-8.384	-8.858
≤500c	2	49.655	62.231	33.135	19.626	26.447
<i>2006–2010</i>						
>500c	40	9.521	13.268	11.186	9.440	7.275
≤500c	74	161.744	150.622	295.734	304.886	300.821

Table 4
A volume analyse of share issues exceeding 200 000 000.

	Number of IPOs	Market adjusted returns (%)				
		1st	5th	10th	15th	20th
<i>2006</i>						
>200 000 000	10	15.320	24.844	14.193	18.921	18.039
≤200 000 000	23	89.223	89.558	88.752	86.209	84.281
<i>2007</i>						
>200 000 000	28	329.548	298.690	691.168	718.138	705.709
≤200 000 000	25	16.398	18.816	16.475	15.344	16.082
<i>2008</i>						
>200 000 000	7	-7.104	-10.298	-14.490	-15.630	-20.213
≤200 000 000	8	11.923	7.306	1.770	-5.709	-4.029
<i>2009</i>						
>200 000 000	4	21.036	32.872	30.357	29.527	29.341
≤200 000 000	2	165.254	172.821	168.918	157.666	159.384
<i>2010</i>						
>200 000 000	6	8.125	12.498	2.581	-0.778	1.561
≤200 000 000	1	-1.780	-3.727	-3.502	2.000	-0.760
<i>2006–2010</i>						
>200 000 000	87	172.067	159.021	355.093	369.111	362.281
≤200 000 000	27	48.919	49.671	47.486	44.713	44.513

A reason for this “abnormality” may be the investors’ flight to more valuable shares in a time of crisis. This also agrees to the conclusions made earlier when in an economic downturn – to hold onto shares for one trading day; and to extend on this, when the shares are priced over 500 cents.

Ang and Boyer (2009) made an interesting discovery in their investigation. They found that the average principal amount increased on IPOs during a financial crisis, even though the total principal amount had decreased. This could indicate that potential investors were seeking quality companies as the market was only accepting those IPOs of larger more established companies. This increase in the average IPO price is also seen in the South African data during this period. The average IPO prices for this period were R8.45, R5.35, R39.62, R12.52, and R12.01, respectively. The average IPO price in 2008 is more than 7 times that seen in 2007 and has remained relatively higher compared to the pre-crash average IPO values.

4.4. Volume

The US market experienced a crash in 1987, before which the number of IPOs peaked at 708 (Ang and Boyer, 2009). The number of IPOs decreased following the crash, showing numbers below 300 for the first three years. This is clearly evident in the South African data where the number of IPOs for the period 2006–2010 was: 33, 53, 15, 6 and 7 respectively. The number of IPOs peaked during the financial bubble and has dropped dramatically since the crash and has failed to bounce back to anywhere near pre-peak numbers. Table 4 gives an indication of the volume of share exceeding 200 000 000.

It was found that companies with a larger share issue are more underpriced compared to companies with a smaller issue. After

the first trading day, companies with a share issue of greater than 200 000 000 shares showed a mean market-adjusted return of 172.067%, while those with a share issue of less than or equal to 200 000 000 shares showed a mean market-adjusted return of just 48.919%.

This was found to be evident in every year during this five year period except for 2008 where the inverse was true. Once again, this can be attributed to investors’ flight to quality companies during times of crisis as they seek more well-known and established companies.

5. Conclusion

The market for newly issued shares is subject to a variety of well-known idiosyncratic patterns, not least the tendency for IPOs to appear underpriced on the first few days of trading. A large amount of theoretical and empirical research has focused on documenting evidence of underpricing and advancing possible reasons for this anomaly over the past three decades. This paper examined underpricing in the Johannesburg Stock Exchange during the period 2006–2010.

Using the adjusted market return and the market relative model to analyse the short run and long run performance of new issues, this study showed significant short run underpricing of IPOs in the JSE from 2006 to 2010, with trading day 15 showing the highest initial returns. A sector wise analysis indicate the financial sector delivered the highest return, but this was mostly attributed to 2007 during the bubble, as this sector subsequently went on to show negative returns in 2009 and 2010. We also found that the average IPO price increased dramatically during the financial crash in 2008, even though the total proceeds had decreased; a signal that investment bankers may be trying to protect their reputations in

times of trouble and only opt for more well-known established firms. A value analysis of the new issues also showed that investors tend to prefer well-known and established companies.

Appendix A.

New sub-sector	JSE sector classification
Mining	Aluminium
	Coal
	Diamonds & Gemstones
	General Mining
	Gold Mining
	Industrial Metals
	Mining
	Nonferrous Metals
	Platinum & Precious Metals
	Steel
Financials	Asset management
	Consumer finance
	General finance
	Investment instrument
	Investment Services
	Mortgage finance
	Real estate investment and services
	Speciality finance
	Airlines
	Building materials and fixtures
Other	Business support services
	Business training and employment agencies
	Computer services
	Constructions and materials
	Diversified industrials
	Electrical components and equipment
	Electricity
	Electronic equipment
	Farming and fishing
	Food producers
General retailers	
Health care equipment and services	
Heavy construction	
Hotels	
Industrial suppliers	
Medical suppliers	
Mobile telecommunications	
Other securities	
Personal products	
Pharmaceuticals	
Preference shares	
Real estate holdings	
Real estate holdings and development	
Restaurants and bars	
Software	
Speciality chemicals	
Speciality retailers	
Support services	
Telecommunication equipment	
Telecommunications	
Tobacco	
Travel and leisure	
Waste and disposal services	

