Factors and characteristics impacting underpricing of Initial Public Offerings (IPOs) on the Johannesburg Securities Exchange (JSE)

by

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ABSTRACT

The research was undertaken to determine the factors and characteristics that impact underpricing of Initial Public Offerings (IPOs) on the Johannesburg Securities Exchange (JSE). The data were acquired from the JSE, IPO prospectus and the McGregor-BFA database. The sample consisted of 390 IPOs from a possible population of 484 between 1996 and 2011, representing 80.6% of the IPOs listed on the JSE for the specified period. The literature reveals that certain factors and characteristics affect the level of underpricing of IPOs. For this study, the market-related factors, company characteristics and financial factors were included. The data were very skew because of outliers in the dataset that caused the data to be very difficult to interpret and unreliable. To rectify this problem, the study made use of natural logarithms to reduce the Skewness, improve the accuracy and ensure that the data were close to that of a normal distribution. Both the offer price and market capitalisation were adjusted using the consumer price index (CPI) for inflation. The JSE All-share Index (ALSI) was used as a benchmark for the short-term performance (market-adjusted abnormal return – MAAR) and the relative medium-term performance (buy and hold abnormal returns – BHAR).

The research findings revealed the following:

- The levels of underpricing on the first day and in the first week and first month were 23.0%, 22.1% and 17.3% respectively.
- IPOs listed in hot market periods received significantly higher returns. The JSE experienced a decrease in the number of IPOs being listed in both the later hot and cold market periods.
- AltX IPOs achieved significantly higher returns.
- The electronic and technology sector yielded the highest returns, followed by the financial and consumer sectors.
- Younger IPOs with a small market capitalisation and offer price were significantly more underpriced than larger IPOs were.
- Smaller companies, as measured by turnover, net profit after tax (NPAT), total assets and shareholders' equity, were significantly more underpriced when compared to larger companies.

- The financial ratios revealed that IPOs with a debt ratio of between 40% and 60% were the least underpriced. The current ratio and the return on assets (ROA) yielded no statistical significance in predicting underpricing, whereas IPOs with a smaller return on equity (ROE) were significantly more underpriced.

- IPOs with an extremely high price to earnings (P/E) ratio were also significantly underpriced. It was surprising that the market value to book value (MV/BV) did not reveal any significance in predicting underpricing on the JSE.

- The absolute returns (Buy Hold Return - BHR) found that IPOs that were initially underpriced would perform positively (41.2%) over a period of one year; however, they would underperform (-12.0%) over three years.

- The relative returns (Buy Hold Abnormal Returns - BHAR) also found that IPOs that were initially underpriced achieved positive returns in the first year after listing (30.3%) relative to the market; however, they would also underperform (-39.8%) in the market over three years.

- Although both the hot and cold market periods underperformed in the market over a three-year period, the cold market IPOs achieved significantly better medium returns.

- IPOs listed on both the Main Board and AltX underperformed in the market over a three-year period; however, the Main Board IPOs performed significantly better in the medium term.

The empirical findings of this study recommend that investors should buy IPOs at the offer price and sell them at the end of the first day of trading, as the level of underpricing revealed that the returns diminished towards the end of the first month. Investors seeking to improve their short-term returns should consider the above-mentioned factors and characteristics when making an investment decision, as these factors can act as a guide for superior returns.

Keywords: IPO, underpricing, factors and characteristics affecting underpricing, JSE, natural logarithms, Skewness

OPSOMMING

Die navorsing is onderneem om te bepaal watter faktore en eienskappe die onderprysing van Aanvanklike Openbare Aanbiedinge (AOA's) op die Johannesburgse Sekuriteitebeurs (JSB) beïnvloed het. Die data is bekom van die JSB, AOA-prospektus en die McGregor-BFA-databasis. Die steekproef het uit 390 AOA's van 'n moontlike 484 tussen 1996 en 2011 bestaan, wat 80.6% van die AOA's op die JSB vir die spesifieke tydperk verteenwoordig. Die literatuur toon dat sekere faktore en eienskappe die vlak van onderprysing van AOA's affekteer. Vir hierdie studie is markverwante faktore, maatskappy-eienskappe en finansiële faktore ingesluit. Die data was baie skeef vanweë uitskieters in die datastel, wat veroorsaak het dat die data onbetroubaar was en dit baie moeilik was om dit te vertolk. Om die probleem reg te stel, het die studie natuurlike logaritmes gebruik om die skeefheid te verminder, die akkuraatheid te verbeter en te verseker dat die data so na as moontlik aan 'n normale verspreiding was. Beide die aanbodprys en die markkapitalisering is aangepas deur die verbruikersprysindeks (VPI) vir inflasie te gebruik. Die JSB indeks van alle aandele (IAA) is gebruik as 'n maatstaf vir die korttermynprestasie (markaangepaste abnormale opbrengs – MAAO) en die relatiewe mediumtermyn-prestasie (koop en hou abnormale opbrengste – KHAO).

Die navorsingbevindings het die volgende getoon:

- Die vlakke van onderprysing op die eerste dag en in die eerste week en eerste maand was 23.0%, 22.1% en 17.3% respektiewelik.
- AOA's wat in warmmarktydperke gelys is, het beduidend hoër opbrengste ontvang. Die JSB het 'n afname ondervind in die aantal AOA's wat gedurende beide die latere warm en koue marktydperke gelys is.
- AltX-AOA's het beduidend hoër opbrengste gelewer.
- Die elektriese en tegnologiesektor het die hoogste opbrengste gelewer, gevolg deur die finansiële en verbruikersektore.
- Jonger AOA's met 'n kleiner markkapitalisering en aanbodprys was beduidend meer onderprys as wat die groter AOA's was.

- Kleiner maatskappye, soos gemeet deur die omset, netto wins ná belasting (NWNB), totale bates en aandeelhouers se ekwiteite, was beduidend meer onderprys in vergelyking met groter maatskappye.

- Die finansiële verhoudings het getoon dat AOA's met 'n skuldverhouding van tussen 40% en 60% die minste onderprys was. Die huidige verhouding en die opbrengs op bates (OOB) het geen statistiese beduidendheid in die voorspelling van onderprysing opgelewer nie, terwyl AOA's met 'n kleiner opbrengs op verdienste (OOV) beduidend meer onderprys was.

- AOA's met 'n uiters hoë P/E-verhouding was ook beduidend onderprys. Dit was verrassend dat die markwaarde tot boekwaarde (MW/BW) nie enige beduidendheid in die voorspelling van onderprysing op die JSB getoon het nie.

- Die absolute opbrengste (koop en hou opbrengste – KHO) het gevind dat die AOA's wat aanvanklik onderprys was, positief (41.2%) oor 'n tydperk van 'n jaar sou presteer; hulle sou egter oor drie jaar onderpresteer (-12.0%).

- Die relatiewe opbrengste (koop en hou abnormale opbrengste – KHAO) het ook gevind dat AOA's wat aanvanklik onderprys was, positiewe opbrengste relatief tot die mark in die eerste jaar ná lysting opgelewer het (30,3%); hulle het egter ook onderpresteer (-39.8%) in die mark oor drie jaar.

- Hoewel beide die warm en koue marktydperke oor 'n driejaar-tydperk in die mark onderpresteer het, het die koue mark-AOA's beduidend beter mediumtermynopbrengste opgelewer.

- AOA's wat op beide die hoofafdeling en die AltX gelys was, het oor 'n driejaar-tydperk in die mark onderpresteer; die hoofafdeling-AOA's het egter beduidend beter in die mediumtermyn presteer.

Die empiriese bevindings van hierdie studie beveel aan dat beleggers AOA's teen die aanbodprys behoort te koop en hulle aan die einde van die eerste dag van verhandeling te verkoop, omdat die vlak van onderprysing getoon het dat die opbrengste na die einde van die eerste maand afneem. Beleggers wat hulle korttermynopbrengste wil verbeter, behoort die bogenoemde faktore en eienskappe te oorweeg wanneer hulle 'n beleggingsbesluit neem, omdat hierdie faktore as 'n gids vir beter opbrengste kan dien

DECLARATION

Hereby I, Isak Cornelis Rust, declare that the master's degree research dissertation that I hereby submit for the master's degree qualification **Master's in Business Management (M.Com)** at the University of the Free State is my independent work, and that I have not previously submitted it for a qualification at another institution of higher education. I am aware that copyright of the dissertation is vested in the University of the Free State, and that all royalties with regard to intellectual property that was developed during the course of and/or in connection with the study at the University of the Free State, will accrue to the University. I am aware that the research may be published only with the dean's approval.

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PROOF OF LANGUAGE EDITING

Hereby I, Jacob Daniël Theunis De Bruyn STEYL (I.D. 5702225041082), a language practitioner accredited with the South African Translators' Institute (SATI), confirm that I have done the language editing of the thesis titled *Factors and characteristics impacting underpricing of Initial Public Offerings (IPOs) on the Johannesburg Securities Exchange (JSE)* by Mr Isak Cornelis Rust.

Yours faithfully

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CHAPTER 1

INTRODUCTION, BACKGROUND AND AIM

1.1 Introduction

According to Karlis (2000:81), Ljungqvist (2004:1) and Spinelli and Adams (2012:395), going public is seen as an important event in the life of a young company, as this provides the company access to new equity capital that helps to fund new projects.

Initial Public Offerings (IPOs) present companies with the opportunity to transform their companies from being privately owned to becoming a publicly trading company. This is regarded as one of the most important decisions taken by the owners of a private company. Going public is important for the company, as it presents the company and existing shareholders with wealth and an exit strategy, also known as the harvesting of shares (Firer, Ross, Westerfield & Jordan, 2012:464; Gounopoulos, Nounis & Stylianides, 2007:1; Govindasamy, 2010:1-2; Hansen & Jørgensen, 2010:4; Ritter & Welch, 2002:5). Agarwal (2006:7) defined an IPO as "the original sale of a company's securities to the wider public for the first time in the primary market".

Before a company can go public, the founding stockholders have to surrender a portion of their ownership in the form of shares for the company to acquire the external funding needed (Govindasamy, 2010:1). However, Spinelli and Adams (2012:396) mention that three main issues need to be answered before a company can consider obtaining equity capital:

- Does the venture need external equity capital?

- Do the founders require external equity capital?

- Who should invest in the company?

According to the Johannesburg Stock Exchange (2012:53-170) and Sher (2006:30), companies that want to become listed companies on the JSE have the options of listing on the Johannesburg Securities Exchange itself (Main Board), or on the

Alternative Stock Exchange (AltX). They also state that the AltX is a division in the JSE for small and medium-sized enterprises (SMEs).

Sher (2006:31) mentions that certain advantages and disadvantages are associated with listing a company on a stock exchange. They are documented as follows:

Table 1.1: Advantages and Disadvantages of Listing

The advantages of listing	Disadvantages associated with listing
Access to finance	Continuing obligations from the stock exchange
Exit strategy for existing shareholders	A lack of flexibility
Shares can be used as a direct currency for shareholders	Being too transparent can allow for market imitation
Staff incentives or rewards	Lack of control
Public profile is increased	Directors' responsibility increased dramatically

Ljungqvist (2004:1) and Van Heerden and Alagidede (2012:130-138) claim that the main anomaly within any stock exchange around the world is underpricing. Hansen and Jørgensen (2010:4) add that underpricing happens when investors have the opportunity to earn positive returns on newly issued stock. According to Lawson and Ward (1998:21) and Van Heerden and Alagidede (2012:130-131), underpricing occurs when the offer price of the new stock issued is lower than the closing price at the end of the first day of trading. The market then considers the stock as underpriced. This means that the value at which the company sold its shares to the public was lower than their actual market value.

Several researchers found underpricing in their studies around the world. Ritter and Welch (2002:2) found that IPOs in the United States were underpriced by 18.1% in the 1990s and up to 65% in 1999 (which was a hot period) and then fell back to 14% in 2001. Doeswijk, Hemmes and Venekamp (2006:405) mention that during the hot period of 1997-2000, Dutch IPOs were underpriced at an average of 35.8% compared to 9.2% during the previous cold period. Drobetz, Kammermann and Wälchli (2005:253) found that the average initial underpricing for the Swiss stock exchange between 1983 and 2000 was 34.97%. Chiraphadhanakul and Gunawardana (2005:1) also found Thailand's IPOs to be underpriced on average between 14% and 24% during the cold period of 2000-2004. Boulton, Smart and

Zutter (2007:28) mention underpricing levels for the following countries: Indonesia (41%), Malaysia (41%), South Korea (44%), Taiwan (13%) and Thailand (26%).

Thus, it is clear that when companies go public, it creates opportunities for investors to make profit of good investments. However, Gao, *Ritter and Zhu* (2012:1) and Van Heerden and Alagidede (2012:131-134) believe that the IPO market has not regained its favourable position from the late 1990s. This creates hardship for investors who want to make desirable decisions when choosing IPOs. Van Heerden and Alagidede (2012:136) confirm that underpricing does take place in South Africa and that it has a negative effect on the short-term performance of IPOs on the JSE. Ljungqvist (2004:1) adds that it is important to consider the returns of the first day, first week and first month of the IPO, as this can help to measure the short-term performance of the IPOs.

1.2   Problem Statement

According to Buchheim, Grinstead, Janssen, Juan and Sahni (2001:2) and Damodaran (2011:353-354), the consequences of underpricing tend to be different for each of the parties involved in the IPO process because underpricing is considered a potential loss of initial investment for the shareholders of the company, as the issuing company or current owners gain less capital from the issued shares. They conclude that shares are being sold for less than they are worth.

Govindasamy (2010:14) and Van Heerden and Alagidede (2012:130) mention the presence of hot and cold market periods in the JSE. They added that these periods tend to generate different returns for IPOs. Chang *et al.* (2012:3) add that companies that went public during hot cycles showed a higher level of delisting and underpricing compared to firms listed in cold periods. Kooli and Suret (2002:10) confirm that during hot markets, underpricing may double or even triple.

Taranto (2002:3) mentions the theory that suggests that investors demand underpricing to avoid the winner's curse due to information or pricing uncertainty. This is to help informed investors acquire additional wealth. Two prominent factors that have been identified in literature to increase underpricing are identified as information asymmetry and the winner's curse (Bansal & Khanna, 2012:68; Brau & Fawcett, 2006:414; Davidoff, 2011:Online; Doeswijk *et al.*, 2006:407; Hansen &

Jørgensen, 2010:4; Helwege & Liang, 2002:7; Hu & Ritter, 2007:23; Ljungqvist, 2004:2; Van Heerden & Alagidede, 2012:131-132).

Hansen and Jørgensen (2010:7) define information asymmetry as an insufficient amount of information in the market that causes investors to make wrong decisions when it comes to choosing IPOs for investment.

Agarwal (2006:31) and Rekik and Boujelbene (2013:94) mention that the winner's curse is based on a model of equilibrium for short-term underpricing created by Rock (1986:187). This means that uninformed investors are more likely to receive a complete stock allowance if the offer is overevaluated and an incomplete allowance if the offer is over-subscribed (thus severally underpriced). Therefore, investors are more likely to receive stock from a bad IPO company than to receive the desired stock from a good IPO. They add that this is why issuers need to underprice stock for the market so that the less desired offerings can still be bought.

According to Ritter and Welch (2002:5) and Van Heerden and Alagidede (2012:132), IPOs in need of investment will underprice their offerings to attract investors. However, due to the limited amount of information in the market, investors often judge the real IPO value of the company on the prospectus containing company information. According to Hansen and Jørgensen (2010:7), this is known as information asymmetry. They define information asymmetry as an insufficient amount of information in the market that causes investors to make wrong decisions when it comes to choosing IPOs for investment. Davidoff (2011:Online) adds that this can cause disparities among investors.

Demers and Joos (2005:13) and Habib and Ljungqvist (2001:434) mention that, to some extent, the issuers of shares can make costly choices that can help to lower the expected underpricing of their shares. They add that the type of underwriter and auditor can help to signal the quality of the IPO to the market. Carter, Dark and Singh (1998:285) and Hansen and Jørgensen (2010:6) confirm that having a prestigious underwriter can lead to a reduction in underpricing, which will help to eliminate underperformance in IPOs. According to Brau and Fawcett (2006:404), Ritter (1991:13) and Teoh, Welch and Wong (1998:1952), the size of an offering helps to reduce information asymmetry among investors. Van Heerden and

Alagidede (2012:136) add that the larger the number of shares issued, the less underpriced the offering was in comparison with other smaller IPOs.

Hu and Ritter (2007:3) define an underwriter as a stockbroker or investment banker that can assist the private company in becoming a publicly trading company. Chen and Mohan (2002:521) mention that underwriters will intentionally price IPOs below the market value (underprice the offering) to minimise the probability that losses will occur due to unsold shares. This means that the issuers must leave money on the table. Hansen and Jørgensen (2010:4) claim that most IPO firms can afford to underprice their offerings because they will be able to recover the loss of the underpricing in the near future.

Hansen and Jørgensen (2010:4), How, Izan and Monroe (1995:88) mention that investors who purchase newly issued stock at the offer price and sell it at the closing price on the first day have the opportunity to make huge returns. However, Smit and Neneh (2014:3) and Van Heerden and Alagidede (2012:132) mention that the uninformed investor cannot always be certain that high-priced IPOs will bring in high returns. They mention further that this leads to the probability game that uninformed investors have to play in order to gain returns on their investment. This is also known as the winner's curse. This makes it hard for the uninformed investor to select a profitable IPO initially. Davidoff (2011:Online) adds that the knowledge gaps in the market can lead to uninformed investors bidding on the wrong IPOs, whereas the informed investor will bid on specific IPOs to gain superior returns on their investments. He concludes that the above-mentioned cause investors to leave the market. Gao *et al.* (2012:28-29) confirm the decline of IPO activity in the US market. This is largely due to the market being unattractive, resulting in the drop in IPO volume in the stock market.

Company characteristics, market characteristics and financial factors have been identified to help explain underpricing in the short term. These characteristics will be discussed in full later in this chapter.

It is clear that underpricing is an important issue in IPO markets, as many of the investment decisions of informed and uninformed investors are based on this. Understanding how these factors and characteristics influence the level of

underpricing could improve investment decision making, thus improving the IPO selection process of investors.

1.3 Objectives of the Study

1.3.1 Primary objectives

The primary goal of this dissertation is to determine which factors and characteristics significantly influence the level of IPO underpricing with the intent to improve the IPO investment decision.

Prelisting values obtained from the prospectus of the 390 companies listed on the JSE in South Africa between 1996 and 2011 will be used to determine the level of underpricing as well as the factors and characteristics of IPOs that significantly affect the level of underpricing.

1.3.2 Secondary objectives

The secondary objectives are divided into theoretical and empirical objectives as set out below:

Theoretical focus:

- To ascertain which factors and characteristics significantly impact the underpricing of IPOs internationally.

Empirical focus:

- To identify the short-term performance of the 390 companies on the JSE listed from 1996 to 2011.

- To measure and analyse the level of IPO underpricing on the JSE in South Africa on the first day, in the first week and in the first month.

- To assess whether hot and cold markets have an impact the level of underpricing of IPOs on the JSE.

- To determine whether the size of the issue, the offer price and the use of the Main Board or AltX, and certain financial factors affect the level of IPO underpricing.

- To determine whether there are different levels of underpricing across the six different sectors on the JSE.

- To compare hot and cold markets to see which yields the best investment opportunities for investors.

- To improve investors' short-term returns in their selection of IPOs.

1.4 Research Methodology

According to Rajasekar, Philominathan and Chinnathambi (2013:2), research is a systematic and logical search for new and useful information that can help an individual on a particular topic. For this topic, a comprehensive literature study was conducted on the short-term performance of IPOs. By determining the level of underpricing, future investors will be able to select better IPOs. The focus is also on the factors that affect the level of underpricing of IPOs.

Information was obtained from journal articles, financial books and relevant scientific articles. The empirical study was based on empirical evidence from more than 390 IPOs listed on the JSE between 1996 and 2011.

1.4.1 Literature review

The literature review will be used to document the results of the research done on the short term performance of IPOs on the JSE. Only valid sources will be used within the dissertation and will be cited and referenced as described by the Harvard method. This will help anyone reading the assignment to trace the sources that has been used within the dissertation to ensure the authenticity and quality of the material used.

1.4.2 Empirical study

1.4.2.1 Research design

According to Rajasekar *et al.* (2013:22) a research design should indicate the various approaches the study used in solving the research problem. Quantitative data were used in this study, and the results are discussed in detail in the empirical chapter and conclusion chapter. Lombaard, Van der Merwe, Kele and Mouton (2011:19) defined *quantitative data* as a variable that can be measured on a numerical scale, such as discrete or continuous data.

1.4.2.2 Data collection

All quantitative data for the study were collected from the JSE, IPO prospectus and the BFA McGregor, whereas the other relevant data were collected through the internet, for instance journal articles and other online sites.

1.4.2.3 Population and Sample

The population consists of 484 IPOs listed on the JSE during 1996 to 2011; however due to inconsistencies only 390 IPOs (80.6% of the sample) was used in the study. The period from 1996 until 2011 was chosen, as much IPO activity was highly documented in this period. This period included two hot market periods, three cold market periods and a global recession.

1.4.3 Measurement techniques

The performance of an IPO can be measured in a number of ways. Buchheim *et al.* (2001:22) mention that the main focus should be on the mean adjusted abnormal return known as market-adjusted abnormal return (MAAR) because it is used to implement and interpret initial underpricing. According to Smit (2015:6) and Van Heerden and Alagidede (2012:130-138) MAAR is the most widely used method of calculating the level of underpricing of IPOs. Factors and characteristics that help to identify high levels of underpricing are discussed next. The MAAR measurement has been used by several studies around the world such as (Bansal & Khanna, 2012:70; Agathee, Sannassee & Brooks, 2012:11; Van Heerden & Alagidede, 2012:130-138; Seitibraimov, 2012:14).

The second measurement technique used in this study is the medium term performance, which consists of the Buy Hold Return (BHR) and the Buy Hold Abnormal Returns (BHAR). The BHR measures the absolute value of the returns whereas the BHAR measures the returns relative to the market by benchmarking the medium returns against the ALSI. Buchheim *et al*. (2001:28) states that the relative returns are more important as they measure the difference between the compounded actual returns and the compounded predicted returns. BHAR has been present in several South African studies such as (Chipeta & Jardine, 2014:1169-1171; Neneh, 2013:127; Govindasamy, 2010:36-37).

The data were very skew because of outliers in the dataset that caused the data to be very difficult to interpret and unreliable. To rectify this problem, the study made use of natural logarithms to reduce the Skewness, improve the accuracy and ensure that the data were close to that of a normal distribution.

High levels of Skewness were documented within the data as the distribution was un-even (not normally distributed). It was documented that the inconsistencies and outliers within the data set made it difficult to analyse the data properly. To rectify this problem the study made use of natural logarithms as it reduced the Skewness that was present within the data; ensuring that the data is as close to a normal distribution as possible.

Table 1.2: Summary of the measurement techniques used in this study

Measurement Technique		Source
Underpricing		
Method of Measuring Daily and Abnormal Returns **(MAAR)**	$MAAR_{x,d} = 100 \text{ x } \{\dfrac{(1 + R_{x,d})}{(1 + R_{m,d})} - 1\}$	Van Heerden and Alagidede (2012:132)
Long Term Performance		
Holding Period Return **(BHR)**	$BHRT_{i,t} = \left[\displaystyle\prod_{t=1}^{T}(1 + R_{i,t}\right] - 1$	Govindasamay (2010:31)

| Buy and Hold Abnormal Returns **(BHAR)** | $$BHAR = \frac{1}{N} \sum_{i=1}^{N} [\prod_{t=1}^{T}(1 + R_{it}) - (\prod_{t=1}^{T}(1 + R_{mt}))]$$ | Govindasamay (2010:32) |

1.4.4 Market characteristics

1.4.4.1 Hot and cold markets

Agarwal (2006:22) and Govindasamy (2010:14) stated that there is a strong relationship between the amount of IPOs issued and the market period (hot and cold market periods). Ljungqvist *et al.* (2006:1668) added that issuers time their listing to coincide with the favourable market periods as there are more investors willing to buy shares. Van Heerden and Alagidede (2012:130-131) identified the favourable market period as a hot market period; this is when the number of listings are unusually high during a period.

Table 1.3 documented the hot and cold market periods as they were found on the JSE from 1996 to 2011:

Table 1.3: Hot and Cold Periods

Hot Period	Cold Period
1997-1999	1996
2006-2007	2000-2005
	2008-2011

1.4.4.2 Board of listing (Main Board or AltX)

There are two listings on the JSE, namely the main listing (the JSE) and the secondary listing (AltX). The AltX was established in 2003 to replace the unsuccessful Venture Capital Market (VCM) and Development Capital Market (DCM) that were used as sub divisions on the Main Board. The AltX caters for small for companies that are not yet able to list and acquire capital (Mkhize & Msweli-Mbanga, 2006:86; Neneh, 2013:44-45).

1.4.4.3 JSE sectors

For the purposes of this study the IPOs have been grouped into the following six sectors: (1) basic materials, (2) consumers, (3) industrial, (4) financial, (5) electronic and technology (IT) and (6) venture capital/AltX sectors.

1.4.5 Company characteristics

1.4.5.1 Age of a company (IPO)

It is widely believed that the age of an IPO is very important. Demers and Joos (2007:Online) state that companies with more experience tend to have lower failure rates than those of younger companies. Loughran, Ritter and Rydqvist (2015:23) found that there was a strong correlation between the age of a company and the aftermarket performance it achieved.

1.4.5.2 The offer price

According to Van Heerden and Alagidede (2012:135), IPOs with a share price below 500 cents are extremely underpriced. These shares are perceived very risky. South Africa is notorious for its high levels of inflation. Smit (2015:8) argued that the offer price should be adjusted for inflation by making using of the Consumer Price Index (CPI).

1.4.5.3 Market capitalisation

Beaumont (2004:48) states that the market capitalisation is calculated as the stock price multiplied by the outstanding shares; this establishes how big the company was after its initial listing. Paavola (2007:92) adds that investors use market capitalisation as a proxy for risk, as stronger companies have higher levels of market capitalisation. Smit (2015:8) states that the (CPI) should also be used to adjust the market capitalisation for inflation.

1.4.6 Financial factors

1.4.6.1 Prelisting data from the prospectus

The prospectus is the document companies compile to present the relevant information about the company to potential investors with the purpose of being listed.

The information from the prospectus is extremely valuable, as it contains important accounting information such as the total number of shares issued, turnover, net profit after tax (NPAT), total assets, total shareholders' equity, debt ratio, net asset value, share price and the current ratio. The data acquired from the prospectus allows the study to create additional financial ratios such as the return on equity (ROE), return on assets (ROA), the price to earnings ratio (P/E) and the market to book value ratio (MV/BV).

Specific indicators such as the turnover, NPAT, total assets and shareholders equity and can be used to measure the size and risk of an IPO. This study believes that the data acquired from the prospectus can aid investors in choosing better performing IPOs.

1.4.7 Data analysis

The following formulas were used to determine the level of underpricing and the long-term performance of IPOs on the JSE:

- MAAR – market-adjusted abnormal return

- BHR – buy hold period return (absolute)

- BHAR – buy hold abnormal returns (relative to the market)

1.5 Contribution

The sample consists of 80.6% of the population of IPOs listed on the JSE from 1996 to 2011; this study is thus a true reflection of the IPOs listed on the JSE over the specified period of time. The large response rate ensures the accuracy of the data and validates the results and findings. The study documented high levels of Skewness, which indicated that the data was not normally distributed. To rectify the problem, natural logarithms were used and the removal of outliers was undertaken; this ensures that the data is as close to a normal distribution as possible and improves the accuracy of the study.

Focusing on a period of 16 years which covered two hot and cold market periods creates an ideal opportunity to benchmark South African returns to specific market related factors, company characteristics and financial factors. By identifying the

specific factors and characteristics that impact the level of underpricing, allows this study to improve the investors' selection process by reducing information asymmetry.

Finally the study will contribute to the ongoing academic research of documenting the levels of underpricing of IPOs on the JSE. The factors and characteristics that were identified will aid future researchers as they will be able to benchmark specific factors and characteristics of the JSE to other stock markets around the world.

1.6   Importance of the Study

This study examined the level of underpricing of initial public offerings on the JSE for the period 1996 to 2011. The factors that influenced the listing prices of the 390 sample IPOs were investigated and analysed. The study also monitored the effect underpricing had on the first day of trading, as this was necessary to earn above-average returns.

Doeswijk *et al.* (2006:409) mention that companies issue stock on a stock exchange for two reasons. Firstly, they found that the IPO volume is higher when an economy is strong, leading to greater opportunities. The second reason was investor demand for IPOs. However, Gao *et al.* (2012:1) found that the number of IPOs in the U.S. had dropped during 2001-2009. They also state that this is alarming as it can potentially decrease the gross domestic product (GDP) and employment growth rate of the country. Van Heerden and Alagidede (2012:136) notice an unfortunate rapid decline in the South African market and blame the recession of 2008 as the perpetrator. As this study focused on the JSE, feedback will be given as to how much IPO listings have decreased in the past decade and whether an upward trend is possible in the near future.

As mentioned earlier, it is difficult for uninformed investors to identify underpriced stock. Thus, it is likely that uninformed investors will lose money on IPOs, as they do not have the correct information regarding an IPO and its market. This continues to be a critical concern for investors as they initially find it extremely difficult to distinguish successful IPOs from failed ones. Gao *et al.* (2012:29) mention that the high level of IPO failure has made the IPO market unattractive for companies wishing to go public. This resulted in a large decline in IPO volumes in stock markets

around the world. Consequently, this has led to loss of confidence of investors in the IPO market.

This study strived to improve the decision-making process for uninformed investors, as this will help to create better investment opportunities that will lead to better returns. This was done by analysing IPO performance on the JSE over a 15-year period by using MAAR and comparing them with previous South African studies. Doing so would help to ensure a high level of accuracy for this particular study. Historical data from the IPOs before they were listed were used to help predict the potential future outcome of newer IPOs.

Lastly, the study also gives a brief history of IPOs and some of the factors that affect them. This contributes to the research done on IPO underpricing on the JSE.

1.7 Study Limitations

The research focused on the short-term performance of IPOs that were listed on the JSE; the primary focus was not on the long term performance of IPOs. Although this dissertation tried to research all the factors that affected the level of underpricing, it was impossible to document them all. The study only focused on the JSE (South Africa) and not any of the other stock exchanges around the world. The main limitation is whether enough factors and characteristics were identified and if the data captured were sufficient in helping investors to choose better IPOs for short-term returns.

1.8 Chapter Layout

Chapter 1: Introduction, Background and Aim

This chapter focuses on the introduction, background and aim of the study, thus giving a basic overview of the entire study. This includes an introduction, a problem statement, primary and secondary objectives, a brief description of the research methodology and the importance of the study. A brief description of the contribution and limitations of the study is included in this chapter.

Chapter 2: A General Overview of IPOs

This chapter provides insight into the history of underpricing. It also focuses on the history of the JSE and documents important events in the history of the JSE.