References

- Adjasi, C.K.D., Osei, K.S., Fiawoyife, E.U., 2011. Explaining underpricing of IPOs in frontier markets: evidence from the Nigeria Stock Exchange. *Research of International Business and Finance* 25, 255–265.
- Agathee, U.S., Sannasee, R.V., Brooks, C., 2012. The underpricing of IPOs on the stock exchange of Mauritius. *Research in International Business and Finance* 26 (2), 281–303.
- Aggarwal, R., Leal, R., Hernandez, L., 1993. The aftermarket performance of initial public offerings in Latin America. *Financial Management* 22 (1), 42–53.
- Alagidede, P., 2010. Equity market integration in Africa. *African Review of Economics and Finance* 1 (2), 88–119.
- Allen, F., Faulhaber, G., 1989. Signaling by underpricing in the IPO market. *Journal of Financial Economics* 23, 303–323.
- Alli, K.L., Subrahmanyam, V., Gleason, K.C., 2010. Short- and long run performance of initial public offerings in post apartheid South Africa. *Journal of African Business* 11, 1–25.
- Ang, J., Boyer, C., 2009. Has the 1987 crash changed the psyche of the stock market? *Review of Accounting and Finance* 8 (2), 138–154.
- Barlow, H.R., Sparks, R.J., 1986. A study of the pricing of new equity issues listed on the Johannesburg Stock Exchange. M.B.A. Research Report. University of Cape Town, Cape Town.
- Beatty, R., Ritter, J.R., 1986. Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics* 15, 213–232.
- Bradfield, D.J., Hampton, B.G., 1989. The post-listing performance of new listings: a study on the JSE. *South African Journal of Business Management* 20 (2), 82–87.
- Buckland, R., Herbert, P.J., Yeomans, K.A., 1981. Price discount on new equity issues in the UK and their relationship to investor subscription in the period 1965–75. *Journal of Business and Accounting* 8 (Spring), 79–96.
- Chalk, A.J., Peavy, J.W., 1987. Initial public offerings: daily returns, offering types and the price effect. *Financial Analysts Journal* 43 (5), 65–69.
- Dimson, E., 1979. The efficiency of the British new issue market for ordinary shares. Doctoral Thesis. London Business School.
- Elston, J.A., Yang, J.J., 2010. Venture capital, ownership structure, accounting standards and IPO underpricing: evidence of Germany. *Journal of Economics and Business* 62 (6), 517–536.
- Grinblatt, M., Hwang, C.Y., 1989. Signaling and the pricing of new issues. *Journal of Finance* 44, 393–420.
- Ibbotson, R.G., Jaffe, J.F., 1975. Hot issue' markets. *Journal of Finance* 30, 1027–1042.
- Ibbotson, R.G., Ritter, J.R., 1995. Initial public offerings. *Handbooks in Operations Research and Management Science* 9, 993–1016.
- Ibbotson, R.G., Sindelar, J.L., Ritter, J.R., 1994. The market's problems with the pricing of initial public offerings. *Journal of Applied Corporate Finance* 7 (Spring (1)), 66–74.
- Jegadeesh, N., Weinstein, M., Welch, I., 1993. An empirical investigation of IPO returns and subsequent equity offerings. *Journal of Financial Economics* 34 (2), 163–175.
- Kiyamaz, H., 2000. The initial and aftermarket performance of IPOs in an emerging market: evidence from Istanbul Stock Exchange. *Journal of Multinational Financial Management* 10, 213–227.
- Levis, M., 1993. The long-run performance of initial public offerings: the UK experience. *Financial Management* 22 (Spring (1)), 28–41.
- Loughran, T., Ritter, J.R., 2002. Why has IPO underpricing changed over time? Working Paper. Department of Finance, Insurance and Real Estate, Florida University, Florida.
- Loughran, T., Ritter, J.R., Rydqvist, K., 1994. Initial public offerings: international insights. *Pacific Basin Journal* 2, 165–199.
- M'kombe, C., Ward, M., 2002. Aftermarket price performance of initial public offerings on the JSE. *Investment Analysts Journal* 55, 7–20.

- Omran, M., 2005. Underpricing and long-run performance of share issue privatizations in the Egyptian stock market. *Journal of Financial Research* 28 (2), 215–234.
- Page, M.J., Reyneke, I., 1997. The timing and subsequent performance of initial public offerings on the Johannesburg Stock Exchange. *Journal of Business, Finance and Accounting* 24 (9–10), 1401–1420.
- Ritter, J.R., 1984. The ‘hot issue’ market of 1980. *Journal of Business* 57, 215–240.
- Ritter, J.R., 1991. The long-run performance of initial public offerings. *Journal of Finance* 46, 3–27.
- Ritter, J.R., Welch, I., 2002. A review of IPO activity, pricing and allocation. *Journal of Finance* 54 (4), 1795–1828.
- Rock, K., 1986. Why new issues are underpriced. *Journal of Financial Economics* 15, 187–212.
- Sadaqat, S., Akhtar, M.F., Alli, K., 2011. An Analysis on the performance of IPO – a study on the Karachi Stock Exchange of Pakistan. *International Journal of Business and Social Science* 2 (6), 275–285.
- Su, D., Fleisher, B.M., 1999. An empirical investigation of underpricing in Chinese IPOs. *Pacific-Basin Finance Journal* 7 (2), 173–202.
- Welch, I., 1989. Seasoned offerings, imitation costs, and the underpricing of initial public offerings. *Journal of Finance* 44, 421–449.