Reasons and motives for listing an IPO, as well as some of the advantages and disadvantages that are associated with going public are discussed. Key players that assist companies in the listing process are mentioned and finally, criteria for listing an IPO on the JSE are discussed.

Chapter 3: Underpricing of IPOs

This chapter focuses on underpricing and its existence in the world. The chapter begins by explaining what underpricing is and provides evidence of underpricing around the world (including South Africa). The chapter then proceeds to document underpricing and the effect it has on IPOs around the world, followed by behavioural theories that explain the reasons for underpricing. Thereafter, the factors and characteristics that affect the level of underpricing are discussed. These include the hot and cold market periods, Main Board versus AltX and the JSE sectors. The second set of factors is called the company characteristics, which consist of the age of an IPO before listing, the offer price, total number of issued shares and market capitalisation. The last part of the factors and characteristics includes financial factors (these are the pre-listing values of the IPO and the financial ratios such as ROE, ROA, P/E and MV/BV). Finally, the chapter concludes with a discussion of underperformance (medium-term performance).

Chapter 4: Research Methodology

This chapter focuses on the methods used to predict the short-term performance of IPOs and compares the performance of these companies with each other by using MAAR. BHAR has also been included to determine the level of underperformance in IPOs. Hot and cold markets are also compared, as the period focuses on a distinct period that includes a hot market followed by a cold market.

Chapter 5: Data Analysis

In this chapter, the data obtained from the JSE period of 1996-2011 are analysed by using the methods discussed in Chapter 4. The data are analysed critically to help potential investors when it comes to choosing better IPOs in which to invest. The factors and characteristics discussed in Chapter 3 are included.

Chapter 6: Conclusions

This final chapter concludes the research done in the dissertation and discussing the findings and make recommendations on the research done in Chapter 5. A discussion follows, highlighting the results and which factors and characteristics are most likely to influence the level of underpricing. This assists with the accurate prediction of choosing the correct IPO. Finally, recommendations for further studies in the field are made.

1.9 Conclusion

The aim of this chapter was to give the reader an in-depth overview of the research study, the research problem and primary and secondary objectives. The research focuses on the short-term performance of IPOs that were listed on the JSE. As mentioned earlier, the focus was on determining whether investors could use underpricing to gain better returns in a short period.

Analysing IPOs from the past will give an indication of what trends can be followed to analyse potential future investments of companies on the JSE. This will help to facilitate better investment choices for future investors.

The factors and characteristics mentioned in this chapter are used to help identify why the level of underpricing is so high in the South African market. This also helps to analyse the short-term performance of companies listed on the JSE.

CHAPTER 2

A GENERAL OVERVIEW OF IPOs

2.1   Introduction

Initial public offerings (IPOs) have always been a favourable subject for investors and researchers alike in the finance literature (Hansen & Jørgensen, 2010:4). This chapter provides an overview of IPOs and the decisions that are made by companies that choose to go public. An IPO is the original sale of the securities of a company to the public on a primary market for the first time (Agarwal, 2006:7). On the JSE there are two listings, namely the primary listing (Main Board) and the secondary listing (AltX) (Johannesburg Stock Exchange, 2012:53-170; Sher, 2006:30). It is important to distinguish between these markets, as the benefits of the stock exchange are examined and compared according to these markets.

The central theme of this chapter is to discuss and describe the history of IPOs. It is important to understand why companies list their stock on stock exchanges around the world. Reasons and motives for listing, as well as the advantages and disadvantages of going public, are examined. According to Neneh (2013:23), going public is a prestigious time for a company, as this means the company has become successful enough to require additional capital to continue its growth. She also states that the IPO process is complicated, time consuming and expensive. This chapter also examines the roles of the key participants of the JSE and the listing procedures that are in place.

2.2   The Security Exchange and its Role in the IPO Process

Younesi, Ardekani and Hahemijoo (2012:141) mention that IPOs are the first issuance of securities with the purpose of selling stock to the public. Gounopoulos *et al.* (2007:1), Govindasamy (2010:1-2) and Hansen and Jørgensen (2010:4), agree that IPOs present potential investors with an opportunity to earn above-average returns. Going public is a turning point in the life of a firm, as it presents the company and existing shareholders with wealth.

Abdulrahim (2011:1) states that financial systems help to carry out vital roles of fund channelling to individuals or organisations that have lucrative investment

opportunities. He adds that, in order to achieve these goals, participants in a financial market need to make the correct decisions when it comes to investment opportunities, as some can be less creditworthy than others are.

Stock market activities in an exchange can be classified into three categories. Firstly, shares of new public offerings are sold by private companies in the IPO market. Secondly, the additional shares are sold by the established publicly owned companies in the primary market. Finally, the outstanding previously issued shares of established publicly trading companies in the secondary market are traded. It is also found that companies do not receive extra money when the shares are sold in the secondary market (Neneh, 2013:23).

The Johannesburg Stock Exchange (2004:3-5) mentions that it is extremely important to consult a competent and experienced advisor before deciding to list on a stock exchange and that the company should appoint appropriate advisors such as the following to help with the listing process:

- A sponsor is required by the JSE to enable a company to list on the Main Board.

- Although it is not mandatory, the JSE encourages the appointment of a corporate advisor. A corporate advisor can be a stockbroker, a merchant bank or auditing firm.

- Legal advisors are also advised, as they help to draft the listing documentation to ensure that all the legal requirements are met.

- An accredited independent accountant, a registered accountant and an auditor are required by the JSE to report in the prospectus or pre-listing statement. It is also required that the profits of the company over the previous three years and the financial position of the company should be displayed in the prospectus.

- The transfer secretaries are responsible for setting up the registration of members, the issuing of shares, etc.

- All companies that wish to be listed on the JSE must be shares transactions totally electronic (STRATE) eligible in terms of the Central Securities

Depositary Rules. Alli, Subrahmanyam and Gleason (2010:7) mention that, in 1998, all transactions at the JSE became electronic with the introduction of shares transactions totally electronic (STRATE). They add that STRATE is South Africa's first electronic and depository system for dematerialised equities. Mkhize and Msweli-Mbanga (2006:85) point out that STRATE was implemented to align South Africa with international best practices to improve the financial society.

- Public relations consultants can be used to help promote a positive image of the company before its initial listing.

- Technical advisors are required in the case of mineral companies, as the prospectus needs to contain a competent person (technical advisor) to report on the company and its exploration activities.

- Printers are used to print the share certificate and the prospectus for potential investors.

2.3 The History of IPOs

Stock market facilitates are all the key prospects of a financial system, such as: capital mobilisation, investment opportunities, risk distribution and exerting corporate control. The strategic importance of a stock market cannot be overemphasised, as it symbolises commerce in the modern world (Abdulrahim, 2011:3).

According to Levinson (2011:8) and Neneh (2013:25), the concept of IPOs can be traced back to the first company in the world to issue stock and bonds in 1602, the Dutch East India Company. Agarwal (2006:7), Neneh (2013:9), Neneh and Smit (2013:895) mention that an IPO is the original sale of the securities of a company to the wider public for the first time. Younesi *et al.* (2012:141) provide a sample definition for an IPO, namely the exchange of securities for cash to raise the capital of the company.

According to Alli *et al.* (2010:5-6), Jefferis and Smith (2005:66), Johannesburg Stock Exchange (2004:2), and Mahama (2013:11), the JSE has functioned for more than 127 years, making it the second oldest stock exchange in Africa. It was formally opened on November 8, 1887 for the needs of the rapidly expanding gold-mining

industry and has emerged as an active player in meeting both the political and economic challenges of South Africa. According to Sher (2006:30), the main function of the JSE is to facilitate the raising of primary capital by re-channelling cash resources into productive economic activities. He mentions further that the activity of raising capital stimulates the economy, as it provides job opportunities and creates wealth.

Alli *et al.* (2010:5) and Mkhize and Msweli-Mbanga (2006:80) mention that, prior to 1994, roughly four companies had capitalised on over 80% of the JSE. This meant that most companies had to grow internally via vertical integration, which resulted in a large pyramidal corporation structure. They add that institutional investors dominated the JSE in the apartheid era. Unfortunately, this led to limited growth for any other company due to the limited capital available because of economic sanctions and laws in the stock market that limited foreign participation.

According to Mkhize and Msweli-Mbanga (2006:86) and Gondo (2007:21), the AltX was launched on 1 October of 2003 after its forerunners known as the development capital market and the venture capital market failed to meet their set objectives. These boards were launched with the intention to help less mature companies to qualify for an alternate listing. However, unfortunately, the development capital and venture capital boards were largely unsuccessful in meeting the envisaged objectives because the boards were unable to attract quality companies and investors. For these reasons, the AltX was envisioned to be a superior and suitable replacement for these failed opportunities.

2.3.1 The history of the JSE

With the help of numerous South African studies, a time frame as shown in Table 2.1 was adapted from Alli *et al.* (2010:6) and modified to accommodate information from several authors (Gondo, 2007:20-21; IFRS, 2015:2; JSE, 2015:Online; Mhlanga, 2013:Online; Mkhize and Msweli-Mbanga, 2006:83-86; Sher, 2006:30-35; Softschools, 2005:Online;).

Table 2.1: The Full History and Development of the South African Securities Exchange (JSE)

Historical era	Year	Major events in the JSE
Pre-Apartheid	1886	Gold discovered at Langlaagte on the Witwatersrand.
	1887	8th November: The JSE was founded by Benjamin Woolan.
	1890	A second JSE building was built on the original building site.
	1895	DRDGold Limited, the oldest listing on the exchange, was listed, and is still active in 2015.
	1897	SABMiller (then SA Breweries) was listed on the exchange, the second oldest listing on the exchange.
	1899	JSE was closed due to the Boer War.
	1901	JSE re-opened after the Boer War.
	1903	Third building opened, which became the financial centre of Johannesburg for nearly half a century.
	1914	The JSE closed due to the First World War.
	1915	The JSE re-opened.
	1937	The Great Depression on Black Friday caused a crash on the JSE, which led to investors losing £40 million. Mine shares dropped by £168.9 million.
	1945	Greatest gold boom in the history of the JSE.
	1947	The Stock Exchange Control Act was promulgated.
Apartheid era	1948	After the May elections, Apartheid was officially enforced.
	1960	Sharpeville incident caused overseas shareholders to disinvest.
	1963	The JSE was admitted to the World Federation of Exchanges (WEF).
	1964	The JSE was admitted as a member of the Federation International Bourses de Valeurs (FIBV).
	1984	Forerunners to the AltX were launched, known as the development capital market and the venture capital market.
	1985	First independent businessman appointed as JSE chief executive officer (CEO).
	1987	8th November: The JSE was 100 years old.

Historical era	Year	Major events in the JSE
Pre Liberation era	1990	President F.W. de Klerk announced the first government policy to liberate the apartheid regime.
	1991	March: Marketable securities tax on share purchases was reduced from 1.5% to 1%, with the aim to abolish the tax by 1993.
	1993	Exchange controls were removed from the JSE. The JSE became a member of the African Stock Exchanges Association (ASEA).
	1994	May: A report on the JSE structure was published.
Liberation era	1995	The "Big Bang" of the year saw citizenship requirements abolished for stockbroker. The JSE was aligned to international trends. Banks were allowed to operate in the stock broking business and a corporate option with membership limitation liability was introduced.
	1996	Dual capacity trading was introduced to eliminate the problems associated with single capacity trading, such as cost inefficiency. The open outcry system of trading was replaced by an automated trading system, known as JSE Equities Trading (JET).
	1997	The Stock Exchange News Service (SENS) was introduced as a real-time news service.
	1998	Emerging enterprise zone (EEZ) was established to provide capital from small medium-sized businesses. Three new versions of JET were implemented successfully. A memorandum with the Namibian Stock Exchange was signed to allow foreign listings and the so-called Angelo's trek.
Post-liberation era	1999	A new Insider Trading Act was introduced. The JET system was modified. Shares Transactions Totally Electronic (STRATE) was formed.
	2000	Dual listings were reintroduced. May: JET API was held. June: More companies made use of STRATE.
	2001	The highest level of delisting reached in the JSE's history. SAFEX joined the JSE.

Historical era	Year	Major events in the JSE
	2002	13th May: JSE scrapped JET and replaced it with the securities exchange trading system (SETS). JSE implemented the FTSE/JSE Africa Index series.
	2003	1st October: The AltX was opened as an alternative exchange to the JSE (Main Board).
	2004	The social responsibility index (SRI) was launched in May, seeking to measure company policies, performance and reporting in relation to the three pillars of the triple bottomline (environmental, economic and social sustainability).
	2005	1st January: The JSE officially adopted the international financial reporting system (IFRS). Name changes for the Main Board from the "JSE Securities Exchange of South Africa" to "the JSE". AltX reached a market capitalisation of R5 billion
	2006	June 5: The JSE Ltd was listed on its own Main Board exchange. The JSE moved away from the traditional floor-based trading system to make way for modern, fully electronic trading and clearing settlement. JSE launched a website to assist with investment and trading.
	2009	The JSE listed the Single Stock Futures on Microsoft and Google, which allowed retail investors to trade in the two American companies without using their R2 m foreign allowance.
	2012	Phase 1 of the alliance agreement of BRICS member exchanges was launched on 30 March 2012, offering to trade in benchmark equity index derivatives in local currencies on each BRICS member's exchange. July: The millennium trading platform project as the platform was repatriated from the London Stock Exchange.
	2013	June: JSE launched its public online virtual trading game.

Alli *et al.* (2010:6) mention that, since 2000, the JSE has reintroduced dual listing and adopted the King Code on Corporate Governance, an introduction of the social responsibility index (SRI), in 2004. The JSE was the first major stock exchange in

the world to conduct financial reporting according to the International Financing Reporting Standards (IFRS) using Extensible Business Reporting Language (XBRL).

According to the Institute of Directors Southern Africa (2009), the King I and King II were on the forefront of governance internationally. The new Companies Act no. 71 of 2008 ("the Act") and the changes in international governance increased the need for a third King report. Listing requirements for the JSE will be discussed in more detail later in this chapter.

2.4   Listing of IPOs

The term *listing* refers to the process of listing a company on a registered stock exchange. This should take place according to the relevant legislation in order to protect investors (Sher, 2006:30).

Going public is identified as a key moment in a company's life. This is when a private company has to decide between either staying a private company or issuing shares on the stock exchange to become a publicly trading company (Helwege and Liang, 2002:7). Karlis (2000:81), Ljungqvist (2004:1) and Spinelli and Adams (2012:395) point out that going public provides the company with access to new equity capital that helps to fund new projects. Govindasamy (2010:1) mentions that it should be noted that, when a company goes public, the founding stockholders have to surrender a portion of their ownership in the form of shares for the company to acquire external funding.

Hansen and Jørgensen (2010:15) state that, according to the pecking order theory, a company prefers financing with internal equity, secondly through debt financing and then by raising external capital. They also found that a company would choose only external equity if this would result in lower cost of capital that would increase the value of the firm.

According to Agarwal (2006:7), Anderson and Westling (2009:3), Brau, Ryan and DeGraw (2006:486), Gondo (2007:21-22), Johannesburg Stock Exchange (2004:2), Ritter and Welch (2002:5); and Smit and Neneh (2014:2), there are several reasons for companies to go public, for instance to:

- raise additional capital;

- improve credibility;

- unlock wealth and increase the liquidity of the investment for the former shareholders;

- attain additional resources for future expansion;

- increase the company's net worth, as public companies are worth more than private companies;

- increase the marketability of the shares; and

- elevate the image of the company.

Ritter and Welch (2002:5) confirm that investing in IPOs may also be considered an exit strategy for venture capitalists who intend to harvest their shares for capital. Neneh (2013:29) adds that most companies go public for their own specific reasons, for instance to obtain financing and/or to harvest their shares.

2.4.1 The price of going public

It should be noted that certain costs are associated with going public. According to Al-Yaman (2009:13-15), at least seven costs are associated with a company when it goes public:

- Direct cost: Direct cost includes direct expenses plus the underwriting spread. The company also pays direct expenses whether or not the offering was completed; however, the underwriter's commission is contingent on the completion of the IPO process.

- Gross spread: It depends on factors such as size of the offering, the type of underwriting commitment and the type of security offered. There is also reimbursement for some of the banker's direct expenses.

- Legal fees: This is usually the second largest expense associated in the IPO process. These legal fees also vary from company to company, depending on the time necessary to draft and file the registration statement.

- Accounting fees: The accountant verifies the registration statement and issues the comfort letter. However, these fees do not include audits of the financial statements, which may vary depending on the size of the company and the number of the years audited.

- Printing costs: These depend upon the length and the number of changes made to the registration statement and lastly the number of phonographs.

- Underpricing costs: Since the offer price is typically less than the aftermarket value, investors who bought the issues get a bargain at the expense of the firm's original shareholders. The original shareholders typically retain a large portion of the company's original shares on which they may make substantial profits.

- Hidden and future costs: Unanticipated costs can include marketing, extra transportation costs to and from consultations, counsels, accounting fees and underwriters. Thousands of Rands may be required to make the brokerage community and investors aware of the firm. However, the one cost that is notoriously difficult to put in Rand value is the management time it takes to complete the offering.

2.4.2 Harvesting shares as existing shareholders

Going public will help entrepreneurs to acquire a higher value for their company. This will inspire investors to buy into the company by adding additional value (Ritter and Welch, 2002:5). Neneh (2013:29) defines harvesting as the "path to realising the gains from an investment." She further states that harvesting can be considered as an activity in which investors pull their profits from their investments with the intention to reinvest its profits into other potential investments. Al-Yaman (2009:6) states that an IPO offers the founding shareholders the chance to diversify their wealth and ease the exit from the business for the founding entrepreneurs.

Firer *et al.* (2012:464) define venture capitalists as specialists who pool funds together from various sources to invest them in companies. According to Brau and Fawcett (2006:406), Firer *et al.* (2012:464) and Ritter and Welch (2002:5), venture

capitalists see IPOs as an opportunity to exit as an option to exercise, as it provides them with an attractive harvesting strategy for their shares.

2.4.3 Financing

Karlis (2000:81) mentions that a company goes public to raise capital, as this helps to fund new projects. Alti (2006:1681) states that companies with high growth opportunities, which typically have high market-to-book values, may use relatively more equity financing to maintain financial flexibility. Adams, Thornton and Hall (2008:4) mention that companies tend to take advantage of the inefficiency of the market when raising capital.

According to Agarwal (2006:7), initial public offering can be either an equity offering or an offering of any of the fixed income securities. Thus, it paves the way for listing and trading of the issuer's securities. He adds that once the stock is publicly traded, it paves the way for companies to raise capital in ways that are more effective, as it does not have to compensate investors for the lack of liquidity that is usually associated with a privately held company.

2.5 Advantages and Disadvantages of Going Public

Although many benefits are associated with going public, costs are also associated with it. Companies that consider going public have to consider the advantages and disadvantages associated with going public (Neneh, 2013:32).

2.5.1 Advantages of listing

According to Al-Yaman (2009:6), Johannesburg Stock Exchange (2004:2) and Sher (2006:31), the following are examples of advantages associated with going public:

- Raising capital as a source of ongoing financing will improve the firm's chance of successful growth.

- The greatest financial advantage of going public is that the gains are distributed among the founding shareholders, investors and members of the management team.

- There are also advantages for employees working for the public company, as they can receive shares as incentives for quality work.

- The listing process can increase the performance of a company, as it improves dealings with banks, suppliers, distributors and customers. This is because the listing process enhances the public image of the company.

2.5.2 Disadvantages of LISTING

Gompers and Lerner (2001:1335) mention that uninformed investors may be too optimistic when they try to invest in companies that issue equity for the first time. This leads to loss of money on the stock exchange.

According to Fama (1997:285), investors can overreact on the current position of the market when they focus too much on past performances. Ritter and Welch (2002:5) point out that having a high public price can attract competition in the market, but trading publicly can also add value to the firm. However, this can lower the potential value for the IPO because the underwriter now needs to underprice the IPO, as this will entice the public to buy the stock.

The following disadvantages associated with going public have been identified (Al-Yaman, 2009:7; Certo, Holcomb & Holmes, 2009:1341; Giudicia & Roosenboom, 2002:2; Johannesburg Stock Exchange, 2004:3; Sher, 2006:31-32):

- Enhanced requirements for the listing company, as the company is bound to comply with the listing requirements of the JSE.

- A lack of operating confidentiality caused by the filing of the registration and meeting the subsequent reporting requirements.

- Lack of flexibility, as the company needs to comply with the rules and regulations regarding the disclosure and approval of substantial transactions.

- When the company becomes publicly owned, the management will be under constant pressure in order to improve its short-term performance.

- The possible damage from the thriving entrepreneurial culture because of tighter constraint or public exposure. The diffusion of corporate ownership could raise the possibility of a hostile takeover.

- Going public is considered expensive and time consuming.

- Pre-IPO shareholders may suffer wealth losses when they sell the shares at the IPO offering.

- The IPO process increases financial and operational scrutiny of the business.

- Stringent reporting requirements of the Securities Exchange Commission (SEC).

- Strategies and company structure may need to change to deal with investor expectations.

- IPOs are new to the market and suffer from liability of market newness, as they have yet to demonstrate their ability to cope with pressures of public trading.

2.6 Key Players in the Listing Process

When a firm decides to go public, a team needs to be formed (Al-Yaman, 2009:8). Combining the literature from Al-Yaman (2009:8) and Neneh (2013:37-44) ,seven key players were identified in the IPO listing process for this study, namely the existing shareholders that want to sell their shares, the issuing company, the underwriters/investment bankers, accountants, lawyers, the SEC and the public.

2.6.1 Existing Shareholders

Neneh (2013:38) defines a shareholder as an individual or organisation that owns one or more shares of a company. Underpricing is a potential loss of initial investment for the shareholders of the company, as there is still money left on the table (Buchheim *et al.*, 2001:2).

Brau and Fawcett (2006:406) state that IPOs act as an opportunity for shareholders to cash out. Neneh (2013:39) adds that shareholders cash out their shares for their own personal gain when they prefer to trade their shares for cash. It should be noted that the founding stockholders have the option to take out a personal loan from a financial institution, as the marketable shares are a more acceptable form of collateral.

The management team of a company should always be transparent when they communicate information to the shareholders. Being transparent allows the

shareholders and potential investors to be aware of all the directors' decisions (Sher, 2006:32).

2.6.2 Issuing company

Habib and Ljungqvist (2001:434) found that the degree to which owners of IPOs care about underpricing depends on the price at which they sell the IPO. They also state that owners who sell very few shares suffer only marginally from underpricing; however, the more shares they sell, the greater their incentive will be to decrease underpricing.

After a company has decided to go public, the next big step is to choose the underwriters or investment bankers that will assist in the offering process (Neneh, 2013:39).

2.6.2.1 Analysts

According to Teoh and Wong (2002:870-871), an analyst helps an investor to evaluate whether the high reported net income from large accruals are a result of good news about future company performance or whether it merely reflects earnings to improve investor perception. Accruals contain important information for the future earnings of a company. These are accounting adjustments of the cash flow of the company from operations consistent with financial reporting regulations.

2.6.3 Underwriters as stockbrokers or investment bankers

Hu and Ritter (2007:3) state that an underwriter is a stockbroker or investment banker that can assist the private company in becoming a publicly trading company. They added that the underwriter is also responsible for creating a market that will buy the stock. Ljungqvist (2004:16) found that underwriters are extremely important when it comes to the issuing of IPOs, as they are able to increase the value of the stock. However, underwriters have to be careful when pricing the stock, as they can lose market shares if they underprice or overprice the stock too much.

Carter *et al.* (1998:286), Demers and Joos (2005:12) and Hansen and Jørgensen (2010:6) found that companies choosing prestigious underwriters to handle their listing showed less underpricing and better performance than did companies that did not make use of underwriters at all. They mention that this leads to higher offer

prices and better long-term performance for the company. The above-mentioned is attributed mostly to the fact that underwriters that are more reputable would take only potentially good IPOs to ensure their success.

Management can follow the following criteria to ensure that a prestigious underwriter is used (Findlaw Inc., 1999:Online):

- The underwriter's overall experience

- The underwriter's preliminary valuation of the company's financial situation

- Other logistics such as the underwriter's strengths and weaknesses

- The market success of the underwriter

He (2007:1014) found that less reputable investment banks attract companies with worse quality and approve them without producing information for the market, whereas underwriters that are more reputable attract companies of better quality and approve them only when good signals are observed. Liu, Sherman and Zhang (2013:9) mention that larger underwriting companies tend to attract more media coverage, which attracts additional investor attention to the specific IPO. This means that underwriters that are more reputable can increase awareness of the offering, which will lead to a better-priced IPO with less initial underpricing and better long-term performance.

DuCharme, Malatesta and Sefcik (2000:1) found that a high offering price would benefit the underwriter in two ways:

- Shares that are retained by the entrepreneur for a longer time will be worth more in the long run.

- A higher income is received for the secondary shares when they are listed.

Department of Public Enterprises (2004:147) indicates that, until a few years ago in South Africa, a company would list its stock on the stock exchange by a fixed price method. Stock can also be listed by analysing the IPO based upon the demand for the shares. Agarwal (2006:30) adds that the fixed price method is used to sell the stock at a fixed price to the buyers.

Al-Yaman (2009:4-5), Findlaw Inc. (1999:Online) and Giudici and Roosenboom (2002:3-4); mention that IPOs can be underwritten on either a commitment or best effort basis. In a commitment offering, the underwriters will purchase the shares at a discount and then resell them to public investors at the full price. In contrast with a commitment, the underwriter sells the shares only at the best possible price it can receive with the best effort offering. Ljungqvist (2004:32) mentions that underwriters always operate under the assumption that all the information was seen as symmetrical information for the public. Findlaw Inc. (1999:Online) adds that when an IPO is being underwritten on a best effort basis, it should serve as a warning to both the company and the potential investors. This is because the underwriter is unwilling to take the risk to hold the shares of the company and resell them to the public.

According to Khurshed and Mudambi (2002:698), investment bankers possess a substantial information advantage over IPO issuers and could use this advantage to lower their risk of loss.

2.6.4 The accountant

According to Al-Yaman (2009:9), most of the financial information contained in the registration statement is obtained from the audited financial statements. Al-Yaman (2009:9) and the Johannesburg Stock Exchange (2004:4) agree that the SEC requires an independent public accountant to certify the financial statements and to test other information included in the registration statement.

The accountant also assists in responding to SEC comments on the accounting issues and has to sign comfort letters stating that the financial system conforms to generally accepted accounted practice (GAAP) (Al-Yaman, 2009:9). According to international financial reporting standards(IFRS, 2015:2), since December 1, 2012, the South African GAAP is no longer used as it has been replaced officially by the identical international financial reporting system (IFRS), which is currently implemented in South Africa.

2.6.5 Attorneys

Al-Yaman (2009:9) states that attorneys are employed to advise on compliance with the securities laws during and after the registration process. He further mentions that an attorney usually conducts the due diligence such as reviewing the minutes of the

board and shareholder meetings, articles of incorporation, contracts and leases and the ownership status of major assets. According to the Johannesburg Stock Exchange (2004:4), it can be concluded that attorneys are very important, as they help to draft the listing documentation to ensure that all the legal requirements are met.

2.6.6 The Securities Exchange Commission (SEC)

According to Neneh (2013:41), the SEC is the chief regulating body in the industry that helps to protect the investor by preventing fraud, insider trading and other fraudulent practices in the market. Martinez and Perron (2004:23-24) mention that companies must register the issuance of securities with the SEC.

Chung, Li & Yu (2005:69) suggests that the primary purpose of the SEC is to increase efficiency and enhance the fairness of the securities market for the benefit of the investors, corporations and the economy. This is done by accelerating the receipt and promulgation of time-sensitive corporate information filed with the agency. Martinez and Perron (2004:23-24) state that the mission of the SEC is to protect investors and maintain the integrity of the securities market. They add that its role is not to judge the merits of the proposed offering but rather to ensure that all the information about the company has been disclosed properly as required to inform investors properly.

After a company has decided to go public and engaged an underwriter, it files a preliminary prospectus with the SEC that contains the terms of the offering (Hanley, 1993:233). Dunbar (1998:4) mention that, during the SEC's review of registration documents, which includes the initial prospectus, the investment bank in a firm-commitment offering conducts a marketing campaign to solicit interest. Gao, Mao and Zhong (2006:114) argue that institutional controls and SEC regulations in the IPO market help to restrict short-selling in the early post-offering period. This may help the initial aftermarket IPO prices to be more inflated because they reflect the sentiment of optimistic investors better now.

According to Al-Yaman (2009:9), the SEC regulations require that the independent public accountant needs to certify the financial statements and test other information included in the registration statement.

2.6.7 Investors

Investors are people from the wider public that buys the shares that are on offer from the issuing company. The main objective of the investor in an IPO is to maximise the short- and long-term share price returns by broadening and diversifying their portfolio (Neneh, 2013:42). When a company goes public, the ownership becomes widely dispersed, as the company raises new equity capital to diversify their stock holdings (Adams *et al.* 2008:69).

According to Martinez and Perron (2004:22), there are two types of investors, namely institutional investors and retail investors, of which the institutional investor is the more important. Institutional investors are banks, insurance companies, pension funds, labour union funds, corporate profit-sharing plans and college endowment funds. They also state their importance, as these institutional investors typically purchase between 70% and 90% of the shares in an IPO. Retail investors purchase securities and commodities on their own behalf and typically buy shares or commodity positions in much smaller quantities than institutional investors do.

Initial public offerings have always been important to investors and researchers alike; consequently, there is evidence and speculation about the subject (Hansen & Jørgensen, 2010:4). Lawson and Ward (1998:17) state that the JSE plays the most significant role in market capitalisation of South Africa. Thus, it is imperative for potential JSE investors to make good investments.

It can be concluded that the cost of capital for companies going public depends not only on the transactional costs incurred, but also on the returns the investors want to receive from the IPO (Ritter, 1991:4).

2.7 The Johannesburg Securities Exchange

After the end of apartheid, the market was opened to foreign capital, which led to the improvement of the stock exchange and the efficiency of the stock market in South Africa. The Apartheid JSE was characterised by several regulations and laws that limited foreign participation in the exchange (Alli *et al.*, 2010:4-5).

There are two exchanges on the JSE, namely the Main Board, which is simply known as the JSE and the secondary listing, known as the alternative exchange or

the AltX (Sher, 2006:30-31; Johannesburg Stock Exchange, 2012:1). Sher (2006:30) mentions that prior to the name change of 1 July 2005 the Main Board was known as the JSE Securities Exchange. The alternative exchange was launched as a market that focuses on smaller companies, as this will potentially help them to raise additional capital (Gondo, 2007:12-21). Gondo (2007:21) adds that the AltX was modelled on the very successful alternative investment market (AIM) of the global market for smaller, growing companies of the London Stock Exchange.

Sher (2006:32) states that if a company wishes to be listed on the JSE, it needs to comply with the King Code. The King Code is seen as a mandatory list of requirements with which a company should comply if it wishes to be listed on the JSE (Johannesburg Stock Exchange, 2012:370).

Sher (2006:32) formulated the following four main compliance procedures of which management should be aware when they comply with the requirements of the King Code:

- Firstly, a company should be prepared for having a lack of flexibility because it must comply with the rules and regulations regarding the disclosure and approval of substantial transactions.

- Secondly, the company should be transparent towards its shareholders. Transparency requires that the director's decisions be made public. The director will lose much of the privacy and autonomy he/she had before listing. This is to inform potential investors and the market of key factors they want to achieve.

- Thirdly, the lack of control should be addressed. When a large share of capital is given to the public, the managing director will have less control over the company. The company should be aware that a large portion of its control will be handed to outside shareholders, who may have different views for the company than the management has.

- Finally, the director's responsibility is changed when a company goes public. He/she needs to consider other stakeholders when making decisions. The director also needs to adhere to market practice and codes of good practice

and disclose all salaries, bonuses and party-related contracts. The management team can be reluctant to take over as directors.

According to paragraph 3.84 of the Requirements for the Main Board issuers, companies that want to list their stock on the JSE are subject to these requirements. Companies are also subject to the requirements of the King Code. All of the afore-mentioned requirements are mandatory and must be adhered to (Johannesburg Stock Exchange, 2012:370-372). These requirements are discussed in Table 2.2 below.

Table 2.2: The Mandatory Principles for Main and Secondary Board Issuers on the Johannesburg Securities Exchange (JSE)

Requirements	Principle	JSE Guidance
3.84(a)	Procedures detailing the appointment of board members should be documented in detail. Appointments must be formal and transparent and assisted by a nomination committee where appropriate.	The policy must be articulated clearly and disclosed in the relevant documentation. Given the size and the composition of the board, the issuer must consider whether such a committee is required.
3.84(b)	A clear policy when it comes to the balance of power and authority, as this will ensure that no one director has sole power.	This policy must clearly demonstrate the power referred to and disclosed in the relevant documentation.
3.84(c)	The company must appoint a CEO and chairman, but these positions may not be held by the same person, as this will be seen as conflict of interest. *AltX issuers are not required to separate the appointment of the CEO and the Chairman.	An independent director must be appointed in the case where an executive chairman who is not independent, is appointed.

Requirements	Principle	JSE Guidance
3.84(d)	An audit committee must be appointed in compliance with the King Code. The issuers must appoint a remuneration committee and, where appropriate, a risk and nomination committee. *AltX issuers must appoint an audit committee and the DA must be invited to each audit committee meeting.	The audit committee must consist of at least three independent, non-executive directors. The remuneration committee must consist of members of the board and should have a majority of non-executive directors. If required, the risk and nomination committee should consist of the board of directors.
3.84(e)	A brief CV (Curriculum Vitae) of each of the directors standing for election or re-election.	Sufficient information allowing shareholders to make informed decisions to elect a new director.
3.84(f)	The capacity of the directors in relation to executive and non-executive and independent directors must be categorised and disclosed in the relevant documentation.	These provisions help to determine the relevant capacities of the directors involved.
3.84(g)	All issuers must have a full-time executive financial director	The financial director may hold no other position or may not be part of any other commitments that would be considered as full- or part-time employment.
3.84(h)	The audit committee must report annually to the financial director and report thereon the findings in the annual report.	The report formulated should clearly state that the audit committee has executed the responsibility of its audit.
3.84(i)	This provision helps to deal with the competence, qualifications and experience of the company secretary and the responsibility of the board of directors in relation thereto.	

Requirements	Principle	JSE Guidance
3.84(j)	This provision helps to deal with the arms-length relationship between the board of directors and the company secretary and the responsibility of the board of directors in relation thereto.	

Sher (2006:33) states that the listing requirements are there to ensure that there will always be a sufficient amount of disclosure of all relevant information in the public interest. This will help investors to invest freely in a listed company of their choice. To summarise, the King Report is used to ensure that the best international practices are incorporated with the JSE. This ensures that the companies are well informed of what they are allowed and prohibited to do while they are listed on the JSE (Johannesburg Stock Exchange, 2012:110). The King Report is a code of principles and practises that are implemented to avoid legal sanctions for non-compliance (Institute of Directors in Southern Africa, 2009).

2.7.1 Criteria for listing on the JSE

The term *listing* refers to the process of being listed on a registered stock exchange in accordance with the relevant legislation that ensures compliance with the standards of the exchange (Sher, 2006:1). The time frame associated with listing a company is usually between 9 and 13 weeks (Neneh, 2013:46).

The requirements that need to be met in order to be listed on either the Main Board listing or the secondary listing are summarised in Table 2.3 (Johannesburg Stock Exchange, 2004:10; Johannesburg Stock Exchange, 2012:53-54; Johannesburg Stock Exchange, 2014:1-7; Levinson, 2011:81):

Table 2.3: Listing Criteria for the JSE and the AltX

Requirements	JSE (Main Board)	AltX (Secondary)
Minimum capital	R25 000 000	R2 000 000
Minimal equity shares	25 000 000	Not specified
Profit history	3 years	Not specified

Requirements	JSE (Main Board)	AltX (Secondary)
Audited profit (before taxation)	R8 000 000 in last financial year	Not specified
Equity securities to public	The public must hold a minimum of 20% of the equity securities.	The public must hold a minimum of 10% of the equity securities.
Public shareholders	The number of the public shareholders shall consist of the following: ❖ 300 equity securities ❖ 50 preference shares ❖ 25 debentures	The number of the public shareholders shall consist of at least: ❖ 100 equity securities
Directors	Not specified	At least 3 directors or 25% of the directors must be non-executive

From Table 2.3 it is clear that there are different criteria for the JSE's Main Board listing and the AltX respectively. The AltX criteria clearly have been reduced to entice smaller companies to make use of the service.

2.8 Chapter Summary

This chapter examined the role of the stock exchange in facilitating the IPO process. The two major stock markets in the JSE were identified as the JSE (Main Board) and the AltX (secondary exchange). Both these markets are significant to investors and shareholders because the stock prices and the value of all publicly owned companies are established there.

The chapter provided insight into the history of underpricing. It then focused on the history of the JSE and documented important events in the history of the JSE. The reasons and motives for listing IPOs were discussed and followed by the advantages and disadvantages associated with listing private stock to the public. The focus then shifted to the key players, namely the existing shareholders, issuing company, the accountant involved, the attorneys, the SEC and the investors. The key players are all part of the listing process and are extremely important to the JSE.

The JSE and its two main markets are important for investors because they need to comply with the listing criteria and ensure that they do not overstep their bounds. The next chapter documents underpricing and the effect it has on the short-term

performance of IPOs. Reasons for underpricing and the factors and characteristics that affect underpricing are also included.

CHAPTER 3

UNDERPRICING OF IPOS

3.1   Introduction

According to Karlis (2000:81) and Neneh (2013:51), a company goes public to obtain additional funding to raise capital. Agarwal (2006:14) found that the IPO market should not be understated as venture capitalists realise their return potentials and entrepreneurs play a more responsible role towards the shareholders. Thus, IPOs are the most common channel by which companies can touch the capital market to gain additional funding for growth. Khurshed and Mudambi (2012:1) point out that the short-run underpricing of IPOs is one of the best documented anomalies in finance.

The theme of this chapter is underpricing and the effect it has on the short-term performance of IPOs. The chapter documents the differences between absolute and relative returns. Secondly, underpricing theories are discussed and explained, followed by how underpricing is influenced by underwriters, hot and cold market cycles and the different sectors in the JSE. Next, the short- term performance of IPOs and, finally, the factors influencing underpricing are discussed.

3.2   Short-term Performance of IPOs

Spinelli and Adams (2012:395) regard going public as an important event in a young company's life, as it provides the company access to new equity capital that helps it to fund new projects. According to Lin (1996:56), venture capitalists have incentives to take their portfolios public when the equity valuations of the portfolio company are high stated that Venture capitalists specialise in pooling funds together from various source and investing them into companies (Firer *et al.*, 2012:464).

Van Heerden and Alagidede (2012:132) argue that, by underpricing a company's shares, the company aims to attract more investment, as this tends to attract more investors. Khurshed and Mudambi (2002:698) state that the short-term performance of IPOs refers to the widespread observation that, regardless of how IPOs come to the market, they tend to yield substantial levels of returns in the days and sometimes week immediately after initial listing. Lattimer (2006:60) reports that a common

practise of computing the average initial returns using equal weights on all IPOs tends to overstate the amount of short-term underpricing that exists in the US. This is because the smaller and lower-priced issues tend to be the more underpriced in the short term.

3.2.1 Underpricing

According to Hansen and Jørgensen (2010:4), underpricing occurs when investors have the opportunity to earn positive returns on newly issued shares. Adams *et al.* (2008:67), Van Heerden and Alagidede (2012:130) and Younesi *et al.* (2012:143) mention that the phenomenon of underpricing occurs when the offer prices of newly issued shares are lower than the first day's trading prices of the shares. Buchheim *et al.* (2001:2) argue that underpricing implies potential loss of initial investment for the shareholders of a company.

It is clear that there are opportunities for investors to benefit from IPOs in the short term. However, investors can gain positive returns only if they buy the offering at the offer price, as the share will lose much of its initial value once it reaches the aftermarket (Agathee *et al.*, 2012:20). Khurshed and Mudambi (2002:2) mention that short-term underpricing refers to the IPOs that enter the market and yield substantial returns in the days and weeks following the immediate listing. Agarwal (2006:16) states that studies on the short-term underperformance of IPOs have found frequent incidences of large initial returns on the IPO markets within the first few days after the initial listing, as IPOs tend to be underpriced.

According to Agathee *et al.* (2012:1), issuers offer shares to investors at prices that are considerably below the subsequently revealed market value. Khurshed and Mudambi (2002:698) mention that short-term underpricing refers to widespread observation regardless of methods used to go to the market. IPOs tend to yield significant returns in the days preceding the listing. Traditionally, IPO underpricing was explained based on risk aversion on the part of the underwriters. By underpricing newly issued offerings, the underwriters (usually the investment banks) reduce the chances that they will end up with an under-subscribed issue, which is associated with major losses. According to Ljungqvist (2004:1) and Agarwal (2006:24), underwriters benefit from brining companies into the market below their market price, as it helps to ensure a full subscription to the IPO and to reduce the

cost of promoting and marketing the new issue. They also state that underwriters profit from underpriced IPOs, as they are able to sell the shares more easily because they are more appealing to investors.

Agarwal (2006:16) found that, in studies on short-term underperformance, there are frequent incidences of large initial returns in the IPO market in the first few days of listing. This can be contributed to the fact that IPOs tend to be underpriced. Khurshed and Mudambi (2002:698-699) point out that, if IPOs are priced at the underlying economic value, uninformed investors tend to make systematic losses, which eventually leads to them leaving the market, which results in a shortage of liquidity for the investors. Van Heerden and Alagidede (2012:134) refer to U.S. data reporting that underpricing is found to occur more often with regard to smaller offerings than it does with regard to larger offerings.

The optimal procedure for selling IPO shares on a stock exchange is to maximize the issuer's wealth in the presence of optimistic valuations (Ljungqvist *et al.*, 2006:1674). Investors take on significant risk when they invest in companies whose worth is yet to be revealed to the marketplace. If the offer price is higher than the reservation price, the investor would most likely walk away from the offer. Thus, the issuing company or underwriters are likely to set the offer price as close as the investor is willing to pay for it (Chung *et al.*, 2005:67).

According to Zamanian, Khodaparati and Mirbagherijam (2013:71), there are two main determinants of short-term underpricing of IPOs, namely the underwriter's reputation and oversubscription.

Underpricing generates trading volume, from which the leading underwriter can benefit, as the leading underwriter is also the dominant market-maker for the shares. There should be no direct benefit of underpricing to the issuing company, which is the focus of the model (Aggarwal, Kringman & Womack, 2002:107). When investors are pessimistic about the value at which shares trade, the shares tend to be below fundamental values, as the shares will be underpriced. However, when investors bid on shares in the short run, there is often a reversal as the price converges towards the fundamental value in the long run, leading to more optimistic investors (Adams *et al.*, 2008:70). Agathee *et al.* (2012:20) agree with Alli *et al.* (2012:13) that the

opportunity for abnormal returns is available only if the investor is able to buy the shares at the offer price. When the investor buys the share in the aftermarket, the first-day returns are just too low to achieve any significant returns. Lowry and Schwert (2001:7) mention that when investors are overly optimistic, they tend to bid higher on the aftermarket price of the IPO companies, which results in higher initial returns. Brau, Couch and Sutton (2012:495) found that investors are overly optimistic about acquisitions in the IPO market, as IPO managers tend to be susceptible to overconfidence in their decisions about acquisitions. This can lead to unnecessary overinvestment in acquisition strategies that have been linked to negative benchmark-adjusted returns, suggesting that investors do not fully recognise the risk associated with increasing investments. Govindasamy (2010:7) found that investors who are overly optimistic tend to base their decisions on fads. Basing investment decisions on fads is regarded as a factor in underperformance.

3.2.2 Evidence of underpricing around the world

The following table was sampled from different studies (Kenourgios, Papathanasiou & Melas, 2007:334; Younesi *et al.*, 2012:142; Neneh, 2013:54-55; Loughran *et al., 2015*:2-3) and compiled by making use of Upadhyaya (2013:9-17) to prepare a new table containing 48 countries.

Table 3.1: Average First-day Returns of Countries around the World

Country	Sample Period	Sample Size (N)	Average Initial Returns (MAAR)
Industrialised Economies			
Australia	1976-2011	1562	21.8%
Austria	1971-2013	103	6.4%
Belgium	1984-2006	114	13.5%
Canada	1971-2013	720	6.5%
Denmark	1984-2011	164	7.4%
Finland	1984-2013	168	16.9%
France	1983-2010	697	10.5%
Germany	1978-2011	736	24.2%
Hong Kong	1980-2013	1486	15.8%

Country	Sample Period	Sample Size (N)	Average Initial Returns (MAAR)
Hungary	1990-1998	25	44.0%
Ireland	1991-2013	38	21.6%
Israel	1990-2006	348	13.8%
Italy	1985-2013	312	15.2%
Japan	1970-2013	3236	41.7%
Korea	1980-2013	1720	59.3%
Malaysia	1980-2013	474	56.2%
Netherlands	1982-2006	181	10.2%
New Zealand	1979-2013	242	18.6%
Norway	1984-2013	209	8.1%
Singapore	1973-2013	609	25.8%
Spain	1986-2013	143	10.3%
Sweden	1980-2011	374	27.2%
Switzerland	1983-2013	164	27.3%
Taiwan	1980-2013	1620	38.1%
UK	1959-2012	4932	16.0%
USA	1960-2014	12702	16.9%
Emerging Industrial Economies (EIEs)			
Brazil	1979-2011	275	33.1%
Chile	1982-2013	81	7.4%
China	1990-2013	2512	118.4%
Cyprus	1997-2012	73	20.3%
Greece	1976-2013	373	50.8%
India	1990-2011	2964	88.5%
Indonesia	1990-2014	464	24.9%
Mauritius	1989-2005	40	15.2%
Mexico	1987-2012	123	11.6%
Poland	1991-2014	309	12.7%

Country	Sample Period	Sample Size (N)	Average Initial Returns (MAAR)
Saudi Arabia	2003-2011	80	239.8%
South Africa	1980-2013	316	17.4%
Thailand	1987-2012	500	35.1%
Turkey	1990-2013	399	9.7%
Other Developing Economies			
Egypt	1990-2010	62	10.4%
Iran	1991-2004	279	22.4%
Jordan	1999-2008	53	149.0%
Morocco	2000-2011	33	33.3%
Nigeria	1989-2013	122	13.1%
Pakistan	2000-2013	80	22.1%
Philippines	1987-2013	155	18.1%
Sri Lanka	1987-2008	105	33.5%

From Table 3.1, it is clearly observed that the average initial returns vary significantly across countries and continents. It is also clearly visible that the majority of countries are industrialised economies (developed countries), followed by the emerging industrial economies, of which South Africa is one and then the developing economies. The highest underpricing observed in the industrialised economies occurred in Korea and Malaysia. It is not surprising that the United States of America (USA) and the United Kingdom (UK) had the most listings and most readily available data.

Upadhyaya (2013:7) defines the emerging industrial economies (EIEs) as countries that have made significant achievements of industrialisation. These are economies that have made substantial contributions to industrial production in the worlds. Saudi Arabia (239.8%) has the highest level of underpricing of all the 48 IPOs in the list. According to Tadawul (2015), the Saudi Exchange was public until the mid 1980s, when the government embarked on forming a regulated market. The Capital Market Authority (CMA) was established only in July 2003, whereas the Saudi Stock Exchange (Tadawul, 2015) was approved only on March 19, 2007. This means that

the Saudi Stock Exchange is still very young in comparison with the other stock exchanges around the world. Ntim (2012:57) and Mahama (2013:14) classify South Africa as the biggest stock exchange in Africa, as the JSE makes up almost 90% of the market capitalisation of Africa.

Comparing the highest level of underpricing to the lowest, it is observed that Saudi Arabia is the highest, as mentioned previously and the lowest is Austria at 6.4%. Table 3.1 reveals that IPOs in an industrialised economy tend to be substantially less underpriced than in emerging industrial economies and the other developing economies. It is also interesting to see that there are differences among the European countries; for example, the level of underpricing is considerably higher for Greece (50.8%) compared to the UK (16%). Neneh (2013:56) mentions that the differences between the levels of underpricing can be because of institutional rules and laws in the different countries and even the timing of the issues (hot and cold markets) can have an effect. It can be noted that, from Africa, only four countries were represented and developing markets in Africa are a possible explanation for this situation. Kiymaz (1999:215) points out that the existence of initial underpricing is evident in emerging markets. The findings in Table 3.1 make it clear that underpricing is an inevitable phenomenon in most financial markets around the world, irrespective of the periods and the level of underpricing in the different markets.

3.2.3 Evidence of underpricing in South Africa (JSE)

Van Heerden and Alagidede (2012:134) argue that, to ensure the significance of data, a series of different days are used to examine the short-term underpricing of IPOs on the JSE. Table 3.2 was constructed by using values from the study by Van Heerden and Alagidede (2012:133), as it summarises their findings and can be used as a comparison to other South African studies. It should be noted that the three important time measurements conducted by this study are present in Table 3.2. Day 1 is the first day of trading, Day 5 the first week and Day 20 is seen as the first month of trading.

Table 3.2: Average Returns for Short-term Performance

Day:	1	5	10	15	20
Market-adjusted Abnormal Returns (MAAR) (%)	108.33%	102.43%	195.89%	201.22%	197.82%

According to Van Heerden and Alagidede (2012:134), previous research suggests that the highest returns are received on the first day of trading; however, they found that the highest returns are actualised only after the first month's holding. Day 15 would have been the optimal holding for the above-mentioned scenario. Agathee *et al.* (2012:14) found that the average returns are the highest for investors who hold their IPOs close the end of the first month. However, they add that it should be noted that the risks associated with IPOs are the highest for the end of first month compared to the end of the first day or first week of trading.

Chipeta and Jardine (2014:1162) argue that a limited number of studies have been conducted on IPO performance in the South African market. They mention that a study by Page and Reyneke in 1997 on the JSE shows that the industry sector indexes of companies underperformed by an average of 18.4% initially and 13.1% per annum. In their study of 138 IPOs on the JSE for the period of 2006-2010, Van Heerden and Alagidede (2012:133-134) found that the average first-day return was 108.33%. Alli *et al.* (2010:13) found that the MAAR for the first day was 9.03% and for the first week 1.04% on the JSE between 1995 and 1998. This number decreased to 2.8% for the first day and then to 2.19% after the first week during the period of 1999-2004. In a South African study by Neneh and Smit (2013:898), the MAAR of the first day for the first day was 67.51%, for the first week 67.82% and for the first month 70.43%. The higher levels of MAAR can be attributed to the fact that there were many more IPOs in their study compared to other South African studies. Alli *et al.* (2010:14) also found that the first-day abnormal return for 141 companies on the JSE between 1995-2004 was 7.35%. After the first week, it declined to 1.35% and after a month, negative returns were realised. In a similar study by Agathee *et al.* (2012:19-20), the initial short-term return for 44 Mauritian IPOs was 13.14% on the first day and after only 4 days, it declined to 3.67%; afterwards, it also saw negative returns.

3.2.4 A brief explanation of hot and cold market periods

High initial returns in the market indicate that private companies have an opportunity to raise money in the form of IPOs. Thus, the companies can acquire more money than it was previously thought, which leads to a period that has an increase in IPO volume in the market (Lowry & Schwert, 2001:8). According to Govindasamy (2010:14-15), issuing companies prefer to go public immediately after a period of high returns, as they aim to raise additional money. Neneh and Smit (2014:5) confirm that these periods are known as hot and cold market periods. Govindasamy (2010:14) and Neneh and Smit (2014:5) state that IPO markets tend to be cyclical in nature and the different cycles lead to different returns on the offering, as hot market periods have higher initial returns. Van Heerden and Alagidede (2012:130-131) mention that IPOs issued during hot market periods are susceptible to low survival rates and higher failure rates than IPOs issued during cold market periods are. According to Helwege and Liang (2002:4), this is the case because during hot market cycles, lower-quality companies will follow because their returns tend to be much worse than they are during normal periods.

Ritter and Welch (2002:4) analysed 6249 IPOs in the United States for the period of 1980-2001 and found that the average first-day returns for the period was 18.8%. They identified that there were five different periods and they showed that for the period of 1980-1989, the first-day returns were merely 7.4% compared to 11.2% for 1990-1994. Average first-day returns of 18.1% were documented for 1995-1998. They concluded that during 1999-2000 (the internet bubble period) the average first-day returns were 65%, compared to 14% in 2001. Lowry and Schwert (2001:6) documented IPOs over a 41-year period from 1965 to 2005. They found an average monthly initial return of 22%; however, a standard deviation of over 55% was noticed for the period. They add that, during the hot period of 1996-2000, the IPO market achieved much higher returns compared to the colder periods preceding and following that specific period.

3.3 Behavioural Theories Explaining Underpricing

Brown, Gallery and Goei (2006:194) define the behavioural explanation as a window of opportunity that arises when there is sufficient asymmetry of information between management and outside investors regarding the true value of the company. During

these windows, the market has overpriced the shares of the company, and management exploits this information by issuing shares at an inflated price. According to Davidoff (2011:Online), a behavioural explanation is when institutional investors or managers have a chance of gaining financial advantage by taking advantage of retail shareholders who act irrationally towards their offerings. Brau and Fawcett (2006:409) add that chief financial officers (CFOs) attempt to act rationally when it comes to IPOs, as they look for certain characteristics in an IPO company that can improve the success rate. However, Baker and Wurgler (2012:50-52) state that not all managers in an efficient capital market are corrupt, as some honestly believe that they can maximise the value of companies. These honest managers tend to be overly optimistic and overconfident with their decisions, which can lead to unexpected negative events or failure.

Going public is a key area in behavioural explanations, for instance when a private company has to decide between either remaining a private company or issuing shares on the stock exchange to become a publicly trading company (Helwege & Liang, 2002:7). Karlis (2008:83) adds that behavioural explanations have also been linked to companies that intentionally underprice their IPOs to attract uninformed investors to participate in the market. He adds that intentionally underpricing an offering as a rational behaviour persuades uninformed investors to participate in the IPO market. This further increases the demand for the IPOs in the shares exchange. Underpricing can be regarded as a marketing scheme that attracts potential investors by increasing the market range (Brau & Fawcett, 2006:414). The behavioural theory argues that issuers of shares are somewhat pleasantly surprised with the amount of money they can raise with their IPOs (Brau & Fawcett, 2006:425). This means that they are not really as concerned with underpricing as they should be. Davidoff (2011:Online) explains that this is because the institutional investors or managers have a chance of gaining financial advantage by taking advantage of retail shareholders who act irrationally towards their offerings. Karlis (2008:83) points out that companies underpriced their IPOs intentionally in the past to attract uninformed investors, as this helped to raise additional equity capital. However, Goa, Ritter and Zhu (2012:114) state that institutional controls and the SEC regulate the IPO market to ensure that short-selling does not take place immediately after a listing took place.

There are six reasons for underpricing, namely information asymmetry, underwriter's assistance, the winner's curse, the signalling hypothesis, lawsuit avoidance, and the efficient market hypothesis. Several studies confirm that the abovementioned hypothesises are factors that affect underpricing and should not be viewed as mutually exclusive (Alli *et al.*, 2010:3-4; Brau & Fawcett, 2006:414; Chen & Mohan, 2002:521-522; Davidoff, 2011:Online; Hansen & Jørgensen, 2010:4; Helwege & Liang, 2002:7; Hu & Ritter, 2007:23; Khanna & Bansal 2012:1; Ljungqvist, 2004:32; Van Heerden & Algidede, 2012:131-132; Younesi *et al.*, 2012:145).

3.3.5.1 Information Asymmetry

According to Alli *et al.* (2010:3), information asymmetry is found when there is imperfect information among companies, investors and underwriters. Davidoff (2011:Online) explains that information asymmetry is found when there is little to no information available in the market, causing disparities amongst investors. Brau and Fawcett (2006:414) state that underpricing may occur because of asymmetrical information between informed and uninformed investors. Companies that are characterised by a higher level of information asymmetry will tend to be more underpriced on average than companies that do not have asymmetrical information at all. Theoretically, companies that are exposed to information asymmetry should have a higher volatility of initial returns because of the risk associated with the asymmetrical information (Lowry, Officer & Schwert, 2008:2). Whether issuers decide to use venture capitalists to go public or go public to raise capital affects the degree to which asymmetrical information affects the pricing and cost of the funds raised (Agarwal, 2006:22-23).

Asymmetric information between the underwriter and the potential investor can lead to underpricing, as only the underwriter and the owner have access to the correct market information, while the investor does not (Brau & Fawcett, 2006:414). Agathee *et al.* (2012:6) state that book building theories predict that higher levels of underpricing are associated with higher levels of information asymmetry between underwriters and investors.

According to Kerins, Kutsuna and Smith (2003:2), even in Japan's hybrid auction method, underpricing is very common. They add that underpricing and partial adjustments do take place, even in a market where investors are symmetrically

informed about their IPOs. Symmetrically informed investors are potential buyers in a market that have a sufficient amount of information of what is happening in the current market position. Ahmad-Zaluki and Abidin (2011:322) found in the Malaysian shares exchange that information asymmetry tended to be lower for companies that listed on the main market compared to IPOs that were listed on the ACE market. Booth (2010:3) found that, by frequently disclosing relevant data, the issuer can ensure accuracy of information in the market. By not overflowing the market with information, potential investors will be able to use up-to-date information, as this helps to make better decisions when choosing a specific IPO.

Al-Yaman (2009:17) mentions that the asymmetrical information theory states that the issuer tends to underprice IPOs to reward the investors for their costly and valuable information. Chen and Mohan (2002:521) state that IPO underpricing can be attributed to asymmetric information between informed and uninformed investors. Chang *et al.* (2012:4) point out that information generated during the valuation of early issuers (the pioneers) in a hot market makes the valuation of followers easier, as they reduced the informational asymmetry amongst the investors. Helwege and Liang (2002:7) indicate that hot market IPOs reflect decisions made by better quality companies to go public when the cost associated with asymmetrical information is reduced. Govindasamy (2010:4) defines a hot market period as a period in which there is a surge of potential companies that want to take advantage of the current lucrative position of the market.

3.3.5.2 Underwriter's assistance

The underwriter is responsible for the creation of a market that will buy the shares from the issuer. It should be noted that the underwriter will focus solely on selling the offering, as this creates marginal profit from which the fees are allocated to the underwriter for the work done (Hu & Ritter, 2007:3). According to Carter *et al.* (1998:286), Hansen and Jørgensen (2010:6) and Booth (2010:3), choosing a prestigious underwriter to handle the listing will decrease the amount of underpricing when compared to companies not using underwriters, and it eliminates underperformance in IPOs. Hu and Ritter (2007:1) mention that, when multiple bookrunners are present in an IPO, it reflects on a higher offer price relative to the first day's closing market price. Ritter and Welch (2002:5) argue that having a high

offer price can attract competition in the market, but trading publicly can also add value to the firm. Having a high public price can lower the potential value for the IPO because the underwriter now needs to underprice the IPO, as this will entice the public to buy the share.

According to Ljungqvist (2004:1), there is potential for underwriters to profit from an underpriced IPO. Wang (2005:12), argues that managers strategically underprice their IPOs to maximize their own personal wealth from the selling of the shares, and that the higher the ownership by managers is, the more underpriced the offering tends to be on the first-day. However, Adams *et al.* (2008:73) state that when the deal or bookmaking process is weak, uninformed investors will receive much greater allocations of IPOs. Andersson and Westling (2009:4) agree that underwriters take advantage of investor's information, as they need it to set the issue price. By involving institutional investors, the underwriter has access to private information about the market's demand for the shares. Gaining private information is a vital part of the IPO process, as this helps the issue price to be as close to the clearing price of the market as possible. Finally, the price is updated, and trading in the secondary market on the first day can be observed with initial returns. Figure 3.1 illustrates the above-mentioned process.
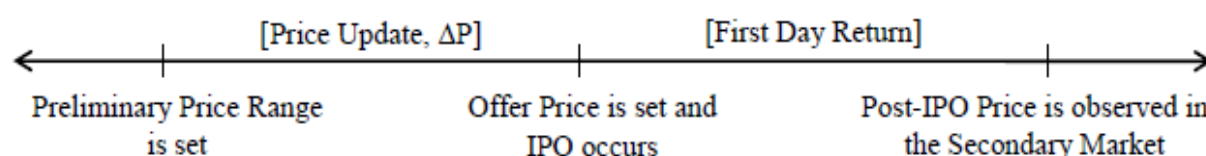
Figure 3.1: Illustration of the IPO process from which the underwriter sets the offer spread until the first-day returns can be observed on the secondary market (Andersson and Westling, 2009:4).

Gross underpricing may be a result of monopsonist power of investment bankers as they underwrite common shares of small speculative companies. Investment bankers have substantial information advantage over the IPO issuers and tend to use their knowledge to lower their own risk of loss (Khurshed & Mudambi, 2002:697). Busaba (2006:160) found that underwriters help to solicit investor information as part of pricing strategy. This helps to create incentives for informed investors, as the

underwriter will deliberately underprice the offerings and prioritise the allocation of shares to investors who reveal strong interest in them. Andersson and Westling (2009:4) concluded that pricing errors that lead to underpricing must be intentional, as the underwriters are compensated for their efforts.

Taranto (2002:3) and Ljungqvist (2004:1) state that when underwriters act as post-IPO markers with the shares they sold, they can increase their profit margin, further maximizing their profits. Underpricing the IPO will improve market appeal among potential clients. By underpricing the shares, the company is able to sell the shares more easily. Wang (2005:11-12) mentions that owners and managers have better knowledge about the true value of shares of the company than the potential investors have, that IPO underpricing is deliberate, and that to signal a company's true value is justified to achieve better prices in subsequent seasoned equity offerings (SEOs). Kucukkocaoglu (2008:169) found that larger firms tend to use fixed price offerings, whereas smaller firms would make use of sales through the stock exchange or bookbuilding methods. Borges (2007:66) points out that fixed price offerings tend to be more underpriced than book building offerings in the U.S. However, she adds that some international evidence has shown that auction IPOs are less underpriced than bookbuilding is in France and Japan. According to Agathee *et al.* (2012:6), bookbuilding theories consider underpricing as a mechanism used by underwriters to extract private information from investors.

3.3.5.3 The winner's curse

According to Smit and Neneh (2014:12), the winner's curse is found when investors randomly buy IPOs at the offer price and sell them on the first day of trading because of the high levels of underpricing associated with IPOs. According to Gondo (2007:16), companies will intentionally issue their IPOs at a discount in order to guarantee the participation of uninformed investors. This method is not sustainable, as mistakes leading to failure will arise. Kooli and Suret (2002:9) mention that, in order to keep uninformed investors participating in the IPO market, underwriters will intentionally underprice shares to ensure a non-negative rate of return to cover their losses on the overpriced IPOs.

Agarwal (2006:30-31) and Wang (2005:11) state that informed investors will not invest in all IPOs, as they have superior information about the specific IPOs.

Agathee *et al.* (2012:4), Kenourgios *et al.* (2007:334-335) and Younesi *et al.* (2012:146) state that uninformed investors have a lack of information regarding the future cash flow of the company and the value at which the shares should be trading. The informed investor will apply for underpriced IPOs, while the overpriced issues will be undersubscribed. Thus, the lack of information at the disposal of uninformed investors will leave them with bad investment opportunities that will yield negative initial returns. Kenourgios *et al.* (2007:334-335) point out that, under the conditions of information asymmetry between informed and uninformed investors, the uninformed investors require high returns to compensate for the risk of trading against superior information. According to Kooli and Suret (2002:9), the uninformed investors face the winner's curse, as they have the highest probability to receive the overpriced shares instead of the underpriced shares.

Agathee *et al.* (2012:4) state that, although the uninformed investors will be winning by acquiring more issues than the informed investors will, it will come at a cost because they will obtain the issues at an unfavourable price. Thus, the probability game uninformed investors have to play to gain returns on their investment is known as the winner's curse.

3.3.5.4 *The signalling hypothesis*

According to Agarwal (2006:27), Agathee *et al.* (2012:7), Alli *et al.* (2010:3), Hansen and Jørgensen (2010:4) and Ljungqvist (2004:36), companies can communicate the quality of their shares by signalling the market. Signalling is done intentionally by companies who underprice their offerings to signal the market that their IPOs are of high quality and should be bought. Demers and Joos (2005:13) and Gondo (2007:45) state that higher-quality companies tend to employ higher-quality auditors to signal their quality to the market at the time of their listing. According to Kenourgios *et al.* (2007:335), companies that underprice their new issues to 'leave a good taste' to the investors do so to promote asymmetrical information in the market. This allows the companies and insiders to sell the future shares at a higher price than otherwise would have been the case.

Hansen and Jørgensen (2010:4) and Agathee *et al.* (2012:7) claim that IPO companies can afford to underprice their offerings because they will be able to recover the loss of the underpricing in the future. However, the weaker IPOs will not

be able to underprice their offerings, which could lead to a loss in capital. Hansen and Jørgensen (2010:4) mention the following three ways by which companies can signal the quality of their IPOs:

- The initial offer price

- The prestigious underwriters

- The choice in auditors

Signalling mostly happens during hot market periods as this tends to attract better investors (Agarwal, 2006:27). Because of asymmetrical information between IPO insiders and the potential investors, the signalling theory continues to be an important component of IPO research (Brau & Fawcett, 2006:417). According to Hansen and Jørgensen (2010:4), a good-quality IPO company can signal the market by offering its IPO at a discount; by underpricing the IPO. The market embraces underpricing; therefore, underpricing can be seen in a good light. Yang and Ding (2012:8) suggest that IPO issuers use underpricing as a mechanism to signal the quality of their IPOs to the market. They further state that signalling models of underpricing predict that IPO companies that underprice exhibit superior operating performance in comparison with those that do not.

3.3.5.5 Lawsuit avoidance

One of the behavioural explanations for issuer or underwriter liability is that investment bankers are concerned with potential lawsuits if an IPO breaks below the issued price. By depressing (underpricing) the offering, the underwriters can limit their liability. Therefore, it is apparent that underpricing is not an enigma but rather an explainable phenomenon (Adams *et al.,* 2008:70). Kenourgios *et al.* (2007:335) mention that underpricing is one way in which companies can reduce the frequency and cost of future lawsuits.

Gondo (2007:36) and Agathee *et al.* (2012:7-8) state the lawsuit avoidance hypothesis claims that companies intentionally underprice their shares to reduce the probability of lawsuit from investors due to any omissions or errors in the prospectus. According to Younesi *et al.* (2012:146), the lawsuit avoidance hypothesis implies that issuers intentionally underprice their issues to decrease the possibility of litigation by

investors who are not satisfied with their investment in terms of security performance. Agathee *et al.* (2012:7-8) added that the following markets around the world have concluded that the probability of lawsuits is significant: Australia, Japan, Germany, the UK and Finland.

3.3.5.6 Efficient market

Younesi *et al.* (2012:145) mention that the efficient market theory suggests that all security prices reflect information at any moment. Firer *et al.* (2012:386) define the efficient market theory as a perfect world in which all the IPOs will be correctly priced on the first day of trading. Agathee *et al.* (2012:1) argue that IPO underpricing is somewhat anomalous in a sense, as it contradicts the efficient market hypothesis. This is because one would expect underpricing of IPOs to disappear over time as the majority of investors would recognise the implied profit opportunities. However, underpricing is still present in most of the developing and developed markets.

According to Fama (1997:284), an efficient market will generate different categories of events that will classify IPO prices as either an overreaction or an underreaction. Frankfurter (2007:86) added that between the over- and underreaction, only 60% of shares will be priced in the middle and will not be affected by price fluctuations.
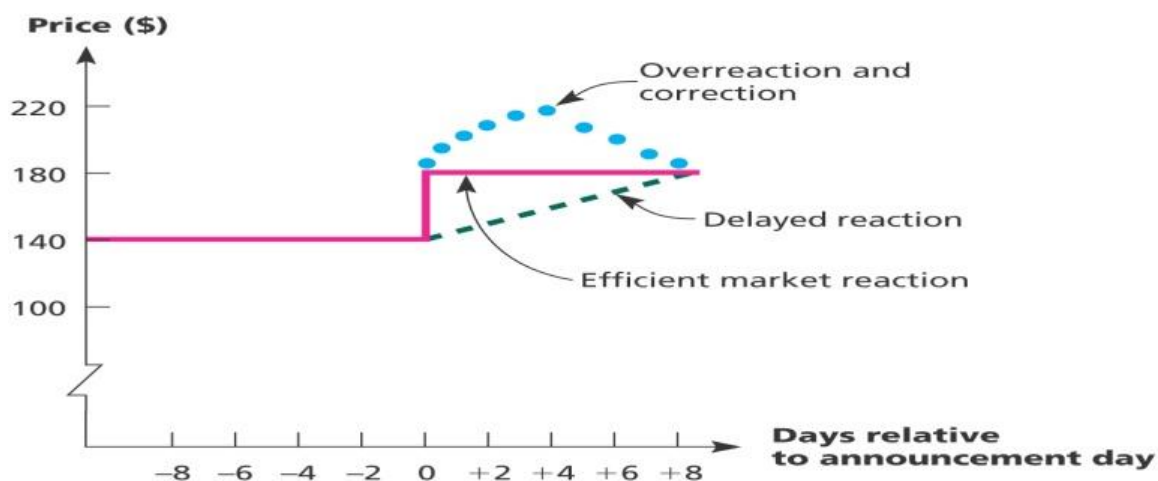
Efficient market reaction: The price instantaneously adjusts to and fully reflects new information; there is no tendency for subsequent increases and decreases to occur.
Delayed reaction: The price partially adjusts to the new information; 8 days elapse before the price completely reflects the new information.
Overreaction: The price overadjusts to the new information; it overshoots the new price and subsequently corrects.

Figure 3.2: Reaction of share price to new information in efficient and inefficient markets (Firer *et al.*, 2012:385).

Figure 3.2 shows the theoretical aspect behind overreaction and the delayed reaction of the market. This means that a share can be priced either higher or lower than it should be, causing a spike in the price, resulting in higher or lower returns.

The efficient market theory is still a highly debated topic because it is impossible to know the misspecification of the models used in each study, as an inefficient market does not always yield accurate returns (Barkat & Terry, 2013:11). Firer *et al.* (2012:386) criticise the efficient market hypothesis, mentioning that the market is not always efficient. They mention that the theory that the world is perfect and that all IPOs therefore will be correctly priced on the first day of trading is absurd. Because there is information asymmetry in the market, it leads to fluctuations of share prices. According to Cubbin, Eidne, Firer and Gilbert (2006:39), if the efficient market theory should be true, it would not be possible for investors to profit from trading rules that allow abnormal returns.

Market inefficiency can lead to mispricing, which affects real investments in two ways. Firstly, the investment may be mispriced, leading to an overestimation of the value of the investment; this causes an overreaction in the market, leading to the investor acquiring fewer shares than he has bargained for, or a potential loss in investment. Secondly, if a company has financial constraints, it can cause the market to be cautious and the IPO to be undervalued. An undervalued company will see investors lose out on a fundamentally valuable investment option (Baker & Wurgler, 2012:5). Analysts do not always account appropriately for past accruals in their forecasting of earnings in the future, because they tend to be overly optimistic about companies with large accruals in the past. Consequently, these issues contribute to investors who misprice their newly issued shares (Teoh & Wong, 2002:896). One of the most documented behavioural biases on a stock exchange is that of overconfidence among investors because investors tend to overweigh recent events and do not consider the long-term fundamentals. This tends to lead to an overreaction among decision makers in the market, thus causing information asymmetry among inexperienced individuals (Cubbin *et al.*, 2006:39).

The various authors above clearly criticise the efficient market theory, claiming that it is hard to state whether a market is hundred percent efficient or whether it is

inefficient. This led to the conclusion that the market is not always efficient in predicting an outcome for market returns.

3.4 Factors and characteristics affecting the underpricing of IPOs

Firstly the characteristics that affect the level of underpricing of IPOs are discussed, followed by the market factors, and finally, the financial factors. According to Smit and Neneh (2014:1), underpricing trends can be documented for issue-related characteristics (company characteristics) such as market capitalisation and the offer price. Several studies have identified characteristics of IPO companies, such as the age of the company, timing of the issue, gross proceeds, leverage, price-to-book value (P/B), market-to-book value (M/B), financial ratios and pre-IPO performance (M'kombe & Ward, 2002:10; Neneh, 2013:79; Zamanian *et al.*, 2013:71). More characteristics and factors influencing the short-term performance of IPOs will be discussed.

According to Khurshed and Mudambi (2002:697) and Neneh (2013:54), differences in underpricing are reported depending on the variations of underpricing. They mention differences with regard to offering type, country, the underwriter's reputation, the industry type, whether it is a hot or cold market, and the different characteristics of the offerings. Almost all of these characteristics are included in this study, except the country to which the IPO belongs.

3.4.1 Market-related factors that affect underpricing

3.4.1.1 *Hot and cold market periods*

According to Agarwal (2006:22), there is a strong relationship between IPO cycles and the fluctuations in the IPO volume. Govindasamy (2010:14) found that IPO markets tend to be cyclical in nature, and the frequency at which IPOs are generated differs for each period, thus making each period unique. Agarwal (2006:19) and Van Heerden and Alagidede (2012:130) concluded that the cyclical phenomenon is known as hot and cold market periods.

Agarwal (2006:17), Alti (2006:1682), Brau and Fawcett (2006:409), Chang *et al.* (2012:4), Helwege and Liang (2002:7) and Ritter and Welch (2002:22) define a hot market period as a period with an unusually high volume of offerings, severe

underpricing, frequent oversubscription of offerings, smaller issues and overly optimistic investors. The cold market periods have much less underpricing, fewer instances of oversubscription and larger offerings. Borges (2007:67) and Govindasamy (2010:4) state that in a hot cycle, underpricing is more frequent because of the surge of highly potential companies that want to take advantage of the current lucrative position of the market. This has also been associated with poor long-term performance. Chang *et al.* (2012:8) suggest that hot markets should have at least eight consecutive hot months, which should help to eliminate very short hot market periods of less than six months.

Doeswijk *et al.* (2006:421-424) and Govindasamy (2010:17) mention that, in contrast to a hot market, a cold market cycle have less underpricing and a larger offering per share. Cold markets are triggered when low-quality IPO companies are observed. When a cold market is in effect, companies do not want to issue new shares, because they are afraid of not getting enough potential buyers for their shares. This will lead to a potential lower capital gain. The acceptable offer price is low; therefore, fewer businesses are willing to go public with their shares.

The existence of hot and cold market periods is likely to affect the aftermarket performance of new listings differently (M'kombe & Ward, 2002:7). Kucukkocaoglu (2008:165) and Booth (2010:3) have shown that during hot market conditions, auctioning an offering is associated with less underpricing than bookbuilding. This is attributed to the fact that the auction method has the ability to incorporate more information about recent market performance with the offer price.
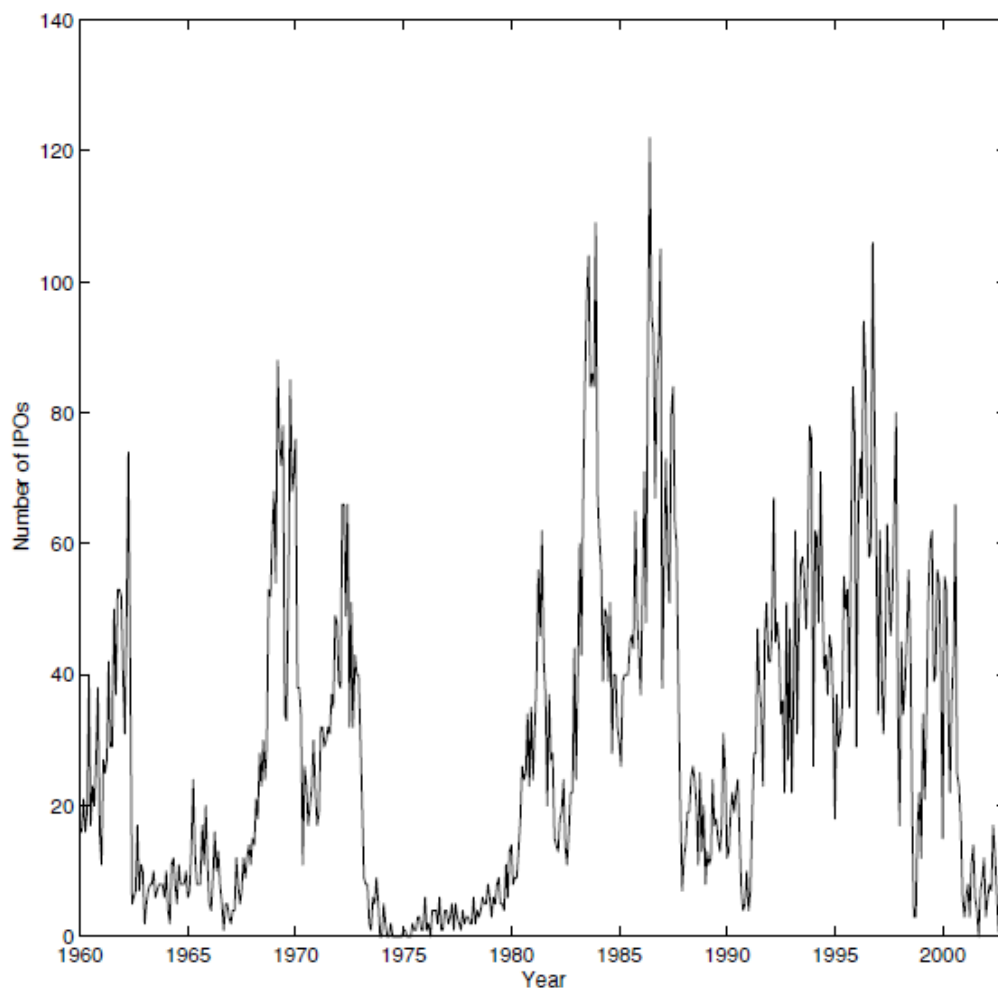
Figure 3.3: IPO volume (Pástor and Veronesi, 2005:1714).

IPO listings change dramatically over time, as is illustrated in Figure 3.3 above. Pástor and Veronesi (2005:1713) state that in the U.S. were 845 companies that went public in 1996, compared to only 87 in 2002. Although Van Heerden and Alagidede (2012:136) had a smaller sample in comparison with Pástor and Veronesi (2005), they found that 53 IPOs were listed in 2007, compared to only seven in 2010. A clear pattern of hot and cold markets emerges. As mentioned in Chapter 1, this study found that the periods of 1997-1999 and 2006-2007 were regarded as two hot periods; thus, when 1996 is compared to 2002, it should be taken into account that these were different periods in the shares exchange. Govindasamy (2010:14) confirms that, in fact, the frequencies of IPO listings for hot and cold periods differ.

He (2007:983) found that the number of IPOs and the total proceeds raised tend to fluctuate over time. Fluctuating IPO volumes and first-day returns are all inherent

parts of IPO market conditions. According to Govindasamy (2010:15), there is a strong auto coefficient for the monthly average initial returns. Investors tend to time their listing by focussing on the different cycles in the market periods. Lowry and Schwert (2001:7-8) point out that IPO volume tends to be higher following periods of high initial returns, and their findings suggest that the relation is driven by information learnt during the registration period. They state that the following three factors can cause IPO volume to fluctuate:

- Changes in private companies that acquire demand for capital

- Changes in adverse selection costs of issuing equity

- The variation in investor optimism

According to Lowry and Schwert (2001:7), more companies tend to raise public equity for the first time rather than when the demand capital of private companies is higher and the selection costs associated with issuing equity are lower. This leads to investors who are especially optimistic and are willing to overpay for IPOs. According to Agarwal (2006:19), there is a positive association between the volume of IPOs and underpricing because companies tend to go public precisely when they are least able to obtain additional funding. He adds that the IPO volume and the level of underpricing in terms of a persistent process can be used as a good predictor for future level of IPO volume and underpricing.

a) *Factors affecting IPO timing*

Brau *et al.* (2006:489) state that a company can achieve a favourable window of achievement by timing its listing. This is done by monitoring its growth stage and the market conditions. Alti (2006:1684) argues that numerous studies have found that companies tend to issue equity when their market valuations are high relative to the book values or past market values. Ljungqvist *et al.* (2006:1668) mention that issuers time their IPO listing to coincide with periods of excessive optimism. This means that more companies go public when investor sentiment in the market is high. According to Lowry and Schwert (2001:11), there are three ways in which companies and/or underwriters can affect the timing of the IPO in response to recent IPO initial returns:

- The company needs to file the issue.

- Secondly, the company has the option to change the planned issue date.

- Lastly, the company has the option to cancel the issue.

According to Ritter and Welch (2002:6), companies sometimes postpone issuing their equities if they know they are undervalued. They argue that the entrepreneurs' sense of value derives more from their internal perspective (day-to-day involvement) than it does on the public shares market. This means that sudden changes in the value of public trading companies are not absorbed as easily into private sense of value held by the entrepreneurs. Thus, entrepreneurs will adjust their valuation with a lag, as the market is driven by irrational private sentiment. This creates an opportunity for investors to sell their shares after valuations in the public market have increased. Brau and Fawcett (2006:409) mention that three theoretical domains explain the timing of IPOs:

- Managers take advantage of markets by attempting to capture attractive share prices.

- Timing is driven by the attractiveness of the IPO market. More companies tend to go public when there is a high amount of IPO activity on a shares exchange.

- When a company reaches a certain point in its business growth cycle and it needs further external equity capital to continue its growth.

b)   Pioneers and followers in hot market periods

Chang *et al.* (2012:5-16) argue that, in a hot market period, there are two kind of issuers, namely early issuers (pioneers) and late issuers (followers). A pioneer is defined as an issuer that went public in the first half of a hot market period, whereas a follower is seen as an issuing company that went public in the second half of the same hot market period. It is very important for a company to determine whether to be a pioneer or follower, as this is seen as one of the most fundamental choices facing a technology-intensive company. This decision is often critical to its success (Wilbon, 2003:233). Ritter and Welch (2002:9) mention that, in the late 1990s, the international market experienced a major increase in the number of internet and technological companies that went public. These companies also followed aggressive acquisition strategies, which the market interpreted as an attempt to pre-

empt competitors. This led to the riskiness of internet markets, as they were associated with a higher probability of failure than other companies were.

A late entry to the market allows companies to recognise the attractiveness and key success factors of the market. This can lower the cost of entry associated with a first-to-market strategy. However, the risks that tend to make companies pursue a follower strategy may temper some investors' enthusiasm for pioneering companies. Thus, it is difficult to speculate whether a breakthrough IPO will be able to sustain its pioneering advantage and continue to produce high returns (Wilbon, 2003:234).

Chang *et al.* (2012:23) point out that pioneers have the best survival duration, best long-term performance and a higher survival probability than the followers, that the negative effects experienced in a hot market are contributed mostly to the followers, and that the pioneers of hot markets tend to perform on par with cold market IPO companies.

c)   *Weak companies following strong companies in hot market periods*

Demers and Joos (2005:14), Helwege and Liang (2002:4) and Govindasamy (2010:14) found that during hot market periods companies tend to take advantage of bullish markets, as the demand for IPO shares is increased severely. Lower-quality companies follow the trend of listings during hot periods as the demand for IPOs is increased. Thus, optimistic managers and immature companies issue IPOs in an attempt to acquire further funding as a measure to raise additional capital. According to Agarwal (2006:17) and Van Heerden and Alagidede (2012:130-131), IPOs are characterised by an unusually high volume of offerings during hot IPO market periods, which leads to a high rate of underpricing. Chang *et al.* (2012:4) attribute this to the information spillover theory. The information spillover theory claims that when information is generated during the valuation phase of issuers in a hot market, the valuation of followers is made easier, as informational asymmetry is reduced among investors. This triggers more IPOs to be listed during hot market cycles.

Chang *et al.* (2012:3) argue that companies that go public during hot markets show worse performance and higher incidences of delisting. They add reasons why hot market IPOs are more likely to be delisted than cold market IPOs are:

- Bad performance-related IPOs

- Performance-neutral mergers with other companies

- Total delisting because of bad IPOs or mergers and acquisitions

Adams *et al.* (2008:73) state that during extremely hot periods, both sophisticated (informed) investors and unsophisticated (uninformed) investors will demand shares; therefore, the issue will be heavily oversubscribed. Agathee *et al.* (2012:4) confirm that uninformed investors' lack of information will leave them with bad investments that generate negative returns.

3.4.1.2 Main Board versus AltX

Although the Main Board and the AltX are explained thoroughly in Chapter 2, this subsection focuses on the two listing boards and the level of underpricing received.

According to Mkhize and Msweli-Mbanga (2006:86), the AltX is the first alternative exchange in Africa. Levinson (2011:5) adds that IPOs listing on the AltX tend to be small and risky, as they are not yet ready to list on the Main Board. He adds that, although some of the companies have limited operating history, a sizeable number of companies have been operating on the AltX for many years. Levinson (2011:11-12) also found that more IPOs are turning to the AltX during hot market periods than during cold market periods.

Mkhize and Msweli-Mbanga (2006:86-87) state that the AltX is designed to appeal to investors who are prepared to accept the risk associated with the AltX IPOs for the potential reward. According to Kooli and Suret (2002:6) and Gajewksi and Gresse (2008:5), this is because IPOs listed on the alternative exchange tend to have higher levels of underpricing to attract a large number of small shareholder to create a more dispersed ownership structure. Gondo (2007:81) found that the level of underpricing on the AltX was 33.21% between October 2003 and 31 March 2007.

Gondo (2007:9) states that there is a lack of information in the South African literature about the AltX. This emphasises the importance of finding the difference in the level of underpricing for the Main Board and the AltX on the JSE. Most South African studies document only the level of underpricing for the JSE, as observed

earlier in this chapter; they hardly distinguish between the returns for the Main Board and AltX.

3.4.1.3 Sectors on the stock exchange

Van Heerden and Alagidede (2012:134) found that data had to be classified into different sectors, as different sectors had different returns. Neneh and Smit (2014:11) confirm that on the JSE are different lifespan expectancies for the internet and none-internet IPO markets. Thus, a factor that affects underpricing in the JSE will be in which sector an IPO finds itself. Govindasamy (2010:45) documented a higher number of financial industry IPOs than any other industry in the JSE for the period of 1995-2006. However, he adds that the mining industry in South Africa was prone to the highest positive returns at 76%.

Yang and Ding (2012:9) mention that previous studies used different sectors to predict failure and that the survivability rates do vary considerably across the different industries. Peristiani and Hong (2004:3) explain that the deteriorating financial performance of issuers from the 1980s can be attributed to the structural change in the character of the companies that went public. They add that the younger and more speculative issuers from the 1990s may in some measure be responsible for the financial underperformance of IPO companies, because the 1990s saw a large number of high-growth technology and internet offerings.
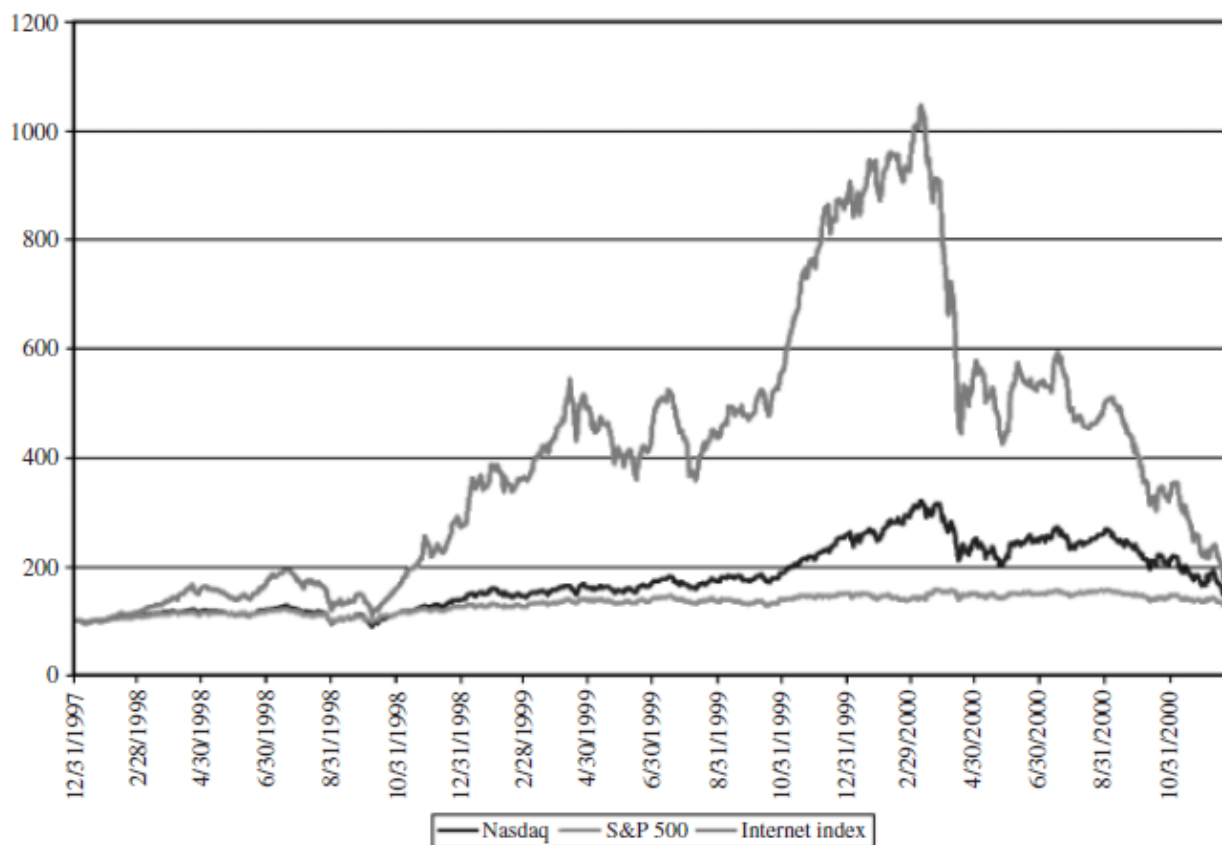
Figure 3.4: Returns on equally weighted internet index, S&P 500 and Nasdaq composite (Ofek and Richardson, 2003:1116).

From Figure 3.4, it is clear that Ofek and Richardson (2003:1113-1116) witnessed that the internet sector earned over 1000% in returns on public equity, as can be seen from January to February of 2000. In the two-year period from October 1998 until October 2000, the prices of internet shares soared, causing them to be very favourable, until the internet market collapsed totally by January of 2001.

Hu and Ritter (2007:19), Karlis (2000:82) and Ritter and Welch (2002:9); all agree that during the period of 2000, the market experienced an increase in the number of internet and technological companies being listed. This led to fierce competition and the risk associated with that market. Peristiani and Hong (2004:3) conclude that, although the financial weakness that was created by the technology companies of the 1990s may have crippled the specific sector in the IPO market, the entire IPO market has lost significant strength as well. Neneh and Smit (2014:11) found similar results on the JSE, as the internet companies listed on the JSE had a shorter lifespan (103.82 months) compared to non-internet companies (151.5 months). They

further indicate that the survival probability of an internet company became consistently lower than that of non-internet companies as time progressed during the past 40 months.

According to Govindasamy (2010:67) and Van Heerden and Alagidede (2012:134), four main industry sectors are of importance on the JSE:

- Technology and Internet

- Industrial industry

- Financial

- Mining

For this study, six sectors were identified from a possible 10 sectors. JSE (2015:5) shows the reformed structure of 10 sectors in the JSE:

Table 3.3: List of JSE Sectors

Sector	Subsector
1. Oil and Gas	❖ Oil and Gas
2. Basic Materials	❖ Chemicals
	❖ Basic Resources
3. Industrials	❖ Construction and Materials
	❖ Industrial Goods and Services
4. Consumer Goods	❖ Automobiles and Parts
	❖ Food and Beverage
	❖ Personal and Household Goods
5. Health Care	❖ Health Care
6. Consumer Services	❖ Retail
	❖ Media
	❖ Travel and Leisure
7. Telecommunications	❖ Telecommunications
8. Utilities	❖ Utilities (Electrical and Water)

Sector	Subsector
9. Financials	❖ Banks
	❖ Insurance
	❖ Real Estate
	❖ Financial Services
10. Technology	❖ Technology

From the data that was available, it was found that some industries had to be merged to form new sectors. The following six sectors were created from the mergers:

1.   Basic Materials

2.   Consumers

3.   Industrial

4.   Electronic and Technology (IT)

5.   Financial

6.   AltX

By expanding on the industry sectors, this study ensures that each IPO is assigned correctly to the applicable sectors so that sectors are not crowded with the wrong IPOs. The sectors listed above are used in the empirical chapter as to see which sectors are the most profitable in the short term. It should be noted that the AltX is added to the sectors, as the first five sectors are all part of the Main Board.

3.4.2 Company characteristics

3.4.2.1 Age of the company

Demers and Joos (2007:Online), Gounopoulos, Merikas and Nounis (2009:14); Neneh and Smit (2014:3) and Ritter (1991:20) found that companies with more experience prior to listing tend to have a lower failure rate than younger companies have. Loughran and Ritter (2003:23), Ritter (1991:20) and Yang and Ding (2012:8) add that there is a strong correlation between the age of a company and the

aftermarket performance, as older companies perform better in the aftermarket than younger companies do.

Neneh (2013:81) measured the age of the company prior to listing by simply subtracting the year in which the company was found or incorporated from the year it went public. Younesi *et al.* (2012:150) found that the average age of Malaysian IPOs is approximately seven years. According to them. private companies are more inclined to be reshaped to the public corporation after seven years from their launch. Neneh (2013:223) found that successful companies on the JSE were typically older than 10 years, prior to initial listing.

According to Booth (2010:3), underpricing is inevitable due to the riskiness of the market. Some companies also have liquidity constraints that will further increase the riskiness of the company. She concludes that companies can reduce the risk by waiting longer to go public, as the company can then build up a good reputation with the public. This can help to increase the price for the initial offering and reduce the level of underpricing.

3.4.2.2 *The size of the offering (offer price and market capitalisation)*

Ahmad-Zaluki and Abidin (2011:321) state that previous studies have consistently found that the offer price for IPOs are lower than the offered price on the first day of trading because lower-priced shares tend to be riskier shares, as they are more likely to be underpriced. Levinson (2011:32) and Neneh (2013:75) add that market capitalisation is also a very important indicator of the size of a company.

Ritter and Welch (2002:6-7) found that in the Italian market, the companies with the high market-to-book ratio were more likely to go public, as this helped to reduce their cost of credit. According to Wilbon (2003:233), the absolute shares price at the time of the IPO may be a misleading performance measurement because it fails to consider the assets of the company. Lawson and Ward (1998:29) found that the market in the JSE was reasonably efficient in predicting the pricing of newly listed offerings, indicating that positive aftermarket returns were found to exist in the first year of listing. Van Heerden and Alagidede (2012:136) found that the average IPO price increased dramatically during the financial crash of 2008, although the total proceeds had decreased. They add that an investment banker may be trying to

protect his reputation in troublesome times and only opt for better known and established companies.

Smit and Neneh (2014:4) mention that a study by Ibbotson, Sindelar and Ritter (1994) found that the average initial return for an offering price of $3 was lower than IPOs with an offer price of less than $3. Kooli and Suret (2002:8) argue that this is because smaller issues are seen as riskier than large issues. A South African study by Van Heerden and Alagidede (2012:136) found that IPOs with a share price below 99 cents had the highest initial returns. However, these were the shares that were priced very low and were considered to be very risky. They concluded that pricing an IPO under 500 cents tended to make the IPO more underpriced compared to IPOs priced above 500 cents.

3.4.2.3 Total issued shares

Kooli and Suret (2002:8) and Van Heerden and Alagidede (2012:136) found that the larger the amount of shares issued, the less underpriced the offering was compared to other smaller IPOs. Govindasamy (2010:13) and Zamanian *et al.* (2013:80) add that the larger the offering is, the less risky the offering will be, as it is an indicator of a more established company. They add that the smaller the company tends to be, the more it contributes to underperformance in a stock exchange. This means that the bigger the IPO, the greater the potential gains from acquiring information about the issue. Mazviona and Nyangara (2014:4) found that larger companies in Zimbabwe also achieved higher returns than smaller companies did.

Maksimovic and Unal (1993:1660-1661) argue that the management of a company can affect the issue size of an IPO by negotiating with the underwriter and the appraiser. They add that when growth opportunities are undertaken, it will be affected by capitalisation, as management may choose an issue size that can maximize the aftermarket returns earned by investors. Lin (1996:59) found that the offer size of an IPO positively correlates with the underwriter's ranking and whether a venture capitalist is involved. This means that when underwriters and venture capitalists are involved, an IPO tends to be bigger.

According to Brau and Fawcett (2006:404), Neneh and Smit (2014:4), Ritter (1991:13) and Teoh *et al.* (1998:1952), the size of an offering helps to reduce

information asymmetry among investors. It is expected that a company that can reduce the information asymmetry with regard to its IPO will have a better chance of survival in the long term. Thus, a positive relationship is expected between a company's size and the survival rate of an IPO on the JSE. Yang and Ding (2012:8) state that the size of a company is the total number of shares multiplied by the offer price.

3.4.3 Financial factors

3.4.3.1 *Financial variables*

According to Neneh (2013:87), roughly 60% of investors base their IPO investment decisions on financial factors such as debt to equity ratios, earnings per share (EPS) growth, sales growth, return on equity ROE), the profitability ratios, and earnings before interest, tax, depreciation and amortisation (EBITDA) growth. She adds that 40% of the decisions are made by non-financial factors such as quality of management, corporate strategy and execution, the brand strength and operational effectives, as well as corporate governance. Kabajeh, Nu'aimat and Dahmash (2012:115-116) added that financial ratios can be used to define a relationship between two individual quantitative financial information sets, connected with each other in some logical manner.

Neneh and Smit (2014:5) argue that companies that are more profitable at the beginning of their public life are more likely to remain profitable in the future as a company's profitability can be positively related to its survival.

3.4.3.2 *Financial Ratios*

The works of Kabajeh *et al.* (2012:116), Jefferis and Smith (2005:57), and Neneh (2013:89) mention that the following financial ratios are of importance:

- Solvency

    o   Debt ratio

- Profitability

    o   ROA

- o ROE

- Market-related ratio

  - o P/E ratio

  - o MV/BV

Kabajeh *et al.* (2012:116) mention that profitability ratios measure earning capacity of the company and are considered as indicators of growth and success. Hollestelle (2008:11) states that a good proxy for risk is the debt-to-equity ratio as it divides the book value of common equity by the market value of equity. Neneh (2013:87) adds that the ROA ratio is one of the most applied measures that are used to evaluate the operational performance of a company.

3.4.3.3 Market-related ratios (P/E and M/B)

For this study the market- related characteristics consist of the price-to-earnings ratio and the market-to-book value. Wilbon (2003:232) mentions that an earlier study performed by Jain and Kini (1994) used market-to-book value and price-to-earnings ratios to measure investor expectations of post-IPO earnings for 682 IPO companies between 1976 and 1988. They documented a significant decline in the IPO growth, which meant that investors tended to be very optimistic not only of pre-IPO performance but also about long-term post-IPO performance. The findings suggest that IPO companies were not able to sustain pre-issue levels of performance and were priced with the expectation that the profit margins would rise. Unfortunately the profit margins would not always rise, which would lead to failure or a decline in performance.

a) Price to earnings ratio (P/E)

According to Zamanian *et al.* (2013:71), there is no single dominant theoretical cause for underpricing, although IPO underpricing is significantly related to the P/E ratio. Neneh (2013:86) adds that investors tend to have overly optimistic expectations of the growth potential of the company based on their pre-listing prosperity. They are then disappointed when there is a decrease in their operating value (Neneh, 2013:86).

b)   Market-to-book value ratio (M/B)

Schultz (2003:485) argues that the market-to-book ratio is a very important determinant when Italian companies go public. Alti (2006:1685) adds that there is an emphasis on the persistence of timing effects that attempts to capture market timing by focusing on the historical market-to-book time series. According to Hollestelle (2008:4), Fama and French discovered that the market-to-book equity ratio and the total value of the market equity together are more significant in explaining the cross-section of shares returns on the New York Shares Exchange than the proxy for risk (β) is. Wang (2005:21) adds that the market-to-book value ratio of the equity is calculated as the number of shares outstanding multiplied by the closing price on the first day of trading.

3.5   Long-term Performance (Underperformance)

Drobetz *et al.* (2005:254) define underperformance as poor returns received on an IPO in the long term. Ritter (1991:13) adds that there is a tendency that long-term underperformance is attributed to smaller companies that have higher initial returns that fail to produce good aftermarket performance. Hansen and Jørgensen (2010:8) mention that issuing IPOs during low IPO activity years will reduce the amount of underperformance.

According to Gompers and Lerner (2001:1335), investors may be optimistic when they are trying to invest in firms that issue equity for the first time. This leads to misinformed investors and loss of money on the stock exchange. Ritter and Welch (2002:34) add the following two explanations for long-term underperformance:

- Investors have a misconception of what a specific company is worth and values the IPO higher than it should be. This overrating leads to underperformance in the long term

- More IPOs follow successful IPOs into the market, which leads to the underperformance of weaker IPOs in the sample group

Doeswijk *et al.* (2006:407-408) argue that companies are able to avoid underperformance by listing their IPOs in cold market periods. They add that companies have to time these windows of opportunity for better performance. Chang

et al. (2012:3) state that companies that go public during hot market periods show higher levels of delisting and underperformance when compared to companies that list in cold periods, whereas Teoh *et al.* (1998:1966) found that companies that are overly aggressive with their IPOs tend to underperform on a three-year basis. They underperform on an average between 15 and 30 percent more than companies that are not as aggressive. Drobetz *et al.*(2005:254) confirm Teoh *et al.* (1998) findings, as they found that of the 109 companies listed on the Swiss stock exchange between 1983 and 2000, the level of underperformance was only 7.45% after three years (36 months) of initial listing. This number increased to 21.71% after another year (48 months) and further increased to 62.50% after 8 years (96 months).

Hansen and Jørgensen (2010:6-8) and Govindasamy (2010:69) mention the following ways to reduce underperformance in IPOs:

- Having an underwriter can reduce underpricing that will help to eliminate underperformance in IPOs.

- Issuing IPOs during years of low IPO activity will reduce the extent of underperformance.

- Reducing the level of underpricing will help to reduce underperformance of IPOs in the long term.

Lawson and Ward (1998:29) found that the market in the JSE was reasonably efficient in predicting the pricing of newly listed offerings, indicating that positive aftermarket returns were found to exist in the first year of listing. The statements above strengthen the belief that there should be a benchmark that can be followed to help potential investors who are looking to invest in newly listed IPOs. The JSE All-share Index is used as a benchmark for the measurement techniques in the empirical chapter.

3.5.1 Absolute and relative returns

According to Asma (2008:8), the general motto of every investor is to earn maximum returns on investments, both in absolute and relative terms. Absolute returns are the returns (gains or losses on an investment portfolio) that are achieved over a certain period, whereas relative returns are the difference between the absolute returns and

the performance of the market, which is usually measured against a benchmark or index. Thus, relative returns are benchmarked against an equity index such as the JSE All-share Index (ALSI); whereas absolute returns are typically managed without reference to a particular benchmark or index.

The objective of absolute returns is not to obtain impressive returns relative to the market benchmark, as much as it is there to provide an attractive return on an absolute basis (Beaumont, 2004:150). The advantage of absolute returns is that they offer higher returns than traditional assets. There is also potential to achieve positive returns when traditional share markets are failing (Waring & Siegel, 2005:4).

Investors in the investment environment focus primarily on relative returns when they evaluate the success of a business, because most of these investors have diversified their portfolios across different markets and industries and they are satisfied only when one particular share outperforms its benchmark. Thus, they tend to be very unhappy when the shares underperform their benchmark (Neneh, 2013:52). Waring and Siegel (2005:6) mention that investment portfolios are there to bring in a constant stream of fixed income.

Gompers and Lerner (2001:1339-1340) found that IPOs usually have low absolute returns and even lower levels of relative returns. They even underperform the broad market benchmark and achieve low returns relative to the market. Baker and Wurgler (2012:30) add that the IPOs do not do worse when they are compared to shares of similar size and book-to-market ratio because securities with similar characteristics, whether they are IPOs or not, tend to be similarly priced (or mispriced) at any given point in time. Teoh and Wong (2002:869) found that mispricing can lead to an improper specification of risk versus return benchmark.

Neneh (2013:51) concludes that whether the focus should be on absolute or relative returns rests solely in the hands of the investor. By focusing on both absolute and relative returns, the investor's portfolio will most likely have more attractive returns than investors focusing on one strategy. It should be noted that this study prefers relative returns, as the findings in the empirical chapter were benchmarked against the ALSI.

3.5.1.1 Reasons for delisting

Yang and Ding (2012:5) and Peller (2013:3) define IPO failure as an IPO that delisted from the stock exchange for negative reasons. Demers and Joos (2007:Online) and Smit and Neneh (2014:6) define IPO failure as the delisting of a company from a primary stock exchange after listing because of bankruptcy, liquidation or losing more than 80% of its initial value. Peristiani and Hong (2004:5) add that the seeds of failure may sometimes have been planted before the decision to go public was made. Thus, it appears likely that the financial weakness of issuing companies may have hampered the ability of some IPO companies to compete and survive in the public market. According to Buchheim *et al.* (2001:4), Chang *et al.* (2012:4), Djama, Martinez and Serve (2012:9) and Neneh and Smit (2014:7), companies delist some IPOs involuntarily from a security exchange for the following reasons:

- Violation of share exchange requirements

- Suspension

- Poor company performance (liquidation)

- Performance-neutral mergers (mergers and acquisitions)

Smit and Neneh (2014:11) found that companies that were initially less underpriced were the companies that survived on the JSE after three years. They state that companies that were initially less overpriced had the lowest failure rate.

3.6 Chapter Summary

The aim of this chapter was to give the investor an in-depth understanding of how decisions are made in the market and which factors affect IPO pricing. More explanations of the different criteria that affect IPOs are given to, as the investor should understand the market first before attempting to purchase newly listed shares. The investor should not forget that hot and cold markets play a critical role in the number of IPOs that are listed in a specific period, as IPOs time their listings to acquire additional capital.

The chapter started by explaining what short-term performance is, followed by underpricing. Thereafter the chapter proceeded to document the evidence of underpricing around the world, followed by the behavioural theories that explain underpricing. The behavioural theories include information asymmetry, underwriter's assistance, the winner's curse, signalling hypothesis, lawsuit avoidance and the efficient market theory. Next, the all-important factors and characteristics that affect the level of underpricing were discussed in full, as they are used as proxies to determine the level of underpricing in Chapter 5. The factors and characteristics used throughout this study consist of the market-related factors, the company characteristics and the financial factors. The market-related factors include hot and cold market periods, Main Board versus AltX and the JSE sectors. The second set of factors is called the company characteristics, which consists of the age of an IPO before listing, the offer price, the total number of issued shares, and market capitalisation. The last part of the factors and characteristics include financial factors (these are the pre-listing values of the IPO and the financial ratios such as ROE, ROA, P/E and MV/BV. Finally the chapter concludes with underperformance (long-term performance).

The next chapter focuses on the research methodology used in the study. This includes the formulas and variables that were used for this particular study.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

The aim of this chapter is to explain the research methodology used in the empirical study. The chapter begins by documenting the basics of data capturing and then explains the different formulas used to calculate the MAAR and BHAR of the IPO sample. Definitions of the different variables used for this study are given.

In this chapter, the performance of IPOs is evaluated by using the following measurement techniques:

- Method of measuring daily and abnormal returns (MAAR)
- Buy hold return (BHR)
- Buy and hold abnormal returns (BHAR)

4.2 Methodology

4.2.1 Research design

According to Neneh (2013:96,) a research design is used to obtain answers for the questions being studied and to handle some of the difficulties encountered during the research process.

To determine the short-term performance of IPOs, the market-related factors, company characteristics and the medium-term performance a quantitative approach was used to analyse the data. The methodology primarily focused on the short-term performance of IPOs in South Africa, as the secondary objectives can be derived from it.

4.2.2 Population

Neneh (2013:99) defines a population as a collection of all observations of a random variable under the study from which conclusions are drawn. The study concentrated on IPOs that were listed on the JSE for the period of 1996 to 2011. The research

population consisted of 484 companies. The period chosen falls within multiple hot and cold market periods on the JSE.

4.2.3 Sample

The sample for the study consisted of 390 IPOs that were listed on the JSE between 1996 and 2011. The information was acquired from three different sources, namely the McGregor-BFA database, the IPO prospectus and the JSE All-share Index (ALSI). The starting date was chosen, as this was the first year from which the JSE All-share Index (ALSI) was available. The study sample was also restricted to IPOs that were listed prior to 2011, as the medium-term after-performance was calculated over a period of three years. A company had to list its stock between the periods of 1996 to 2011 to qualify for the study, which means the company had to be listed in the sample period.

4.2.4 Data

All the data in this study were acquired from secondary sources. The financial data needed for this study included pre-listing financial reports (prospectus), financial statements and share price movements. The data for this particular study were obtained from the McGregor-BFA database, the IPO prospectus and the JSE database. This means that the data were obtained from South African sources.

Numerous sources were used to capture the data that ensured a large sample; however, not all the IPOs could be used. Reasons for excluding some of the IPOs from the sample include:

- unavailable data;
- inconsistencies among the various sources; and
- unexplainable outliers.

Even though the sample size was reduced, high levels of Skewness were still persistent. This made it difficult to interpret the data accurately and effectively. The Skewness was due to outliers in the data set. With the use of natural logarithms, the high levels of Skewness were reduced and the distribution was brought close to that of a normal distribution. Al-Yaman (2009:40) confirms that when an uneven

distribution is present, natural logarithms should be used, as they generate a better distribution of the sample that will reduce the spread between the minimum and maximum values. Hansen and Jørgensen (2010:78) add that applying natural logarithms to the data reduces outliers by correcting them for exponential growth.

According to Lian and Wang (2006:363), natural logs should be used for regression models to ensure the accuracy of the prediction. Brown *et al.* (2006:202) and Coakley, Hadass and Wood (2008:1116) found that natural logarithms help to control the outliers associated with the market capitalisation. Ahmad-Zaluki and Abidin (2011:323) used natural logarithms to reduce the outliers with the offer price. For this study, both the market capitalisation and the offer price were adjusted by natural logarithms to reduce the Skewness.

4.2.5 Benchmarking

For this study, the JSE All-share Index (ALSI) was used as the benchmark for the companies listed on the JSE from 1996 to 2011. According to Govindasamy (2010:29), the ALSI provides a robust method of assessing the abnormal returns of an IPO, and using a broad index would allow comparisons to be made across the different JSE sectors. Thus, the ALSI was benchmarked against the level of underpricing (MAAR) on the first day, first week and first month of trading, whereas the medium-term performance (relative returns) was benchmarked over a period of three years (36 months). According to Neneh (2013:110), a financial calendar month usually consists of 21 days. Thus, in terms of a financial calendar month, the level of underpricing will be benchmarked on day 1, day 5 and day 21, whereas the medium-term performance (BHAR) will be benchmarked against the ALSI over a period of three years (3 years) after initial listing. South Africa's inflation rate from 1996 to 2011 is presented in Figure 4.1.
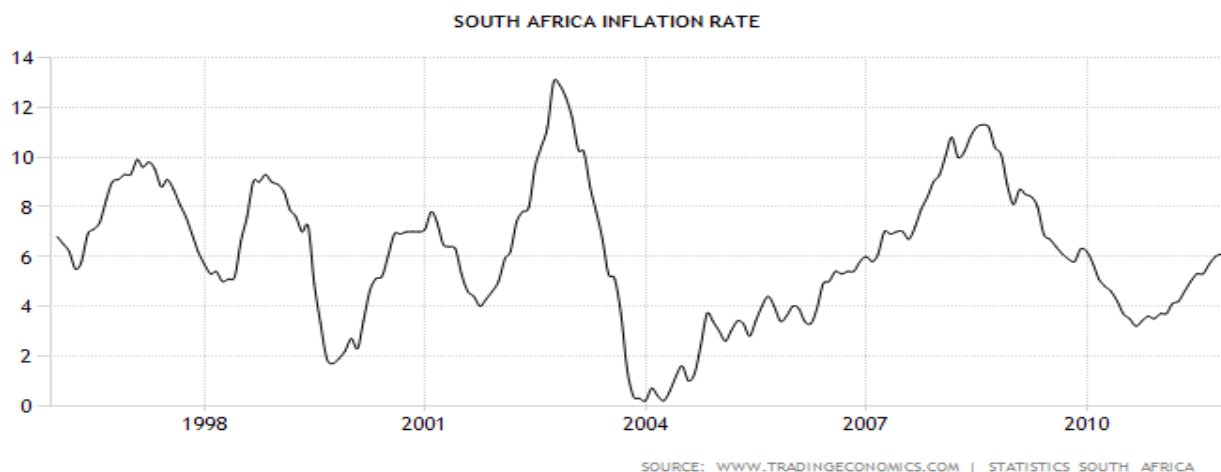
Figure 4.1: South Africa inflation rate from 1996 to 2011 (Trading Economics, 2015:Online).

From Figure 4.1, it is clear that South Africa's inflation rate is changing consistently. Smit (2015:8) states that in South Africa, the JSE All-share Index (ALSI) is used to calculate the market return and the CPI. Lattimer (2006:161) adds that the inflation rate is simply calculated as the percentage change from one period to the next. Smit (2015:8) argues that, because of the high levels of inflation, the CPI is needed to adjust the offer price and the market capitalisation for inflation. By adjusting both the natural log market capitalisation and the natural log offer price for inflation, the study ensures increased accuracy and reliability of the dataset.

4.2.6 Measurement techniques

This section documents the measurement techniques used in determining the level of underpricing (MAAR), the factors and characteristics affecting underpricing and finally the medium-term performance (BHR and BHAR).

4.2.6.1 Underpricing

The main focus of this study was on the mean adjusted abnormal return known as MAAR because MAAR is used to implement and interpret underpricing (Buchheim, 2001:22). Recent South African studies documented the returns associated with the short-term performance of IPOs (Alli *et al.*, 2010:12; Neneh, 2013:101-103; Smit & Neneh, 2014:6; Van Heerden & Alagidede, 2012:132).

Buchheim *et al.* (2001:27) mention that there is a drawback when considering the MAAR because it does not realistically reflect the actual returns realised by the investor. MAAR has been used successfully by numerous international authors such as Kooli and Suret (2002:15), Van Heerden and Alagidede (2012:132) and Younesi *et al.* (2012:147-149). These authors all used the MAAR as a measure for short-term performance. Van Heerden and Alagidede (2012:132) even add that MAAR is the most widely used method of measuring the level of underpricing of IPOs.

Method of measuring daily and abnormal returns:

The mean adjusted abnormal return of the market is calculated as follows:

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

where:

- $R_{x,i}$ is the return on stock '*x*' at the end of the ith trading period
- $P_{x,i}$ is the price of the stock '*x*' at the end of the ith trading period
- $P_{x,o}$ is the offer price of the stock '*x*'
- *i* represents either the first day of trading or the first trading week or the first trading month

The average return is calculated as follows:

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

where:

- $\overline{R(x,i)}$ is the sum of the returns on the sample IPOs divided by the number of sample IPOs

The return on stock (in %) at any given time period is calculated as follows:

$$IR_{i,t} = \frac{CLP_{i,t} - OFP_{i,o}}{OFP_{i,o}} \times 100$$

where:

- $CLP_{i,t}$ = closing price of stock 'i' at time 't'
- $OFP_{i,o}$ = offering price of IPO shares

The JSE All-share Index that is used as the benchmark is calculated as follows:

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

where:

- $R_{m,i}$ is the market return at the close of day i trading period
- $J_{m,i}$ is the market index value at the end of the i trading period
- $J_{m,o}$ is the market index value on the offer day of the stock 'x'

The market-adjusted abnormal return, known as $MAAR_{pt}$ for stock 'x' after the ith trading period is calculated as follows:

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

The above-mentioned MAAR model has been used by two prominent South African studies, namely those of Neneh (2013:102) and Van Heerden and Alagidede (2012:132). In both these studies, the model was used to measure the initial returns in excess of the market.

The average market-adjusted abnormal return for the ith period is calculated as follows:

$$\overline{\text{MAAR}}_{\text{it}} = \frac{1}{\text{N}} \sum_{i=0}^{N_t} \text{MAAR}_{\text{it}}$$

where:

- $\overline{\text{MAAR}}_{\text{it}}$ is the sum of the market-adjusted abnormal return (MAAR) of the sample *N* divided by the number of IPOs

To test that $\overline{\text{MAAR}}_{\text{it}}$ is equal to zero, the follow t-statistic is calculated:

$$t = \frac{\overline{\text{MAAR}}_{\text{it}}}{s/\sqrt{\text{n}}}$$

where 's' is the standard deviation of $\overline{\text{MAAR}}_{\text{it}}$ for '*n*' number of companies that listed their stock on the JSE.

The symmetry of the standard deviation of a normal distribution is calculated as follows:

$$z_{skewness} = \frac{\text{Skewness}}{\sqrt{\dfrac{6}{\text{N}}}}$$

Note: When the measure of Skewness is used and the Z-value exceeds ±2.58, the non-normal distribution is at a significance level of 0.01.

For comparative purposes, the mean MAAR was used as the standard method for calculating the level of underpricing of newly issued IPOs for this study.

4.2.6.2 *Factors and characteristics that affect underpricing*

For this study, three groups of factors and characteristics have been identified in the literature review, namely market-related factors, company characteristics, and financial factors. The market-related factors consist of the hot and cold market issue,

the Main Board versus the AltX, and the different JSE sectors. The company characteristics consist of the size of the issue (offer price and market capitalisation) and the age of the company. The financial factors consist of financial variables (turnover, NPAT, total assets, and shareholders equity), financial ratios such as the debt ratio, current ratio, ROE and ROA, and the market-related factors, namely price-to-earnings (P/E) ratio and the market-to-book value (MV/BV). Some of the researchers that have used the above-mentioned methods include Kabajeh *et al.* (2012:116), Neneh (2013:113), Smit and Neneh 2014:4), Van Heerden and Alagidede (2012:136), Yang and Ding (2012:8) and Wang (2005:21). Descriptions of the characteristics used for this study are given in Table 4.1 below.

Table 4.1: Definition of Variables used for this Study

Characteristics	Definition	Definition Source
Market-related Factors		
Hot and cold market periods	Hot and cold market periods are defined by the number of annual new listings. A hot market period should have at least eight months of consecutive returns to be classified as such a period. For this study, the total number of listings was divided by the number of years to obtain an average. Any year that had more listings than the average was classified as a hot period, whereas the others were classified as cold market periods.	Chang *et al.* (2012:8)
Main Board versus AltX	The two listing boards on the JSE are the Main Board and the AltX. The Main Board has stringent listing requirements, as discussed in Chapter 2, whereas the AltX caters for smaller companies in need of funding.	Mkhize and Msweli-Mbanga (2006:86) and Neneh (2013:44-45).

Characteristics	Definition	Definition Source
The sector	The JSE (2015:5) mentions that the following were the 10 sectors of the JSE: 1. Oil and Gas 2. Basic Material 3. Industrial 4. Consumer Goods 5. Health Care 6. Consumer Services 7. Telecommunications 8. Utilities 9. Financials 10. Technology For this study, some of the sectors were merged. The final sectors were classified as the following: ❖ **Basic Materials** (Oil & Gas, Basic Materials and Utilities) ❖ **Consumer** (Consumer Goods, Health Care and Consumer Services) ❖ **Industrial** ❖ **Financial** ❖ **Electronic and Technology** (Telecommunications and Technology – IT) ❖ **AltX** (Secondary Listings)	JSE (2015:5)

Characteristics	Definition	Definition Source
Company Characteristics		
The size of the issue (market capitalisation and offer price)	To determine the effect the offer size had on the performance, a regression analysis was used to determine if differences existed between groups with different firm sizes. The offer size was calculated as follows: Gross proceeds = offer price x number of shares in issue Categories that were created to help with size for this study include the following: • Market capitalisation (R 'million) • Offer price in South African cents (R1 = 100 cents)	Yang and Ding (2012:8)
Age	The age prior to listing is measured by subtracting the year in which the company was founded or incorporated from the year it went public.	Neneh (2013:81)
Financial Factors		
Financial variables	Turnover and total assets were used as proxies for size, while NPAT and shareholders' equity were used as proxies for risk.	Cairney, Chivaka, Fourie, Joubert, Haji, Pienaar, Roos, Stack, Streng, Swartz and Williams (2009:10-17) and Levinson (2011:33);
Financial ratios	The financial ratios were grouped into four different groups, namely: profitability, liquidity, solvency ratios, and the market-related ratios.	

Characteristics	Definition	Definition Source
Profitability Ratios Return on assets Return on equity	ROA = Profit after tax / total assets ROE = Profit after tax / total shareholder's equity	Marx, Swardt, Smith and Erasmus (2011:72) and Neneh (2013:113)
Liquidity Ratio Current Ratio	CUR = Current assets / total liabilities	Marx *et al.* (2011:73)
Solvency ratio Debt ratio	DR = Total Debt / Total Assets	Marx *et al.* (2011:77) and Neneh (2013:113)
Market-related ratios Market-to-book value Price-to-earnings ratio	(M/B) = Market price per share / net asset value per share (P/E) = Market price per equity share / earnings per share (EPS)	Marx *et al.* (2011:79) and Neneh (2013:113)

4.2.6.3 Medium-term performance

BHAR was also included to show the level of underperformance of the IPOs. Both Buchheim *et al.* (2001:21-28) and Govindasamay (2010:31-32) indicate that the BHAR method should be included when calculating the underperformance of IPO returns. The medium-term performance measurement consists of two returns, namely absolute (BHR) and the relative (BHAR) returns. Absolute returns are discussed in full in Chapter 3. It was concluded that absolute returns are returns on an investment portfolio over a certain period without a benchmark, whereas relative returns are benchmarked to document the returns relative to the market. For this study, the relative returns were considered superior, as they were benchmarked against the ALSI over a period of 36 months.

Several studies around the world have made use of BHAR for measuring long-term performance (Drobetz *et al.*, 2005:260; Fama, 1997:285; Mitchell & Stafford,

2000:297; Neneh, 2013:101-103; Smit, 2015:6; Younesi *et al.*, 2012:147-148; Van Heerden & Alagidede, 2012:130-138).

<u>Buy and hold abnormal returns</u>:

The holding period return (BHR) for a single stock for the period T is calculated as follows:

$$BHRT_{i,t} = \left[\prod_{t=1}^{T}(1 + R_{i,t})\right] - 1$$

where:

- R_{it} is the return of stock *i* at time *t* and *T* is the period for which the BHR is calculated

To calculate an equally weighted portfolio of stock, the returns are calculated as follows:

$$dBHR_{P,T} = \frac{1}{N}\sum_{i=1}^{N} BHR_{i,T}$$

where:

- $dBHR_{P,T}$ is the average BHR of the portfolio
- *N* is the number of stocks in the portfolio and *T* is the period for which BHR is calculated

To calculate BHAR, the return of the benchmark is subtracted from the return of the IPO as follows:

$$BHAR = \frac{1}{N}\sum_{i=1}^{N}[\prod_{t=1}^{T}(1 + R_{it}) - (\prod_{t=1}^{T}(1 + R_{mt}))]$$

where:

- R_{it} is the time *t* arithmetic return (including dividends) on the security *i*

- R_{mt} is the time *t* arithmetic return on the CRSP value-weighted index (also again, including dividends)

The t-statistic is used to test for the null hypothesis of zero mean market adjustment:

$$t = \frac{\overline{\text{BHAR}}_t}{\sigma(BHAR_{it}/\sqrt{n}}$$

where $\sigma(BHAR_{it})$ is the standard deviation of the buy and hold market-adjusted returns and *n* is the sample size

4.2.6.4 Data analysis

All the statistical analyses for this study were completed by using Microsoft Excel and the Statistical Package of Science (SPSS). The interpretation of the data was made easier by the creation of tables that mimicked those of the SPSS analyses from the descriptive tools. This was done by listing the frequency and percentages of the sample to make them presentable to the reader. Statistical analysis also included cross-tabulations, Pearson's correlation coefficient, one-way analysis of variance (ANOVA test), the student's t-test, and multiple regression models.

4.3 Chapter Summary

The aim of this chapter was to explain the research methodology, the collection of the necessary data and the methods used to analyse the data. The research methodology was divided into two stages: The first explained the process used regarding the capturing of the data, and the second focused on the measurement techniques that were used to analyse the data. The first section documents that a total of 390 IPOs were used for this study out of a possible 484. The sampled IPOs were listed on the JSE between 1996 and 2011 (16 years). The data for the IPOs were derived from sources including the IPO prospectus, the JSE, and the McGregor-BFA database. The second part includes the measurement techniques that documented the measurements for underpricing (MAAR), the factors and characteristics that affected underpricing (market-related factors, company characteristics, and financial factors). Finally, the last part documents the medium-term performance (absolute and relative returns) of IPOs. The data in this study were

analysed by using the SPSS and Microsoft Excel. The descriptive tools used, such as the percentage and frequency distribution, made the interpretation of the data much easier for the reader.

CHAPTER 5

DATA ANALYSIS

5.1 Introduction

The main focus of this study was to identify characteristics affecting the short-term performance of IPOs. Thus, the aim of this chapter is to present the research findings for this study. The results follow the parameters set out by the literature review and the methodology discussed in Chapter 4. The sample consisted of 390 IPOs that were listed on the JSE for the period 1996 to 2011. The data were obtained from the McGregor-BFA database, the Stock Exchange handbooks, the prelisting prospectus, and the data provided by the JSE.

This chapter is divided into three sections. The first section deals with the factors and characteristics of IPOs that were listed on the JSE for the period 1996 to 2011. The second section focuses on the levels of IPO underpricing on the JSE for the first day, first week and first month, and also includes the effects hot and cold market periods, the Main Board versus the AltX, the JSE sectors, the company characteristics and the financial formulas discussed in Chapter 4 had on the performance of IPOs. The third section focuses on the effect underpricing has on IPO medium-term performance and documents how the short-term underpricing (MAAR) affects the medium-term performance (BHAR) of a company. It also includes some factors and characteristics that affect long-term performance.

5.2 IPO Listings on the JSE

This section addresses the composition of the sample of the IPOs that were listed on the JSE for the period of 1996 to 2011. It includes the years of listing, the difference between the Main Board and the AltX (including the listings for the different sectors), the hot and cold market periods, and the company characteristics.

5.2.1 The Sample of IPO Listings on the JSE

Table 5.1 compares the total number of IPO listings from 1996 until 2011 with the number of IPOs used in the sample.

Table 5.1: The Number of Newly Listed IPOs on the JSE for 1996 to 2011

Years	No. of IPOs (Population)	No. of IPOs (Sample)	% of Population	% of IPOs listed p.a. (Sample)
1996	21	21	100.0%	5.4%
1997	53	46	86.8%	11.8%
1998	101	72	71.3%	18.5%
1999	74	50	67.6%	12.8%
2000	14	10	71.4%	2.6%
2001	11	8	72.7%	2.1%
2002	9	9	100.0%	2.3%
2003	8	6	75.0%	1.5%
2004	16	13	81.3%	3.3%
2005	19	18	94.7%	4.6%
2006	37	35	94.6%	9.0%
2007	63	59	93.7%	15.1%
2008	23	16	69.6%	4.1%
2009	10	10	100.0%	2.6%
2010	9	6	66.7%	1.5%
2011	16	11	68.8%	2.8%
Total	**484**	**390**	**80.6%**	**100.0%**

From Table 5.1, it is observed that the total number of 390 IPOs used in this study (sample) consisted of 80.6% of the total population of IPO listings on the JSE for the period of 1996 to 2011. It can be concluded that the size of the sample and the response rate of 80.6% are a true reflection of IPOs on the JSE over this period, validating that the results and findings of this research are representative of IPO performance in South Africa. The reasons for excluding some of the IPOs from the sample are based on guidelines given by Smit (2015:10). He emphasises the importance of improving the reliability of the data, using the following reasons for exclusion:

- Undocumented data for some of the IPOs, such as the offer price and number of issued shares: Some data of the IPOs were not available to be captured.

- Inconsistency in the IPO data among the various sources named.

- Unexplainable outliers that could jeopardise the reliability of the data. It is very important to exclude the discrepancies in the various data sources if the data discrepancies cannot be resolved.

Table 5.1 also reveals that, for the periods of 1997 to 1999 and 2006 to 2007, the JSE experienced an increase in the number of IPOs listed.

5.2.2 Hot and cold market periods on the JSE

This subsection shows the difference in IPO listings during the sample period and how IPOs were timing their listing on the JSE. The subsection also documents how hot and cold market periods were triggered by the surge of IPO activity on the JSE, and how the IPO market was classified into either hot or cold market periods.
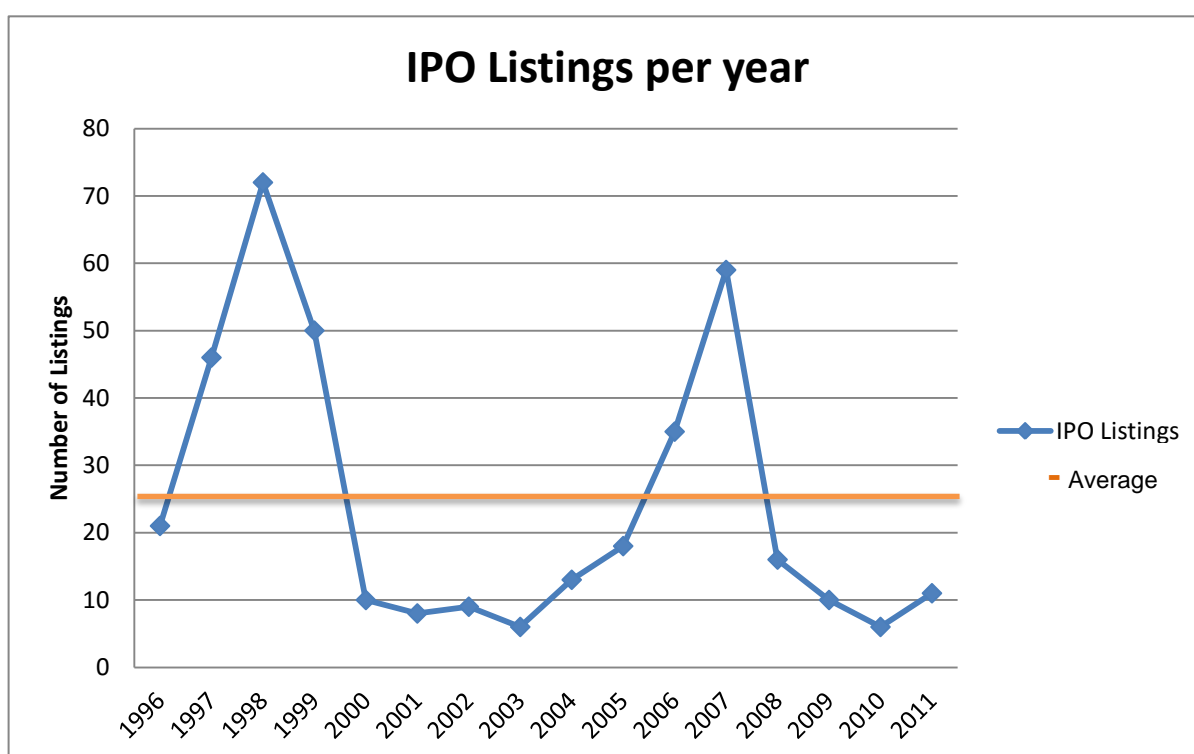
Figure 5.1: Frequency of IPO listings from 1996-2011.

Figure 5.1 illustrates the number of IPOs that were listed during the period of 1996-2011. It is clearly noticeable from Figure 5.1 that the listing of IPOs tended to be cyclical in nature. The average number of listings was 24.4 per year and, given the volatility of the annual number of listings, all the years with the number of listing exceeding the average of 24.4 were regarded as "hot market periods" while the years with fewer than the average number of listings were regarded as "cold market periods". The hot market was applicable to the years: 1997 to 1999, 2006 and 2007, whereas the other eleven years were classified as cold market periods (1996, 2000 to 2005, and 2008 to 2011). Figure 5.1 proves that hot and cold periods existed because of the volatility among IPOs listings on the JSE. Govindasamy (2010:60),

Lawson and Ward (1998:17), and Neneh and Smit (2013:900) had similar findings in their studies, proving that IPOs all over the world attempt to time their listings, which gives rise to the existence of hot and cold markets. Lowry and Schwert (2001:11) add that by timing their listings, IPO companies can achieve higher returns in the market, which is followed by an increase in the number of IPOs being listed.

Table 5.2: Hot and Cold Periods on the JSE from 1996-2011

Market Periods	Listed Years	Years	No. of IPOs	% of IPOs
Hot Periods		**5**	**262**	**67.2%**
Hot 1	1997-1999	3	168	43.1%
Hot 2	2006-2007	2	94	24.1%
Cold Periods		**11**	**128**	**32.8%**
Cold 1	1996; 2000-2005	7	85	21.8%
Cold 2	2008-2011	4	43	11.0%
Total	**1996-2011**	**16**	**390**	**100.0%**

* For this study, the cold period of 1996 is added to the cold period of 2000 to 2005.

In Table 5.2, it is clearly visible that IPO companies were timing their listings on the JSE, as 67.2% of the listings happened in 5 of the 16 years investigated – the hot market periods. According to Govindasamy (2010:4), Helwege and Liang (2002:4) and Smit (2015:2), hot market periods are characterised by a period in which IPOs are highly valued, which leads to an increase in the number of IPO listings. This is observed in Table 5.2, as hot periods were formed because of the increase in IPO listings. Another observation is that the hot market periods were typically short (two to three years), followed by longer-lasting cold market periods of longer than four years.

Finally, Table 5.2 reveals that the number of IPO listings was decreasing substantially, as both the second hot and cold market periods received almost half the listings compared to the first two hot and cold market periods. Van Heerden and Alagidede (2012:136) found that the financial crisis of 2008/2009 had a great effect on the number of IPOs being listed. They add that investment bankers favoured well established companies after the financial crash, which also led to even fewer companies going public than before.

5.2.3 The AltX versus the Main Board on the JSE

This subsection focuses on the two main listings on the JSE, namely the Main Board and the AltX.

Table 5.3: The Sample of IPOs on the Main Board and AltX

JSE Listings	Total	Percentage
Main Board	264	67.7%
AltX*	126	32.3%
Total	**390**	**100.0%**

* The AltX was named the "venture capital" before 2003.

From Table 5.3, it is observed that there was a big difference between the listings on the Main Board and those on the AltX, as 67.7% of the IPOs were listed on the Main Board. The Main Board had more than double the number of IPOs than the AltX had. For the rest of this chapter the venture capital sector will also be referred to as the AltX, as the name was changed already in 2003, as mentioned in Chapter 2.

Table 5.4: Main Board versus AltX during the Market Periods

Periods	JSE Listings		Total Listings	% of Main Board	% of AltX
	Main Board	**AltX**			
Hot	152	110	**262**	58.0%	42.0%
Cold	112	16	**128**	88.0%	12.0%
Total	**264**	**126**	**390**	**67.7%**	**32.3%**
% Hot Market	**56.7%**	**87.3%**	**100.0%**	**100.0%**	
Pearson Sig.	**0.000***				

*Significant at 1%

Table 5.4 shows that there was a significant difference between the listing preferences of IPOs on the Main Board versus the AltX during hot and cold market periods. It is observed that 87.7% of IPOs that listed on the AltX, listed during a hot market period. Although the Main Board also slightly favoured the hot market periods with 56.3% of its total listings taking place in the hot periods, the Main Board was significantly more indifferent regarding the listings during the two market periods.

5.2.4 The sectors in the JSE

This subsection focuses on the sectors that were present on the JSE. According to the JSE (2015:5-6), ten sectors were present in the JSE at the time of this study. For the purposes of this study, some sectors were grouped together in six sectors,

namely the basic material, consumers, industrial, financial, electronic and technology (IT) and venture capital/AltX sectors

Table 5.5: The IPO Sectors on the JSE for 1996 to 2011

Sectors on the JSE	Total	Percentage
Basic Material	**48**	12.3%
Consumer	**64**	16.4%
Industrial	**38**	9.7%
Financial	**73**	18.7%
Electronic and Technology (IT)	**41**	10.5%
AltX*	**126**	32.3%
Total	**390**	**100.00%**

The AltX is also a sector on the JSE, but for purposes of analyses, the AltX must be compared separately against the entire Main Board, as the AltX is an alternative (secondary listing) as well as one of the six sectors mentioned.

Table 5.5 reveals that there was a fairly even split among the IPOs listed in the six different sectors, although the basic material, consumer and the financial industries were the most popular among issuing companies. In Table 5.6, the research question of whether there was a difference between IPOs listed during the hot versus cold market periods is addressed.

Table 5.6: IPO Listings on the JSE during Hot and Cold Market Periods

Sectors on the JSE	No. of Listings		No. of IPOs	% of Hot IPOs
	Hot Market	**Cold Market**		
Basic Material	24	24	**48**	50.0%
Consumer	37	27	**64**	57.8%
Industrial	27	11	**38**	71.1%
Financial	32	41	**73**	43.8%
Electronic and Technology (IT)	32	9	**41**	78.0%
AltX	110	16	**126**	87.3%
Total	**262**	**128**	**390**	**100.00%**
Pearson Sig.	**0.000***			

Significant at 1%

Table 5.6 reveals that there was a significance difference between the listing preferences for the different sectors during the two market periods. Moreover, Table 5.6 shows that issuers significantly favoured the industrial, electronic and technology (IT) and AltX sectors during hot market periods, while the basic material, consumer and financial sectors were more indifferent in terms of the timing of their listings.

5.2.5 Company characteristics of IPOs on the JSE

This subsection focuses on the age of the company before its initial listing, the market capitalisation and the offer price.

Table 5.7: Years in Existence Prior to Listing (Age of a Company before its Initial Listing)

Years (IPO Age)	Mean (IPO Age)	No. of IPOs	% of IPOs	Adjusted Mean (IPO Age)	Adjusted No. of IPOs	% of IPOs
0	0.0	**108**	27.7%	Ignored*		
1-2	1.3	**79**	20.3%	1.3	**79**	28.0%
3-5	3.8	**49**	12.6%	3.8	**49**	17.4%
6-10	7.9	**52**	13.3%	7.9	**52**	18.4%
11-15	12.4	**25**	6.4%	12.4	**25**	8.9%
≥15	40.3	**77**	19.7%	40.3	**77**	27.3%
Total		**390**	**100.0%**		**282**	**100.0%**
Average	**10.6**			**14.6**		
Median	**3.0**			**7.0**		

Ignored: The IPOs that had name changes or for other reasons had no indication of years prior to listing, were excluded from this section

In Table 5.7, it is observed that the average age of an IPO on the JSE was 10.6 years. However, it is also observed that 108 IPOs consisted of 27.7% of the sample that had an age of 0 years. It is concluded that most of these companies with zero years prior to listing, had changed their names just before the initial listing with no indication of their years of existence prior to listing or prior to the name change. Thus, for all purposes of analysis of "age prior to listing", the 'zero' category was excluded from the sample.

From the second part of the table (excluding zero years), it is observed that 45.4% of the IPOs were young companies under five years of age. However it is also observed that 27.3% of the IPOs were older than 15 years, with an average age of 40.3 years. These findings point to the Skewness of the data, indicating that the median is probably a more accurate and true reflection of the age prior to listing of the sampled IPOs. However, it should be noted that the JSE had 20 IPOs with ages above 50 years (the maximum reached 119 in 2011), and these 'old' IPOs drastically increased the average age of companies before initial listing, further indicating the level of Skewness of the data. In Table 5.8, age is compared with the market periods.

Table 5.8: Adjusted Age for the IPOs versus the Hot and Cold Market Periods

Years (IPO Age)	Market Periods		No. of IPOs	% of Hot IPOs
	Hot	Cold		
1-2	54	25	**79**	68.4%
3-5	33	16	**49**	67.3%
6-10	36	16	**52**	69.2%
11-15	15	10	**25**	60.0%
≥15	61	16	**77**	79.2%
Total	**199**	**83**	**282**	**68.8%**
Pearson Sig.	**0.331**			

From Table 5.8, it is observed that there was no significant difference between the age of an IPO before its initial listing and the market period. Although Table 5.8 indicates no significance, it appears that IPOs older than 15 years, preferred to be listed during hot markets periods, as 79.2% of the older IPOs listed during hot periods and not, as was expected, the younger companies.

Table 5.9: Adjusted Age for the IPO Sectors

Years (IPO Age)	Basic Material	Consumer	Industrial	Financial	Electronic and Technology (IT)	AltX	No. of IPOs	% of IPOs
1-2	13	9	5	23	7	22	**79**	28.0%
3-5	6	4	1	12	5	21	**49**	17.4%
6-10	8	9	4	5	6	20	**52**	18.4%
11-15	1	5	3	5	6	5	**25**	8.9%
≥15	4	21	13	7	12	20	**77**	27.3%
Total	**32**	**48**	**26**	**52**	**36**	**88**	**282**	**100.00%**
% < 5 Years	**59.4%**	**27.1%**	**23.1%**	**67.3%**	**33.3%**	**48.9%**	**128**	**45.4%**
Pearson Sig.	**0.001***							

Significant at 1%

In Table 5.9, it is observed that there was a significance difference between the age of the IPOs prior to listing and the different sectors on the JSE. It is observed that the financial IPOs tended to be the youngest, followed closely by the basic material sector. However companies that listed in the industrial, consumer and electronic and technology (IT) sectors seem to be much older, whereas companies that listed on the AltX seem to be variable with regard to age. It is interesting to note that 45.4% of

IPOs that listed on the JSE were young companies of less than 5 years of age prior to listing.

Smit (2015:8) states that, because of the high levels of inflation in South Africa, the offer price and the issue size (market capitalisation) should be adjusted for inflation. This was done by using the CPI (consumer price index) to inflate the aforementioned characteristics. In all further analyses involving the offer price and market capitalisation (size), the inflation adjustment was applicable.

Table 5.10: The Inflation-adjusted Market Capitalisation

Category (Market Capitalisation)	Mean in Million Rand	No. of IPOs	% of IPOs
0 to R99 m	60.6	47	12.1%
R100 to R199 m	146.9	61	15.7%
R200 to R399 m	286.2	76	19.5%
R400 to R999 m	620.5	90	23.1%
R1000 to R4999 m	2,121.6	80	20.5%
≥R5000 m	40,783.1	36	9.2%
Mean	**4,429.1**	**390**	**100.0%**
Median	**431.4**		

In Table 5.10 it is observed that the average market capitalisation of IPOs on the JSE was R4,429.1 million; however, this is not a true representation of the sample, as 47.3% of the IPOs had a market capitalisation of less than R400 million. It is also observed that a small percentage (9.2%) of the sample had a market capitalisation substantially above R5 000 million, indicating that the data are very skew, as these companies had an average size of R40,783.1 million. The mean market capitalisation of the IPO sample is R4,429.1 million, which was substantially higher than the median market capitalisation of merely R431.4 million. Table 5.11 below was created because of the unusually high mean and the Skewness observed in Table 5.10.

Table 5.11 was constructed by using natural logs. According to Princeton University Library (2008:Online) and Hamilton (2014:Online), natural logarithms are used to make skewed data more normal, meaningful and easy to interpret. Rose, Spinks and Canhoto (2015:1-2) state that when the sample Skewness for an SPSS report must be determined, the Skewness statistic must be divided by the standard error (std. error) giving the Skewness of the sample. For samples with larger sizes, a Skewness

threshold of ±2.58 can be used. Smit (2015:7) adds that a Z-value exceeding ±2.58 indicates a non-normal distribution at a significance level of 0.01.

Table 5.11: Skewness for the Inflated Market Capitalisation

Descriptive	Inflated Log Market Capitalisation	Significance
Mean (R m)	4,429.1	
No. of IPOs	390	
Min (R m)	11.2	
Max (R m)	63,9391.0	
Median (R m)	431.4	**0.001*****
Std. Dev	33,993.7	
Skewness	17.1	
Z (Skewness)	**6.7***	
Adjusted Mean (Nat. Log.)	**536.5**	

*Significant at 1%

Table 5.11 shows that the original mean market capitalisation of R4,429.1 million was not a true reflection of the average market capitalisation of an IPO on the JSE. By using natural logs, the adjusted mean and Skewness of the market capitalisation for a company become substantially lower and a better indicator of the true value of the initial size of IPOs listed on the JSE. Given the Skewness of the data indicated in Table 5.11, all further analyses and comparisons using market capitalisation of IPOs, were inflation adjusted and used natural logs.

Table 5.12: Adjusted Years (Age) for the Inflated Market Capitalisation

Market Cap (Size)	Adjusted Years Cat. (Age)		Total	% of IPOs	% of IPOs 1-5 Years of Age
	1- 5	≥6			
0 to R99 m	19	12	31	11.0%	61.3%
R100 to R199 m	24	21	45	16.0%	53.3%
R200 to R399 m	25	36	61	21.6%	41.0%
R400 to R999 m	32	35	67	23.8%	47.8%
R1000 to R4999 m	17	33	50	17.7%	34.0%
≥R5000 m	11	17	28	9.9%	39.3%
Total	**128**	**154**	**282**	**100.0%**	**45.4%**
% of IPOs	**45.4%**	**54.6%**	**100.0%**		**N.A.**
Pearson Sig.	**0.044***				

*Significant at 5%

In Table 5.12, it is observed that there was a significant difference between the age prior to listing and the size of the IPOs on the JSE. As was expected, Table 5.12

reveals that older IPOs (older than 6 years of age) on the JSE had a significantly higher market capitalisation than younger companies had. It is also observed that the majority (54.6%) of the IPOs on the JSE were older than 6 years of age. The next company characteristic to be addressed is the offer price.

Table 5.13: The Inflation-adjusted Offer Price

Offer Price in Cents	Mean Offer Price in Cents	No. of IPOs	% of IPOs
0 to 99	77.5	44	11.3%
100 to 199	158.3	106	27.2%
200 to 399	279.1	57	14.6%
400 to 999	630.1	92	23.6%
1000 to 2999	1,729.3	61	15.6%
≥3000	10,713.7	30	7.7%
Mean	**1,335.8**	**390**	**100.0%**
Median	**365.9**		

Table 5.13 reveals that the average offer price of IPOs on the JSE was 1,335.8 South African cents. However, this does not seem an accurate representation of the sample, as the majority (53.1%) of the IPOs had an offer price of less than 400 cents. A small percentage of IPOs obtained an offer price above 3,000 cents (with an average offer price of 10,713.7), again indicating the Skewness of the data regarding the offer price. The mean offer price of 1,335.8 cents is much higher than the median offer price of only 365.9 cents. Table 5.14 confirms the level of Skewness of the offer price of the sampled IPOs.

Table 5.14: Skewness for the Inflated Offer Price

Descriptive	Inflated Log Offer Price	Significance
Mean (Cents)	1,335.8	
No. of IPOs	390	
Min (Cents	4.3	
Max (Cents)	83,281.3	
Median (Cents)	365.9	**0.001***
Std. Dev	4,960.0	
Skewness	12.6	
Z (Skewness)	**4.9***	
Adjusted Mean (Nat. Log.)	**410.3**	

Significant at 1%

Table 5.14 shows that the mean offer price of 1,335.8 cents is not a true reflection of the average offer price an IPO would typically obtain on the JSE. Using natural logs,

the adjusted mean and Skewness of the offer price for the listed companies became substantially lower and a better indicator of the true value of the offer price for IPOs on the JSE. The new adjusted mean of 410.3 cents is a more accurate indicator of the offer price an IPO would typically acquire on the JSE. Again, the data are skew, as observed in Table 5.14; therefore, for all future analyses and comparisons using the offer price of IPOs, the inflation-adjusted offer price will be used along with the natural logs.

5.2.6 Financial factors

In this subsection, the focus is on certain specific financial variables prior to listing. The variables can be divided into financial variables such as sales (turnover), profits (attributable income), total assets and the equity contribution, as well as both financial (debt, current ROA and ROE) and the market-related ratios (P/E and MV/BV). Neneh (2013:14) confirms that investors base 60% of their IPO investment decisions on financial factors such as the debt ratio, sales growth and ROE, and the other 40% on non-financial factors such as the quality of the management, corporate strategy, execution and brand strength.

The data in this subsection were obtained from the company prospectus (information prior to listing) and the JSE stock exchange handbooks to acquire the pre-listing values of the IPOs before their initial listing. The sample size tended to decrease for most of the financial categories in this subsection, as some of the financial data were unavailable. To ensure the accuracy of the study, the undocumented IPOs from the sample were left out to ensure the reliability of the data.

5.2.6.1 Financial variables

The financial variables of turnover, attributable income, total assets and ordinary shares (equity contribution at book value) are discussed in this subsection. According to Levinson (2011:32), the size of a company can be measured by the turnover and the total assets at the end of the financial year. It is generally accepted that the bigger the turnover and total assets are, the larger the company would be. Agathee *et al.* (2012:18) state that companies with the highest turnover tend to be the companies with the better reputation among investors. Levinson (2011:33) adds that the attributable income is a measurement of risk, as it is hard to predict future

profits because of the sensitivity to external change. For this study, the ordinary shares are also an indicator of the risk associated with the company, as fewer ordinary shares could lead to less capital raised and a higher debt ratio.

Table 5.15: Pre-listing Turnover

Turnover Income	Mean in million Rand	No. of IPOs	% of IPOs	Skewness
<R0 m	-32.9	13	3.7%	
R0 to R99.9 m	34.2	170	48.9%	
R100 to R499 m	215.3	98	28.2%	
R500 to R999 m	695.7	19	5.5%	16.4
≥R1000 m	13,831.9	48	13.8%	
Mean	**2,021.9**	**348**	**100.0%**	
Median	**87.3**			

Table 5.15 indicates that a small sample of the IPOs (3.7%) realised a negative turnover for the period. The average turnover for an IPO on the JSE was R2,021.9 million; however, this is not a true representation of the sample, as 52.6% of the sample had a turnover of less than R100 million. It is also observed that a small percentage of the sample (13.8%) had a turnover of more than R1,000 million with an average of R13,831.9 million. This clearly indicates the Skewness of the data. Thus, the median turnover of R87.3 million is a closer and more accurate reflection of what the turnover of a typical IPO would be on the JSE. Thus, it can be concluded that 80.8% of the sampled IPOs were relatively small with a turnover of less than R500 million, while 13.8% of the sample were big companies with an average turnover (R13,831.9 million), which is substantially above R1,000 million. It is interesting to note that only 5.5% of the sampled IPOs listed lay in between the very small and very large companies. It was observed throughout this section that the data contained high levels of Skewness; therefore, the median was used, as it was a more accurate and true reflection of what the average should be.

SAICA (2013:19) declares the attributable income as either the profit or loss attributable to the ordinary equity holders. Thus, for this study, the attributable income acquired from the JSE is simply known as the net profit after tax (NPAT). NPAT is also an indicator of risk, as companies with higher NPAT usually will be regarded as less risky than companies that are making a financial loss.

Table 5.16: Pre-listing Attributable Income (NPAT)

NPAT	Mean in million Rand	No. of IPOs	% of IPOs	Skewness
<R0 m	-111.2	64	17.8%	
R0 to R0.9 m	0.478	32	8.9%	
R1 to R4.9 m	2.7	54	15.0%	
R5 to R19.9 m	10.3	101	28.1%	15.7
≥R20 m	502.8	109	30.3%	
Mean	**137.9**	**359**	**100.0%**	
Median	**6.9**			

From Table 5.16, it is observed that the median NPAT for an IPO was R6.9 million for the sampled IPOs in the year prior to listing. It is also observed that 41% of the sampled IPOs listed had an NPAT below R5 million. However, it is very interesting to note that 64 of the IPOs (17.8%) that were listed on the JSE made a loss, while 30.3% made an average profit of substantially more than R20 million (R502.8 million), indicating again the Skewness of the data. According to the JSE (2012:53-54), a minimum profit before income and taxation (EBIT) of R8 million was required to be listed on the Main Board. Although the listing criteria changed with time, roughly only 30.3% of the IPOs would meet the current listing requirements of the Main Board. Table 5.17 shows the NPAT growth IPOs achieved from the year prior to listing until the first year after listing.

Table 5.17: Turnover Growth from Pre-listing to the First Year after Initial Listing

Growth in % Category	Mean Growth	No. of IPOs	% of IPOs	Skewness
<0%	-1,291.5%	47	17.9%	
0-29%	14.9%	69	26.3%	
30-59%	44.7%	42	16.0%	
60-99%	76.8%	33	12.6%	-6.9
≥100%	920.7%	71	27.1%	
Mean	**38.6%**	**262**	**100.0%**	
Median	**39.0%**			

Table 5.17 reveals that the majority of IPOs (82%) had positive growth in their first year of listing, with a median turnover of 39% for the entire sample. It is also observed that a small percentage of IPOs (17.9%) did not have positive growth on their turnover after the first year of initial listing; instead, they had an alarming decrease in their turnover with an average decrease of -1,291.5%. Table 5.17 also

reveals that 27.1% of the IPOs had positive growth on their turnover, with an average growth rate of 920.7%, which proves the Skewness of the data. Regardless of the positive and negative outliers, it is positive to note that, on average, the sampled IPOs achieved positive growth in turnover in the first year after listing.

Table 5.18: NPAT Growth from the Pre-listing year to the First Year after Initial Listing

Growth in % Category	Mean Growth	No. of IPOs	% of IPOs	Skewness
<0%	-316.9%	85	30.3%	
0-29%	16.5%	30	10.7%	
30-59%	42.2%	34	12.1%	
60-99%	81.4%	22	7.8%	3.4
≥100%	627.5%	110	39.2%	
Mean	**163.0%**	**281**	**100.0%**	
Median	**51.9%**			

Although Table 5.18 shows that 69.1% of IPOs achieved positive growth in profits, the median growth was 51.9% for the sample. However, it is alarming that 30.3% of the sampled IPOs achieved negative growth in their NPAT. A positive observation is that 47.0% of the IPOs sampled achieved NPAT growth of more than 60%. A second observation is that 39.2% of the IPOs achieved NPAT growth of more than 100% with an average of 627.5% after obtaining additional capital. This emphasises the Skewness of the data.

From the data that were available for this study, the total assets were used and not the net assets. Dempsey and Pieters (2009:10-17) and Cairney *et al.* (2012:464) state that the total assets are also an indicator of how big a company is, as the total assets consist of all the assets held by a company. Thus, the more assets a company employs, the less risky the investment would be.

Table 5.19: Pre-listing Total Assets

Total Assets	Mean in million Rand	No. of IPOs	% of IPOs	Skewness
0 to R99.9 m	44.4	103	35.0%	
R100 to R299.9 m	177.8	66	22.4%	
R300 to R499.9 m	414.7	29	9.9%	11.6
≥R500 m	17,487.5	96	32.7%	
Mean	**5,886.2**	**294**	**100.0%**	
Median	**205.8**			

Table 5.19 reveals that the median of the total assets for an IPO listed on the JSE prior to listing is roughly R205.8 million. It is further observed that almost 67% of the sampled IPOs could be classified as relatively small companies with total assets of less than R500 million, whereas 33.1% of the sampled IPOs seem to be much bigger with an average of R17,487.5 million. This emphasises the Skewness of the data.

According to Chambers and Dimson (2006:7), the JSE (2012:363) and Standard Bank (2015:Online), ordinary shares are the normal sale or purchase of shares in a listed company, which is sometimes referred to as either *equity shares* or *common shares*. Equity shares share in the profits and risk of a company. The data that were available showed that the equity shares were based upon the book value of the equity.

Table 5.20: Pre-listing Ordinary Shares (Book Value of Equity)

Ordinary Shares (Equity Shares)	Mean in million Rand	No. of IPOs	% of IPOs	Skewness
<R0 m	-35.7	12	3.3%	
R0 to R9.9 m	5.2	49	13.6%	
R10 to R49.9 m	25.5	100	27.7%	
R50 to R199.9 m	105.3	103	28.5%	11.8
≥R200 m	3,396.3	97	26.9%	
Mean	**949.2**	**361**	**100.0%**	
Median	**65.8**			

In Table 5.20, it is observed that the median of equity shares for IPOs before listing was R65.8 million. It is also observed that a small sample of the IPOs (3.3%) had negative equity shares with an average of R-35,700.4, which is quite alarming, as these companies would have accumulated losses from the years prior to their initial listing. These companies would carry much risk, as they would not be favoured by investors. It is further observed that 44.6% of the IPOs had accumulated less than R50 million of equity prior to listing. Table 5.20 also reveals that the majority of the IPOs listed (73.1%) had equity below R200 million. Only 26.9% of the sampled IPOs were large companies, as they obtained more than R200 million of equity with an average equity contribution of R3,396.3 million. This confirms the Skewness of the data.

5.2.6.2 Financial ratios

For this study, the liquidity and solvency ratios are indicators of the risk associated with the company, whereas Marx *et al.* (2011:70) state that profitability ratios are used to show the combined effect of the liquidity and the asset-and-debt management results.

a)   Solvency

Marx *et al.* (2011:7) mention that the solvency refers to the extent to which the assets of a company exceed its liabilities. Firer *et al.* (2012:52) add that the solvency is intended to address the ability of a company to meet its long-term obligations. Solvency relates to the debt ratio, which is used to measure the total amount of long-term and short-term debt that the company uses to finance its assets. The debt ratio is calculated simply as the total debt divided by the total assets.

According to Marx *et al.* (2011:77), a higher debt ratio indicates higher financial risk for a company. They add that, although a very high ratio might be unattractive, a very low ratio would also be unattractive because of the forgone leveraged returns.

Table 5.21: Pre-listing Debt Ratio

Debt Ratio in % Category	Mean %	No. of IPOs	% of IPOs	Skewness
0-19.9%	8.7%	109	30.7%	
20-39.9%	30.7%	74	28.8%	
40-59.9%	50.0%	72	20.3%	11.0
≥60%	104.4%	100	28.2%	
Mean	**48.6%**	**355**	**100.0%**	
Median	**38.1%**			

Table 5.21 reveals that the median of the debt ratio was 38.1%, which was relatively low. It is also observed that the majority of IPOs (59.5%) had a debt ratio of less than 40%, which was a good thing, as these IPOs were financed with more equity than debt. It is also observed that 100 IPOs (28.2% of the sample) had a debt ratio of more than 60%, which indicated higher levels of risk for the investors. Thus, the data are observed to be skew. Therefore, it can be concluded that the risk associated with IPOs can lead to higher levels of underpricing to attract additional investors.

b) *Liquidity*

The term *liquidity* refers to how quickly assets can be converted into cash. Companies with a good portion of liquid assets (accounts receivable) will be able to meet their bills easier when they become due than a business that has fewer liquid assets (the ability a company has to pay its current liabilities) will be able to. Thus, the current ratio is a measurement of the short-term solvency or liquidity of a company (Firer *et al.*, 2012:50; Marx *et al.*, 2011:73; Razafindrambinina & Kwan, 2013:203).

Marx *et al.* (2011:73) state that a current ratio of 2:1 is acceptable; however, the higher the current ratio is, the more capable the company is to meet its payment obligations. When the current ratio is below 1 (when the current liabilities exceed the current assets), the company may have problems paying its bills when required. Exceptions to the rule are companies that have high inventory turnovers that are faster than the accounts payable that become due.

Table 5.22: Prelisting Current Ratio

Current Ratio in Category	Mean	No. of IPOs	% of IPOs	Skewness
0-0.9	0.5	65	20.4%	
1.0-1.9	1.5	121	38.1%	
≥2.0	30.8	132	41.5%	7.5
Mean	**13.4**	**318**	**100.0%**	
Median	**1.8**			

From Table 5.22, it is observed that the median of the current ratio was 1.8, which is close to the recommended 2. Thus, it is observed that the majority of the IPOs would not have a liquidity problem. It is perturbing that 20.4% of the IPOs had a pre-listing current ratio of less than 1. It is further observed that 58.5% of the IPOs had a current ratio of less than 2, indicating that they might have a cash flow problem. However, this could be a reason why some of these IPOs tended to list, as they acquired additional capital. However, it should be noted that the liquidity ratio would be different for the different sectors in the JSE, as larger retail companies tend to have lower current ratios compared to the other IPO sectors.

c) Profitability ratios

High profitability ratios are always preferred; however, 'high' would depend on the specific industry. In mature industries, competition tends to be fierce, leading to lower profitability ratios compared to businesses in younger industries with less competition (Marx *et al.*, 2011:70). The two profitability ratios discussed in this study are the return on assets (ROA) and return on equity (ROE) ratios. Given the data that were available, the NPAT was simply divided by the total assets for the ROA and by the total equity for the ROE ratio.

Firer *et al.* (2012:58), Marx *et al.* (2011:72) and Razafindrambinina and Kwan (2013:205) state that the ROA indicates how profitable a company is relative to its total assets. Thus, it is an indicator of the operating performance of a company. The ROA is calculated as the ratio between net profit after tax and the total assets owned by the company. According to Burger (2010:Online), investment professionals on the JSE like to see companies with a ROA that come in at above 5%; however, the exception to the rule is banks, as they usually come closer to 3%. Agathee *et al.* (2012:33) add that a high ROA is synonymous with high profitability, which decreases investor concerns.

Table 5.23: Pre-listing Return on Assets (ROA) Ratio

ROA Ratio in % Category	Mean %	No. of IPOs	% of IPOs	Skewness
<0%	-58.8%	62	17.3%	
0-5.9%	3.0%	114	31.8%	
6-10.9%	8.2%	76	21.2%	
≥11%	32.0%	106	29.6%	-16.1
Mean	**2.0%**	**358**	**100.0%**	
Std. Dev.	**1.5%**			
Median	**6.1%**			

From Table 5.23, it is observed that the median was 6.1%, which is relatively low; however, it was above the benchmark of 5%. This was attributed to the fact that 17.3% of the IPOs sampled had a ROA of less than 0% with an average of -58.8%. It is also observed that 53% of the IPOs had a ROA of between 0 and 10.9%. The high levels of the standard deviation observed also confirm the Skewness of the data. However, positive to note is that 29.6% of the IPOs achieved a ROA of more than 11% with an average of 32%, which is substantially higher than the median of 6.1%.

The ROE represents the owner's equity and represents how the shareholders fared during the given financial year (Firer *et al.*, 2012:58). The ROE is calculated by dividing the net profit after tax by the portion of owner's equity (Marx *et al.*, 2011:72). Burger (2010:Online) states that it is generally accepted that financial analysts consider a ROE in the 15-20% range as representing attractive levels of investment quality on the JSE.

Table 5.24: Pre-listing Return on Equity (ROE) Ratio

ROE Ratio in % Category	Mean %	No. of IPOs	% of IPOs	Skewness
<0%	-68.3%	60	16.8%	
0-9.9%	5.0%	107	30.0%	
10-19.9%	14.4%	65	18.2%	
≥20%	86.6%	125	35.0%	-2.1
Mean	**22.9%**	**357**	**100.0%**	
Std. Dev.	**1.3%**			
Median	**11.6%**			

Table 5.24 shows that the median ROE was 11.6% for the IPOs prior to listing. However, potential investors need to be cautioned as it should be remembered that although the ROE seems high, the equity contribution was quite low for the majority of the IPOs that were listed on the JSE, as seen earlier in this section. It is observed further that a large portion of the IPOs (48.2%) obtained a ROE of between 0% and 19.9%. Quite alarming is that 16.8% of the IPOs obtained a ROE of less than 0% with an average of -68.3%, proving the Skewness of the data. A positive indicator is that 35% of the sample had a ROE of more than 20% with an average of 86.6%.

A final positive observation regarding the profitability ratios is that there is a positive leverage for the IPOs on the JSE, as the median figures of the ROE and ROA were both positive.

5.2.6.3 Market-related ratios

According to Marx *et al.* (2011:78), investors are concerned primarily with the rate of return earned on their investment. They add that investors are particularly interested in the return that their investments have earned them and what their likely returns will be for the future.

The price-to-earnings (P/E) ratio shows how much investors are willing to pay in Rand for the current earnings. The ratio is calculated as the price per share divided by the earnings per share (Firer *et al.*, 2012:59; Marx *et al*, 2011:79). According to the Options Guide (2009:Online), there is no such thing as a good P/E ratio, as a high P/E can indicate either that the company is too expensive or that the growth prospects are very good, whereas a low (P/E) can indicate that the future of the company does not look bright. Marx *et al.* (2011:79) add that a P/E ratio will be higher for a business with high growth prospects and lower for a business that is regarded as very risky. Firer *et al.* (2012:59) state that care should be taken when interpreting the P/E ratio, as companies that had no or almost no earnings would have a large P/E ratio. With the data that were available, the P/E ratio was calculated by using the offer price.

Table 5.25: Pre-listing the Price to Earnings (P/E) Ratio (Offer Price)

P/E Ratio in Category	Mean (Times)	No. of IPOs	% of IPOs	Skewness
<0	**Neg.***	62	17.4%	
0-9.9	6.7	44	12.3%	
10-19.9	14.1	108	30.3%	
20-49.9	30.0	81	22.7%	2.6
≥50	116.6	62	17.4%	
Mean	**38.9**	**357**	**100.0%**	
Median	**19.0**			

*Neg. – These were the IPOs that obtained a negative P/E ratio (based on the offer price); therefore, the P/E ratio is not appropriate.

Table 5.25 shows that the median P/E ratio was 19, which was relatively close to the historic average of the JSE of 14.4 and the 19.5 at present (as on October 2015) on the JSE (Mantshantsha, 2014:Online; Sharenet, 2015:Online). It is also observed that 17.4% of the sample had a negative P/E, which indicates that these IPOs were not making any profits. It seems that 12.3% of the sampled IPOs (with a P/E ratio between 0 and 9.9) had underpriced their IPOs on purpose to attract potential investors, which would point to greater risk for the investors involved, while 17.4% of the IPOs had a P/E ratio of more than 50, with an average P/E ratio of 116.6. The high P/E ratio observed could point to highly potential and attractive IPOs for investors.

Firer *et al.* (2012:60) state that the book value per share is an accounting number; therefore, it reflects historical costs. The market value to book value (MV/BV) ratio thus compares the market value of the investments of the company to their costs. Firer *et al.* (2012:60) conclude that a MV/BV below 1 could mean that a company has not been successful in creating value for its shareholders. Lexicon (2015:Online) adds that a high MV/BV ratio should reflect greater expectations for future gains, and it indicates that the share price is relatively more expensive, whereas a lower MV/BV may indicate that the company is a poor performer.

Table 5.26: Pre-listing Market Value to Book Value (MV/BV) Ratio

MV/BV Ratio in Category	Mean (Times)	No. of IPOs	% of IPOs	Skewness
0-0.9	0.7	20	5.7%	
1-1.9	1.4	104	29.8%	
2-3.9	2.9	93	26.6%	
4-5.9	4.8	50	14.3%	3.2
6-9.9	7.9	36	10.3%	
≥10	19.3	46	13.2%	
Mean	**4.8**	**349**	**100.0%**	
Median	**2.8**			

Table 5.26 shows that the median MV/BV for the sampled IPOs was 2.8, which is relatively low. It is alarming to see that 20 IPOs (5.7% of the sample) were not creating any value for their shareholders. It is also observed that 23.5% of the sampled IPOs had a MV/BV of more than 6, which indicates the Skewness of the data. It is further observed that 13.2% of the IPOs had a MV/BV ratio above 10 with an average ratio of 19.3, which is substantially higher than the sample median of 2.8. The MV/BV of 2.8 is larger than that of Bhana (2010:4), who acquired 0.51 for the period 2003 to 2006, although the findings still suggest that the median MV/BV figures of the companies are somewhat small and not extreme. According to Beukes (2010:7-8), companies with low share prices and high MV/BV ratios might be required to have a higher discount rate to compensate investors for the additional risk than companies with strong prospects might be required to have. For this study, it would mean that the IPOs with a lower MV/BV might have underpriced their offerings to make them more attractive for potential investors.

5.2.6.4 Description of the SAMPLE

The sample consisted of 390 IPOs from 484 IPOs (population) listed on the JSE over a period of 16 years, with a sample representation of 80.6%. The reason for the omission of these IPOs was unforeseen outliers and irregularities in the data set, which increased the accuracy of the study. It was found that IPOs on the JSE were timing their listings to achieve better returns. The effort these issuing companies put into timing of their offerings created either hot or cold market periods, during which the number of listings changed drastically, depending on the market condition. The JSE experienced two hot and two cold market periods from 1996 until 2011, while 43.1% of all the listings took place during the first hot period of 1996 to 1999. It is also noticed that the number of IPOs were decreasing drastically, as almost half the number of the listings the first market periods had achieved occurred during the second hot and cold market periods.

There are two main listings on the JSE, namely the Main Board and the AltX. The Main Board was clearly preferred to the AltX, as 67.7% of the IPOs studied listed on the Main Board. However, the AltX was more popular during hot market periods than it was during cold market periods, as 87.7% of the IPOs on the AltX were listed in hot market periods, whereas IPOs were much more indifferent when they listed on the Main Board, although it seems the Main Board was slightly favoured during the hotter market periods. Of the six industry sectors, the industrial and electronic and the technology (IT) sectors were the most popular among the Main Board IPO issuers during hot market periods, whereas the basic material, consumer and financial sectors were the most populated IPOs in the Main Board throughout the different market periods combined.

It is observed that the average age of IPOs on the JSE was 10.6 years; however, the data were extremely skew, and after adjustments had been made, it was revealed that the average age of IPOs on the JSE was closer to 14.6 years. The reason for the change was that the data were skew and had to be rectified by using natural logs. It is also observed that younger companies did not prefer to list during hot market periods, whereas it seems older companies did, although the results were statistically inconclusive. 45.4% of IPOs that listed on the JSE were typically young companies under 5 years of age.

Inflation-adjusted market capitalisation was used because of the high levels of inflation that were observed in South Africa for the period. Natural logs were used to adjust the mean because of the high level of Skewness. After the adjustments had been made, it was proven statistically that the mean market capitalisation of R536.5 m was closer to an accurate and true reflection of the market capitalisation. It was also revealed that younger IPOs had significantly smaller market capitalisation than that of older IPOs. Finally, the inflation-adjusted offer price was used to determine the average offer price an IPO would obtain on the JSE. Again, the data were skewed, and natural logs were used to adjust the mean to be closer to the median. The naturally logged mean inflation-adjusted offer price was 410.3 cents, which is the most accurate and true reflective of the offer price an IPO would typically have on the JSE.

From the financial variables, it was observed that the turnover and total assets were a measurement of the size of the IPO, whereas the NPAT and the equity shares were a measurement for risk. The pre-listing turnover observed that 52.6% of the sample had a turnover of less than R100 million, whereas the NPAT observed that 41% of the sampled IPOs listed had a NPAT below R5 million. It was also observed that almost 67% of the IPOs had total assets worth less than R500 m. Finally, it was found that the majority of IPOs (73.1%) had equity shares worth less than R200 million. All of the above indicate that the majority of IPOs listed on the JSE were small companies.

From the financial ratios it was observed that the most of the IPOs listed on the JSE had relatively low debt ratios, which was a very good thing for future success. The current ratio was on average 1.8, which was quite good, as the majority of the IPOs would be able to pay their dues. The ROA and ROE together show that the about 30% of the IPOs were performing extremely well, with only a small percentage that achieved negative returns that were consistent with the financial variables.

The last part of the section revealed that 62 IPOs had a negative P/E ratio, which indicates that these companies were making a loss for the financial year. It was also observed that the P/E ratio of 19 was close to that of the overall P/E ratio of the JSE at 19.5% in 2015. Finally, the MV/BV was quite low, which confirms that the majority of the IPOs on the JSE were rather small.

5.3 IPO Underpricing on the JSE

This section is divided into six sections: firstly, the market-adjusted returns (MAAR) on the JSE after the first day, first week and first month of initial listing, and secondly, the effect underpricing has on hot and cold market periods. The third section focused on the effect underpricing had on the JSE listing boards (Main Board versus AltX), while the fourth documents the effect underpricing had on the sectors present on the JSE. The fifth section documents the effect company characteristics had on the initial level of underpricing, whereas the last section (section six) focused on how the financials affected the level of underpricing.

5.3.1 IPO underpricing using market adjusted abnormal return (MAAR)

According to several studies, IPOs are characterised by high initial returns (Govindasamay, 2010:31-32; Ritter, 1991:3-4; Van Heerden & Alagidede, 2012:130). Smit (2014:7) states that the MAAR is used to measure the level of underpricing for the initial public offering of an IPO. In Table 5.27, the MAAR and standard deviation for the sampled 390 IPOs listed on the JSE for the period of 1996 to 2011 are presented. The table includes the level of underpricing (MAAR) on the first day, first week and first month after initial listing.

Table 5.27: Market-adjusted Abnormal Return (MAAR)

Return	Mean MAAR	Std. Dev.	T-Stats
First Day	38.2%	96.8%	7.8*
First Week	38.9%	96.2%	8.0*
First Month	40.2%	120.7%	6.6*

Significant at 1%

From Table 5.27, it is clear that, based upon the MAAR for the first day, first week and first month, IPOs were significantly underpriced on the JSE at the levels of 38.2%, 38.9% and 40.2% for the first day, first week and first month respectively. Although the first-day returns were lower than those found by Neneh (2013:121), Smit (2014:7) and Van Heerden and Alagidede (2012:133), who acquired first-day returns of 48.2%, 108.3% and 78.1% respectively, it confirms the high levels of initial underpricing on the South African market between the period of 1996 and 2011. It should be noted that the samples used in the previously mentioned South African studies were much smaller than the sample size of this study, but the most important

reasons for the differences are the exclusion of significant outliers and inconsistent data from the various sources.

Table 5.27 also reveals that the standard deviations are extremely high, indicating that there are substantial MAAR differences in the distribution of the data for the first day, first week and the first month after initial trading. All the T-statistic results in Table 5.27 are statistically significant, indicating that all three of the MAARs are statistically higher than normal. This further implies that there were high levels of volatility among the 390 IPOs. Another observation that can be made is that the level of underpricing did not change substantially within the first month after its listing. Smit (2014:7) argues that, since there is not a significant change in the level of underpricing, it is reasonable to assume that the IPO market conforms to at least a weak form of market efficiency. Given the high standard of deviations observed, it was necessary to analyse MAAR further in Table 5.28, in which categories of underpricing are used to explain the level of underpricing.

Table 5.28: The Level of Underpricing (MAAR) Versus the Number of IPOs

Category of abnormal returns (MAAR)	No. of IPOs	% of IPOs	Mean MAAR		
			First Day	First Week	First Month
<-40.0%	6	1.5%	-41.6%	-58.8%	-58.5%
-40.0% to -20.1%	11	2.8%	-33.6%	-40.7%	-54.4%
-20.0% to -0.1%	75	19.2%	-2.0%	-6.9%	-9.7%
0.0% to 20.0%	**160**	**41.0%**	**9.8%**	**8.3%**	**3.4%**
20.1% to 40.0%	44	11.3%	29.1%	35.0%	44.0%
40.1% to 60.0%	37	9.5%	67.4%	54.9%	48.8%
60.1% to 80.0%	10	2.6%	77.2%	69.3%	64.7%
80.1% to 100.0%	8	2.1%	124.0%	120.6%	112.0%
≥100.0%	39	10.0%	295.9%	254.8%	295.5%
Total (Mean)	**390**	**100.0%**	**38.2%**	**38.9%**	**40.2%**

In Table 5.28, it is observed that 41% of the IPO sample obtained a reasonable level of underpricing with a MAAR between 0 and 20 percent; if it is assumed that the 0 to 20 percent category is accepted as a reasonably normal level of underpricing. In contrast to the above-mentioned, only 35.5% of the IPOs were underpriced by more than 20%. It is also observed that only 99 IPOs (25.5% of the sample) would be excessively underpriced (between 20% and 100%) while 39 IPOs (10% of the sample) were extremely underpriced when compared to the norm of between 0 and

20%, which confirms the Skewness of the data. It was observed that 23.5% of the IPOs that attempted to list were actually overpriced with a first-day market price below the offer price. This is worrying, as almost 25% of the investors would lose money on their initial investment.

Table 5.29: The Percentage Increase in MAAR from the First Day to the First Month

% Increase in MAAR Category	No. of IPOs	% of IPOs	% Increase in MAAR from D1 to M1	Mean MAAR		
				First Day	First Week	First Month
<-20.1%	83	21.3%	-43.3%	69.2%	48.9%	25.9%
-20.0% to -0.1%	158	40.5%	-8.6%	13.5%	10.7%	4.9%
0% to 19.9%%	93	23.8%	6.7%	16.8%	22.2%	23.5%
≥20.0%	56	14.4%	91.0%	97.4%	131.5%	188.4%
Total (Mean)	**390**	**100.0%**	**2.0%**	**38.2%**	**38.9%**	**40.2%**
Median			**-3.9%**	**9.9%**	**8.6%**	**5.1%**

Table 5.29 reveals that the average percentage increase in MAAR from the first day to the first month was 2%, which is contradictory to the median, which indicates that the MAAR decreased on average by -3.9% from the first day to the first month. It is also observed that the majority (61.8%) of the IPOs listed had a decrease in their MAAR from the first day to the first month, while only 14.4% of the IPO sample had an increase in their MAAR of more than 20%, which confirms the Skewness of the data. However, it is very interesting to note that the IPOs that were initially less underpriced experienced less movement in their MAARs, compared to the IPOs that were severely under- or overpriced.

Table 5.30: MAAR – Comparing Mean and Median

Return	Mean MAAR	Min MAAR	Max MAAR	Median MAAR	Std. Dev	Skewness
First Day	38.2%	-77.5%	949.7%	9.9%	96.8%	4.7
First Week	38.9%	-85.4%	936.4%	8.6%	96.2%	4.1
First Month	40.2%	-94.4%	1,215.8%	5.1%	120.7%	4.7

Table 5.30 reveals that the range is very high towards the positive end when comparing the first day's maximum MAAR with that of the first month. It is also observed that the first month had higher negative and positive returns at the extreme ends in comparison with that of the first day of trading. Thus, it is further observed that the mean MAAR and median MAAR figures are substantially different, as the data is not normally distributed; this is indicated by the high level of Skewness above

±2.56. To resolve the problem of the data not being normally distributed and to reduce the high levels of standard deviation, natural logs were used. In the rest of this chapter, natural logs are used to convey the levels of underpricing.

Table 5.31: MAAR versus Log MAAR

Return	Mean MAAR	Median MAAR	Log Mean MAAR	Log Std. Dev.	Log Skewness	Log T-Stat
First Day	38.2%	9.9%	23.0%	42.3%	**1.5**	**10.6***
First Week	38.9%	8.6%	22.1%	46.0%	**1.0**	**9.4***
First Month	40.2%	5.1%	17.3%	54.2%	**0.6**	**6.2***

Significant at 1%

From Table 5.31, it is revealed that the natural logs reduced the MAAR substantially from 38.2%, 38.9% and 40.2% to 23.0%, 22.1% and 17.3% for the first day, first week and first month respectively. It is also observed that the standard deviation is substantially lower than that of the original mean, and that the Skewness is reduced significantly to that of a normal distribution. It is finally observed that the end of the first day of trading was the highest, followed by the first week and then the first month, which is in contrast to the figures of the original returns. Thus, a very important observation is that, although the levels of IPO underpricing on the JSE are still significant, they are substantially lower if the Skewness of the data is reduced using natural logs. It is the opinion of the author that many international studies focusing on IPOs failed to report accurately on underpricing by ignoring the Skewness of their data.

Table 5.32 presents the correlation between the MAAR of the first day and the MAAR of the first week. It shows how that the MAAR of the first day can be used to successfully predict the MAAR of the first week.

Table 5.32: Correlation for the MAAR of the First Day and the MAAR of the First Week

Measurement	First Day	First Week	MAAR	Std. Dev
First Day MAAR	1,000		23.0%	42.3%
First Week MAAR	**0.941***	1.000	22.1%	46.0%

Significant at 1%

Table 5.33: The Relationship between the MAAR of the First Day and the MAAR of the First Week

Independent Variables	Underpricing				
	First Week MAAR				
	Unstandardised Coefficients		Standardised Coefficients	T-Stat	Sig.
	B	Std. Error	Beta		
(Constant)	-0.012	0.009		-1.393	**0.164**
First Day MAAR	1.023	0.019	0.941	54.662	**0.000***
R	0.941				
R^2	0.885				
Adjusted R^2	0.885				
Std. Error of the Estimate	0.1562				
R^2 Change	0.885				
df 1	1				
df 2	388				
Sig. F Change	**0.000**				
F-value	2987.915				
Durbin-Watson	1.292				
ANOVA Sig.	**0.000***				

Significant at 1%

From Table 5.32 and Table 5.33, it is observed that the first day of listing significantly correlated with the MAAR of the first week. The correlation was very strong, indicating that the MAAR of the first day could be used to predict the MAAR of the first week accurately. Thus, it was not necessary to use the MAAR of the first week during the rest of the chapter, as the MAAR of the first day was sufficient.

Table 5.34: Correlation for the MAAR of the First Day and the MAAR of the First Month

Measurement	First Day	First Month	MAAR	Std. Dev
First Day MAAR	1,000		23.0%	42.3%
First Month MAAR	**0.872***	1.000	17.3%	54.2%

Significant at 1%

Table 5.35: The Relationship between the MAAR of the First Day and the MAAR of the First Month

Independent Variables	Underpricing				
	First Month MAAR				
	Unstandardised Coefficients		Standardised Coefficients	T-Stat	Sig.
	B	Std. Error	Beta		
(Constant)	-0.072	0.015		-4.805	**0.000***
First Day MAAR	1.117	0.032	0.872	35.019	**0.000***
R	0.872				
R^2	0.760				
Adjusted R^2	0.759				
Std. Error of the Estimate	0.2662				
R^2 Change	0.760				
df 1	1				
df 2	388				
Sig. F Change	**0.000**				
F-value	1226.338				
Durbin-Watson	0.401				
ANOVA Sig.	**0.000***				

Significant at 1%

From Table 5.34 and Table 5.35, it is observed that the first day of listing correlated significantly with the MAAR of the first month. The correlation was also very strong, indicating that the MAAR of the first day could be used to predict the MAAR of the first month successfully. As with the MAAR of the first week, it was not necessary to use the MAAR of the first month during the rest of the chapter, as the MAAR of the first day was already a very good indicator, thus confirming at least a weak form of market efficiency.

Table 5.36 documents the correlation between the MAAR of the first day and the percentage increase in MAAR obtained from the first day to the first month.

Table 5.36: Correlation for the MAAR of the First Day and the Percentage Increase in MAAR

Measurement	First Day	First Month	MAAR	Std. Dev
First Day MAAR	1,000		23.0%	42.3%
Percentage Increase in MAAR	**-0.111***	1.000	-5.0%	-67.2%

Significant at 5%

Table 5.37: The Relationship between the First Day and Percentage Increase in MAAR

Independent Variables	Underpricing				
	% Increase in MAAR				
	Unstandardised Coefficients		Standardised Coefficients	T-Stat	Sig.
	B	Std. Error	Beta		
(Constant)	0.681	0.015		44.221	**0.000**
First Day MAAR	0.000	0.000	-0.111	-2.204	**0.028****
R	0.111				
R^2	0.012				
Adjusted R^2	0.010				
Std. Error of the Estimate	0.283				
R^2 Change	0.012				
df 1	1				
df 2	388				
Sig. F Change	**0.028**				
F-value	4.859				
Durbin-Watson	0.099				
ANOVA Sig.	**0.028***				

*Significant at 1%; **Significant at 5%*

In Table 5.36 and Table 5.37, it is observed that the MAAR of the first month significantly correlated with the increase in MAAR at the end of the first month. However the correlation was negative, indicating that the higher the MAAR of the first day was, the lower the percentage increase in MAAR would be at the end of the first month. Table 5.38 reveals that the regression was very low and the model fitted only a small portion of the sample. Although the findings were significant, it was impossible to predict the percentage increase in the MAAR of the first month because of the low levels of r^2.

5.3.2 The effect hot and cold markets have on the JSE

This section focuses on the results associated with the years of listing and the level of underpricing achieved on the first day, first week and first month of initial listing. The hot and cold market periods were compared against the initial level of underpricing (MAAR) received on the JSE for the period of 1996 to 2011. As mentioned in the previous subsection, for the rest of this chapter, the logged MAAR was used, as it was a more accurate and true reflection of the level of underpricing.

Table 5.38 documents the level of underpricing received for the first day, first week and first month for the entire sample period.

Table 5.38: Logged MAAR and the Returns Received for Each Listing Year

Years	MAAR in (%)			No. of Listings	% of IPO Sample
	First Day	**First Week**	**First Month**		
1996	7.5	6.6	5.8	21	5.4%
1997	35.4	36.8	41.6	**46**	11.8%
1998	58.2	56.3	48.8	**72**	18.5%
1999	25.1	18.6	9.4	**50**	12.8%
2000	11.5	14.1	11.0	10	2.6%
2001	-8.7	-9.7	-9.6	8	2.1%
2002	3.3	2.9	-8.2	9	2.3%
2003	-2.7	-10.3	-23.4	6	1.5%
2004	14.6	17.2	19.9	**13**	3.3%
2005	9.0	17.5	7.2	**18**	4.6%
2006	22.0	24.9	19.5	**35**	9.0%
2007	17.2	15.5	14.6	**59**	15.1%
2008	1.7	-3.1	-17.3	16	4.1%
2009	1.5	0.1	-6.4	10	2.6%
2010	4.8	3.9	1.0	6	1.5%
2011	3.3	4.0	-2.0	11	2.8%
Total	**23.0%**	**22.1%**	**17.3%**	**390**	**100.0%**
ANOVA Sig.	**0,000***	**0,000***	**0,000***		

Significant at 1%

Table 5.38 shows that the MAAR of the first day, first week and first month respectively were significantly underpriced. It is also observed that there was a significance difference between the MAAR in hot market periods and the MAAR in cold market periods. The MAAR figures for the first day, first week and first month that are marked in grey indicate the hot market periods. These periods received constantly higher returns than the non-marked cold market periods. In Table 5.39, the MAAR of the first day is benchmarked against the two hot and two cold market periods.

Table 5.39: Comparing the Two Hot and Two Cold Market Periods using MAAR

Market Periods	No of IPOs	% of IPOs	MAAR	
			First Day	**% Increase in MAAR**
Hot 1 ('97-99)	168	43.1%	41.4%	-7.7%
Cold 1 ('00-05)	85	21.8%	6.5%	-1.8%
Hot 2 ('06-07)	94	24.1%	18.9%	-0.0%
Cold 2 ('08-11)	43	11.0%	2.5%	-10.5%
Total	**390**	**100.0%**	**23.0%**	**-5.0%**
ANOVA Sig.			**0.000***	**0.613**

Significant at 1%

Table 5.39 reveals that there was a significance difference between the level of MAAR for the two hot and cold market periods on the JSE between 1996 and 2011. Table 5.40 and Table 5.41 were constructed to emphasise the difference between the two hot and two cold market periods.

Table 5.40: Comparing the two hot market periods and the increase in MAAR

First Day MAAR	Market Periods		Total	ANOVA Sig.
	Hot 1	**Hot 2**		
Mean (MAAR)	41.4%	18.9%	**32.9%**	
No. of IPOs	168	94	**262**	
Std. Dev.	74.4%	27.9	**60.9%**	**0.005***
Median (MAAR)	20.2%	10.6%	**17.3%**	
Skewness	3.1	1.7	**3.9**	
% Increase in MAAR D1 to M1	-7.7%	-0.03%	**-5.6%**	**0.448**

Significant at 1%

Table 5.40 reveals that the MAAR significantly decreased from the first hot period to the second hot period, and that the number of IPOs listed during the second hot period decreased drastically. The table shows that the standard deviation and the Skewness decreased significantly during the second hot period. In the first hot period, there was a decrease from the MAAR of the first day to the MAAR of the first month, with an average of -7.7%, compared to a decrease of -0.03% in the second hot period. Although it seems that the decrease in MAAR from the first day to the first month was substantially more in the first hot period than in the second hot period, it was not found to be statistically significant. Table 5.41 documents the difference between the two cold market periods on the JSE.

Table 5.41: Comparing the Two Cold Market Periods and the Increase in MAAR

First Day MAAR	Market Periods		Total	ANOVA Sig.
	Cold 1	Cold 2		
Mean (MAAR)	6.5%	2.5%	**5.1%**	
No. of IPOs	85	43	**128**	
Std. Dev.	28.6%	11.5%	**23.9%**	**0.347**
Median (MAAR)	4.6%	0.7%	**2.9%**	
Skewness	0.6	1.1	**0.9**	
% Increase in MAAR D1 to M1	-1.8%	-10.5%	**-3.6%**	**0.013***

Significant at 5%

Table 5.41 reveals that there was a substantial decrease in the number of IPOs being listed during the second cold period than during the first cold period. It is also observed that the IPOs listed during the second cold period obtained lower levels of underpricing than in the first cold period, although the difference is not significant. The percentage decrease in MAAR from the first day to the first month was significantly more for the second cold period than it was during the first cold period. This shows that IPOs during the second cold period had more movement in the percentage decrease from the MAAR of the first day to the MAAR of the first month. Table 5.42 compares the entire hot and cold market periods from 1996 to 2011.

Table 5.42: Comparing the Two Market Periods using MAAR and the Percentage Increase in MAAR

Periods	No. of IPOs	% of IPOs	MAAR	
			First Day	% Increase in MAAR
Hot market	262	67.2%	32.9%	-5.6%
Cold market	128	37.8%	5.1%	-3.6%
Total	**390**	**100.0%**	**23.0%**	**-5.0%**
ANOVA Sig.			**0.000***	**0.739**

Significant at 1%

Table 5.42 confirms that there was a significance difference in the MAAR for the hot and cold market periods, as the hot market IPOs acquired a MAAR of 32.9% for the first day compared to 5.1% for the cold market IPOs. This is very close to that of Lawson and Ward (1998:17), who found that the average returns for the hot and cold market periods were 34% and 12% respectively on the JSE between 1975 and 1995. From Table 5.42, it is also observed that IPOs prefer to be listed during hot market periods, as the majority of the sample (67.2%), timed their listing during a period with

higher average returns. Although it seems that hot market periods had a bigger percentage decrease in their MAAR from the first day to the first month than the cold market periods had, it was not found to be significant. Thus, there is no difference between the percentage movement in MAAR for the hot and cold market periods. Thus, Table 5.42 reveals that companies timing their listing can affect the initial level of underpricing (by listing in a hot or cold period). Bansal and Khanna (2012:70) confirm that timing an offering can lead to higher levels of underpricing.

5.3.3 Underpricing versus the Main Board and the AltX

This subsection reveals the level of underpricing received for IPOs listed on the Main Board and the AltX of the JSE. It should be remembered that this chapter is making use of the natural logs.

Table 5.43: The Main Board versus AltX and the Level of Underpricing

JSE Listings	Total	% of IPOs	MAAR	
			First Day	% Increase in MAAR
Main Board	264	67.7%	16.5%	-2.6%
AltX	126	32.3%	38.1%	-9.8%
Total	**390**	**100.0%**	**23.0%**	**-5.0%**
ANOVA Sig.			**0.001***	**0.226**

Significant at 1%

Table 5.43 indicates a significant difference between the level of underpricing received by the Main Board IPOs and the AltX IPOs on the JSE. The AltX was underpriced significantly more at 38.1% when compared to that of the Main Board at 16.5%. Gajewksi and Gresse (2008:13-15) confirm that IPOs listed on the secondary exchange tend to have higher levels of information asymmetry, which leads to higher levels of underpricing for secondary listings. Although it is revealed that the percentage increase in MAAR was not significantly different for the two JSE listings boards, it seems that the MAAR decreased substantially more from the first day to the first month for the AltX than it did for the Main Board IPOs.

5.3.4 The JSE sectors and the level of underpricing

This subsection reveals the different levels of underpricing associated with the six sectors of the JSE.

Table 5.44: The Sectors on the JSE and the Level of Underpricing

JSE Sectors	No. of IPOs	% of IPOs	MAAR	
			First Day	% Increase in MAAR
Basic Material	48	12.3%	3.8%	-2.1%
Consumers	64	16.4%	16.1%	0.2%
Industrial	38	9.7%	12.7%	-7.0%
Financial	73	18.7%	17.1%	-1.4%
Electronic and Technology (IT)	41	10.5%	36.6%	-5.5%
AltX	126	32.3%	38.1%	-9.8%
Total	**390**	**100.0%**	**23.0%**	**-5.0%**
Pearson Sig.			**0.002***	**0.848**

Significant at 1%

Table 5.44 reveals that there was a significant difference in the level of underpricing for all of the sectors on the JSE with fairly high levels of underpricing observed for all of the sectors except for the basic material sector. Apart from the AltX (already discussed), Table 5.44 clearly indicates that the electronic and technology (IT) sector had the highest level of underpricing (36.6%) followed by the financial sector at only 18.7%. These findings are close to those of Neneh (2013:124) and Van Heerden and Alagidede (2012:135), who found that the highest level of underpricing was recorded for the financial sector at 189.8% and 548.7% respectively, followed by the technology sector at 108.4%. Although Neneh's (2013:124) results are substantially higher than those of this particular study, it can be attributed to the fact that this study made use of natural logs and removed the outliers to reduce the Skewness of data.

5.3.5 Company characteristics and underpricing

The company characteristics include the age of an IPO prior to listing, the inflated market capitalisation and the inflated offer price of an IPO prior to listing.

Table 5.45: The Age of an IPO and the Level of Underpricing

Years (IPO Age)	No. of IPOs	% of IPOs	MAAR	
			First Day	% Increase in MAAR
1-5	**128**	45.4%	25.8%	-2.5%
6-14	**77**	27.3%	25.7%	-4.4%
≥15	**77**	27.3%	12.1%	-4.7%
Total	**282**	**100.0%**	**22.0%**	**-3.6%**
ANOVA Sig.			**0.014***	**0.261**

Significant at 5%

Table 5.45 clearly illustrates that there is a significant relationship between the age of an IPO prior to listing and the level of underpricing received on the first day of listing. Table 5.45 reveals that young companies (IPOs under the age of 15 years) were prone to be significantly more underpriced when compared to older IPOs (over 15 years of age). This contradicts findings by Agathee *et al.* (2012:72) and Sannassee and Brooks (2012:24), and who found that there was no significant relationship between the age of the company and the level of underpricing. Table 5.45 reveals that, although there is no statistical significance in the percentage decrease in MAAR from the first day to the first month; it seems that younger IPOs (less than 5 years of age) tend to have less movement with the percentage decrease in their MAAR.

Table 5.46: Inflated Market Capitalisation and the Level of Underpricing

Market Capitalisation	No. of IPOs	% of IPOs	MAAR	
			First Day	**% Increase in MAAR**
0 to R99 m	47	12.1%	54.3%	-7.1%
R100 to R199 m	62	15.7%	26.3%	4.9%
R200 to R399 m	75	19.5%	20.6%	-6.4%
R400 to R999 m	90	23.1%	16.3%	-6.9%
R1000 to R4999 m	80	20.5%	9.4%	-4.5%
≥R5000 m	36	9.2%	4.0%	-10.4%
Total	**390**	**100.0%**	**23.0%**	**-5.0%**
ANOVA Sig.			**0.000***	**0.184**

Significant at 1%

Table 5.46 shows that market capitalisation had a significant influence on the level of underpricing. Small IPOs (smaller than R400 million) tended to be significantly more underpriced than the larger IPOs (larger than R400 million) were. Table 5.46 also reveals that large IPOs (with a market capitalisation above R1000 million) were substantially less underpriced when compared to the rest of the IPO sample. This means that smaller IPOs intentionally underpriced their offering to compensate for the risk involved. Lattimer (2008:70) confirms that smaller IPO offerings are more underpriced on average than larger IPO offerings are. It is interesting to see that companies with a market capitalisation between R100 and R199 million seemed to have a 4.9% increase in their MAAR, whereas the rest of the IPOs experienced a percentage decrease in their MAARs growth. However, the percentage increase from the first day to the first month was not found to be significant.

Table 5.47: Inflated Offer Price and the Level of Underpricing

Offer Price in Cents	No. of IPOs	% of IPOs	MAAR	
			First Day	% Increase in MAAR
0 to 99	44	11.3%	56.0%	-9.1%
100 to 199	106	27.2%	26.3%	-1.8%
200 to 399	57	14.6%	23.6%	-3.1%
400 to 999	92	23.6%	10.9%	-6.0%
1000 to 2999	61	15.6%	7.3%	-4.7%
≥3000	30	7.7%	1.3%	-8.7%
Total	**390**	**100.0%**	**23.0%**	**-5.0%**
ANOVA Sig.			**0.000***	**0.327**

Significant at 1%

Table 5.47 indicates a significant difference between the price and the level of underpricing on the first day of trading. It is also observed that the lower the offer price was prior to listing, the higher the MAAR of the first day would be. This means that IPOs with an offer price below 400 cents had the highest amount of underpricing. Lattimer (2008:70) confirms that smaller and lower-priced offerings tend to be substantially more underpriced in the short-term than larger IPO offerings are. Table 5.48 documents the correlation between the company characteristics and the MAAR of the first day.

Table 5.48: The Correlation between the Company Characteristics and MAAR

Characteristics	Mean	Std. Dev.	First Day MAAR	IPO Sample
First Day MAAR	24.1%	53.3%	1.000	
Years Exist (Age)	11.0	19.6	**-0.104****	
Total Issued Shares (R m)	129,230.9	2.7	**-0.080****	375
Inflated Market Cap. (R m)	326.8	5.3	**-0.309***	
Inflated Offer Price (Cents)	407.8	3.7	**-0.296***	

Significant at 1%; **Significant at 5%

Table 5.48 reveals that the sample size decreased from 390 to 375 because of incomplete data in the dataset. It is also observed that there is a significant negative correlation between the company characteristics of an IPO and the MAAR of the first day. This means that the company characteristics can be used to predict the MAAR of the first day.

Table 5.49: The Relationship between the MAAR of the First Day and the Company Characteristics

Independent Variables	Underpricing				
	First Day MAAR				
	Unstandardised Coefficients		Standardised Coefficients	T-Stat	Sig.
	B	Std. Error	Beta		
(Constant)	-4.389	2.035		-2.157	**0.032****
Years Exist (Age)	-0.001	0.001	-0.063	-1.243	0.214
Total Issued Shares	0.277	0.107	0.638	2.595	**0.010***
Inflated Market Capitalisation	-0.302	0.095	-1.186	-3.183	**0.002***
Inflated Offer Price	0.197	0.100	0.604	1.969	**0.050****
R	0.363				
R²	0.132				
Adjusted R²	0.115				
Std. Error of the Estimate	0.4018				
R² Change	0.132				
df 1	7				
df 2	367				
Sig. F Change	**0.000***				
F-value	7.972				
Durbin-Watson stat	1.814				

*Significant at 1%; **Significant at 5%*

Table 5.49 indicates that the total issued shares, inflated market capitalisation and the inflated offer price are all significantly correlated to the MAAR of the first day. This means that these company characteristics can be used to predict the MAAR of the first day. Thus, Table 5.49 reveals that the more shares were issued before initial listing, the lower the MAAR of the first day would be. This was the same for the inflated market capitalisation: The higher the market capitalisation was for a company prior to initial listing, the lower the MAAR of the first day was. Finally, the inflated offer price reveals the same as the two aforementioned company characteristics, namely that the higher the offer price was prior to initial listing, the lower the MAAR of the first day would be.

5.3.6 Financial factors and underpricing

This section focuses on the financial factors that affected the level of underpricing (MAAR) received on the JSE from 1996 to 2011 and documents the levels of MAAR based upon the financial variables, the financial ratios and the market-related ratios. Lastly, the significance of all the tests is concluded by showing which financial factors were significant predictors of the MAAR of the first day.

5.3.6.1 Financial variables

The financial variables include the pre-listing turnover, NPAT, turnover growth and NPAT growth, the total assets and the ordinary shares. These financial variables are used to measure the size and the risk of an IPO prior to initial listing.

Table 5.50: Pre-listing Turnover and the Level of Underpricing

Turnover	No. of IPOs	% of IPOs	MAAR	
			First day	**% Increase in MAAR**
<R0 m	13	3.7%	2.6%	-13.0%
R0 to R99.9 m	170	48.9%	31.5%	-3.5%
R100 to R499 m	98	28.2%	17.7%	-5.3%
R500 to R999 m	19	5.5%	12.5%	-5.0%
≥R1000 m	48	13.8%	7.7%	-2.7%
Total	**348**	**100.0%**	**22.2%**	**-4.3%**
ANOVA Sig.			**0.128**	**0.349**

Table 5.50 shows that there was no significant difference in the level of underpricing and the pre- listing turnover. However, it is evident from Table 5.50 that the IPOs with a turnover of between R0 and R100 million were substantially more underpriced than the rest of the sample was. This indicates that the smaller the turnover of an IPO was prior to listing, the higher the level of underpricing (MAAR) was on the first day of trading. It is also revealed that the larger the company was (with a turnover of more than R500 million), the lower the level of underpricing became. The percentage increase in MAAR tended to be negative for all of the IPOs; however, it does seem that the largest IPOs companies (with a turnover more than R1000 million) tended to have lower levels of percentage decrease on their MAAR.

Table 5.51: NPAT and the Level of Underpricing

NPAT	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
<R0 m	64	17.8%	14.1%	-4.9%
R0 to R0.9 m	32	8.9%	75.5%	-18.9%
R1 to R4.9 m	54	15.0%	34.0%	3.7%
R5 to R19.9 m	101	28.1%	27.3%	-5.8%
≥R20 m	109	30.3%	11.7%	-3.3%
Total	**360**	**100.0%**	**24.4%**	**-4.7%**
ANOVA Sig.			**0.000***	**0.507**

Significant at 1%

Table 5.51 reveals that there was a significance difference between the level of underpricing and the NPAT prior to listing. It is also visible that the smaller an IPO was prior to initial listing (NPAT below R20 million), the higher the MAAR of the first day would be. However, the level of underpricing decreased drastically when the NPAT was above R20 million This shows that the riskier an IPO was, the more underpriced the offering became to attract additional investors. Finally, it is observed that the percentage decrease in MAAR was the highest for IPOs with a NPAT between R0 and R0.9 million.

Table 5.52: Turnover Growth and the Level of Underpricing

Growth in % Category	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
<0%	47	17.9%	14.4%	-4.4%
0-99.9%	144	55.0%	24.8%	-6.9%
≥100%	71	27.1%	45.9%	-3.2%
Total	**262**	**100.0%**	**28.2%**	**-5.5%**
ANOVA Sig.			**0.011***	**0.914**

Significant at 5%

From Table 5.52, it is observed that there was a significant relationship between the turnover growth and the level of underpricing on the first day of trading. The higher the turnover growth of the IPOs was (from the year prior to listing to the first year after listing), the higher the MAAR was on the first day of trading. Finally, it is revealed that IPOs with a turnover growth rate of more than 100% were substantially more underpriced than IPOs with a lower growth rate were.

Table 5.53: NPAT Growth and the Level of Underpricing

Growth in % Category	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
<0%	85	30.2%	17.4%	-3.5%
0-99.9%	86	30.6%	19.5%	-4.5%
≥100%	110	39.2%	39.3%	-5.7%
Total	**281**	**100.0%**	**26.2%**	**-4.7%**
ANOVA Sig.			**0.014***	**0.972**

Significant at 5%

In Table 5.53 it is evident that there was a significant difference in the NPAT growth and the initial levels of underpricing on the first day of trading. This means that the higher the NPAT growth was for an IPO, the higher the MAAR of the first day would be.

Table 5.54: Pre Listing Total Assets and the Level of Underpricing

Total Assets	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
0 to R99.9 m	103	35.0%	47.5%	-14.2%
R100 to R499.9 m	95	32.3%	15.7%	3.6%
≥R500 m	96	32.7%	15.7%	-4.0%
Total	**294**	**100.0%**	**26.0%**	**-5.3%**
ANOVA Sig.			**0.000***	**0.112**

Significant at 1%

Table 5.54 reveals that there is a significant relationship between the level of underpricing and the total assets held by an IPO before listing. It is also evident that IPOs with total assets worth less than R100 million were substantially more underpriced than IPOs with total assets more than R100 million were. This means that larger IPOs tended to be less underpriced than smaller IPOs were. It also seems that smaller IPOs (with total assets below R100 million) tended to have a higher percentage decrease in their MAAR from the first day to the first month, although this was not found to be statistically significant.

Table 5.55: Pre-listing Shareholders' Equity and the level of Underpricing

Ordinary Shares (Equity Shares)	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
>R10 m	62	17.2%	27.0%	-4.1%
R10 to R49.9 m	100	27.7%	32.9%	-3.3%
R50 to R199.9 mil	103	28.5%	16.2%	-6.1%
≥R200 m	96	26.6%	13.0%	-3.4%
Total	**361**	**100.0%**	**21.8%**	**-4.2%**
ANOVA Sig.			**0.004***	**0.649**

Significant at 1%

From Table 5.55, it is clear that there was a significant difference between the shareholders' equity owned by an IPO before listing and the level of MAAR on the first day of trading. It is further observed that the smaller the shareholders' equity was for an IPO prior to listing the more underpriced the IPO tended to be. It also reveals that the bigger an IPO became (with more than R50 million of shareholders' equity owned) the lower the level of underpricing became.

5.3.6.2 Financial ratios

The financial ratios documented in this subsection include the debt ratio, current ratio, ROA and the ROE. The financial ratios are used to predict the solvency, liquidity and the profitability of a company prior to initial listing.

Table 5.56: Pre-listing Debt Ratio and the Level of Underpricing

Debt Ratio in % Category	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
0-19.9%	109	30.7%	36.3%	-5.6%
20-39.9%	74	28.8%	22.9%	-4.9%
40-59.9%	72	20.3%	10.8%	-6.4%
≥60%	100	28.2%	22.3%	0.4%
Total	**355**	**100.0%**	**24.1%**	**-3.9%**
ANOVA Sig.			**0.017***	**0.850**

Significant at 5%

Table 5.56 indicates that there was a significance difference between the level of underpricing and the amount of debt owed (debt ratio). Table 5.56 reveals that IPOs with a debt ratio of less than 20% were the most underpriced; it is also very interesting to see that IPOs with a debt ratio of between 40-60% were substantially

less underpriced than the rest of the IPOs were. Although it was not found to be significant, IPOs with a debt ratio of more than 60% would have a slight percentage increase in the MAAR from the first day to the first month of listing.

Table 5.57: Pre-current Ratio and the Level of Underpricing

Current Ratio in Category	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
0-0.9	65	20.4%	15.7%	-5.9%
1.0-1.9	121	38.1%	22.6%	1.9%
≥2.0	132	41.5%	23.3%	-5.2%
Total	**318**	**100.0%**	**21.5%**	**-2.7%**
ANOVA Sig.			**0.560**	**0.524**

Table 5.57 reveals that there was no significant relationship between the current ratio and the MAAR of the first day. However, it seems that the lower the current ratio was prior to initial listing (below 1), the lower the level of underpricing (MAAR) was.

Table 5.58: Pre-listing ROA and the Level of Underpricing

ROA Ratio in % Category	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
<0%	62	17.3%	15.0%	-4.9%
0-10.9%	190	53.1%	28.1%	-2.8%
≥11%	106	29.6%	24.2%	-8.3%
Total	**358**	**100.0%**	**24.6%**	**-4.8**
ANOVA Sig.			**0.241**	**0.726**

Table 5.58 shows that there was no significant difference between the MAAR of the first day and the ROA before initial listing. Although it is not significant, it seems that IPOs with a ROA of less than 0% would have the lowest levels of underpricing.

Table 5.59: Pre-listing Return on Equity (ROE) Ratio

ROE Ratio in % Category	No. of IPOs	% of IPOs	MAAR	
			First day	% Increase in MAAR
<0%	60	16.8%	14.6%	-6.3%
0-19.9%	172	48.2%	30.8%	-2.9%
≥20%	125	35.0%	20.8%	-6.3%
Mean	**357**	**100.0%**	**24.4%**	**-4.7%**
ANOVA Sig.			**0.085***	**0.858**

Significant at 10%

Table 5.59 indicates that there was a significance difference only at a 10% level between the ROE prior to initial listing and the MAAR of the first day. Table 5.59 reveals that IPOs with a ROE of less than 0% prior to initial listing had the lowest levels of underpricing, whereas IPOs with a ROE of between 0% and 9.9% were underpriced the most.

5.3.6.3 *Market-related ratios*

The market-related ratios are the P/E offer ratio and the MV/BV ratio. Neneh (2013:86) states that the P/E ratio is the best indicator investors can use to judge the performance of different companies in the market. Beukes (2010:3) adds that companies with high MV/BV ratios tend to outperform the market. Thus, the P/E ratio and the MV/BV ratio were used to predict the market value of an IPO prior to initial listing.

Table 5.60: Comparing the P/E Offer Ratio and the MAAR of the First Day

P/E Ratio	No of IPOs	% of IPOs	MAAR	
			First Day	**% Increase in MAAR**
<0	62	17.4%	14.7%	-4.4%
0-9.99	44	12.3%	20.8%	-9.2%
10-19.99	108	30.3%	17.1%	-4.5%
20-49.99	81	22.7%	38.0%	-16.8%
≥50	62	17.4%	33.2%	-16.8%
Total	**357**	**100.0**	**24.3%**	**-5.1%**
ANOVA Sig.			**0.030***	**0.228**

Significant at 5%

Table 5.60 indicates that there was a significance difference in the level of underpricing and the P/E ratio before initial listing. It is further revealed that the lower the P/E ratio was prior to initial listing, the lower the level of MAAR was on the first day of trading, with the exception of the 0-9.9 category. IPOs with a P/E offer ratio of less than 20 would be substantially less underpriced when compared to the higher levels of P/E. It is very interesting to see that IPOs with a P/E ratio of more than 20 would have the greatest percentage decrease in MAAR from the first day to the first month, even though it was found not to be significant.

Table 5.61: Pre-listing Market Value to Book Value (MV/BV) Ratio

MV/BV Ratio in Category	No. of IPOs	% of IPOs	MAAR	
			First Day	% Increase in MAAR
0-0.9	20	5.7%	5.6%	-5.9%
1-1.9	104	29.8%	29.9%	-9.8%
2-3.9	93	26.6%	21.3%	-6.1%
4-5.9	50	14.3%	35.7%	1.6%
6-9.9	36	10.3%	29.7%	-3.0%
≥10	46	13.2%	15.4%	-0.01%
Total	**349**	**100.0%**	**24.9%**	**-5.0%**
ANOVA Sig.			**0.174**	**0.880**

There is no significant relationship between the MV/BV and the MAAR of the first day in Table 5.60. Although it is not significant, it seems that IPOs with a MV/BV below 1 had the lowest level of underpricing, while IPOs with a MV/BV between 1 and 10 had the highest levels of underpricing.

5.3.7 Description of underpricing on the JSE

This section reports on the effect underpricing had on the first day, first week and first month of MAAR for IPOs listed on the JSE from 1996 to 2011. It was revealed that 41% of the IPOs listed on the JSE obtained reasonable levels of underpricing (between 0-20%), whereas only 35.5% of IPOs obtained returns of more than 20%. However, it was observed that the data were extremely skew because of outliers in the data. By using natural logs to reduce the level of Skewness, the study ensured that the data were as close to that of a normal distribution as possible. It was revealed that the MAAR of the first day and the MAAR of the first week were correlated significantly, indicating that the first week of trading need not to be used for the rest of the study. The same correlation was observed for the first day of trading to the first month of trading. However, it was observed that, although the percentage increase in MAAR from the first day to the first month of trading correlated negatively (statistically significant), it was observed that the regression was extremely small, making it almost impossible to predict the percentage increase in MAAR accurately.

The second subsection documents the hot and cold market periods on the JSE. It was found that the level of underpricing in hot and cold market periods differed

significantly. It was also found that the levels of underpricing were decreasing in each market period, as the second hot and cold market periods received half of what the first hot and cold market periods achieved. By examining the two hot and two cold market periods, it was found that the number of IPO listings were declining drastically, which can be attributed to the lower levels of MAAR for the second hot and cold market periods.

When the Main Board and the AltX on the JSE were compared, it was observed that the AltX IPOs were significantly more underpriced. This was attributed to the possibility that the IPOs on the AltX had higher levels of information asymmetry, which could lead to an increase in the level of underpricing. This phenomenon is observed around the world and is not isolated to the AltX. It also seems that IPOs listed on the AltX had a percentage decrease in their MAAR from the first day to the first month, even though it was found not to be significant.

When the different sectors on the JSE were compared, significantly different levels of underpricing were observed for these sectors. It was found that the electronic and technology (IT) sector had the highest levels of underpricing, followed by the financial sector. This corresponded with other South African studies. The basic material sector had almost the lowest level of underpricing of all the Main Board sectors.

The company characteristics revealed that younger and smaller IPOs tended to be significantly more underpriced than older and larger IPOs were. It should be noted that the correlation between the total issued shares, the inflated market capitalisation and the inflated offer price was negative. This means that the stronger these specific characteristics were, the lower the MAAR of the first day would be for the IPO.

The financial variables revealed that the smaller the turnover and total assets prior to listing were, the higher the levels of underpricing were. It is also observed that the larger an IPO was prior to initial listing (turnover and total assets), the lower the levels of underpricing were. This confirms that small and risky IPOs intentionally underprice their offerings to attract additional investors. The financial ratios were very inconclusive in determining a relationship with the MAAR of the first day, while the debt ratio was the only financial ratio that yielded significant results. The market-

related ratios also confirm that the P/E ratio was the only ratio that yielded significant results, which can be used to predict the MAAR of the first day for IPOs on the JSE.

5.4 Medium-term Performance using Absolute (BHR) and Relative (BHAR) Returns

This last part of the data chapter reports on how the level of underpricing (MAAR) affected the absolute (BHR) and relative (BHAR) medium-term performance of IPOs on the JSE. The absolute and relative returns are discussed in Chapter 3, where it is concluded that, although both measurements of performance are important, the relative returns are regarded as more relevant to this study. The medium-term performance was analysed over periods of one year and three years. Neneh (2013:144) defines absolute returns as the returns on an investment portfolio achieved over a certain period that is not compared to other measures or benchmarked, whereas relative returns are the difference between the absolute returns and the performance of the market ,which is gauged by a benchmark. It should be noted that IPOs delisted from the JSE because of failure and mergers, which caused the sample to decrease from 390 to 325 in three (3) years. For this part of the chapter, the normal MAAR was used instead of the naturally logged MAAR.

This section is divided into three subsections, the first of which deals with the medium-term performance and the IPO market periods and also includes the opening BHAR versus the closing BHAR. Secondly, the absolute and relative returns received for IPOs based upon the level of MAAR received on the first day of trading were analysed. Finally, the effect the MAIN BOARD and the AltX, as well as hot and cold markets, had on the medium-term performance of IPOs are discussed.

5.4.1 Medium-term performance and IPO market periods
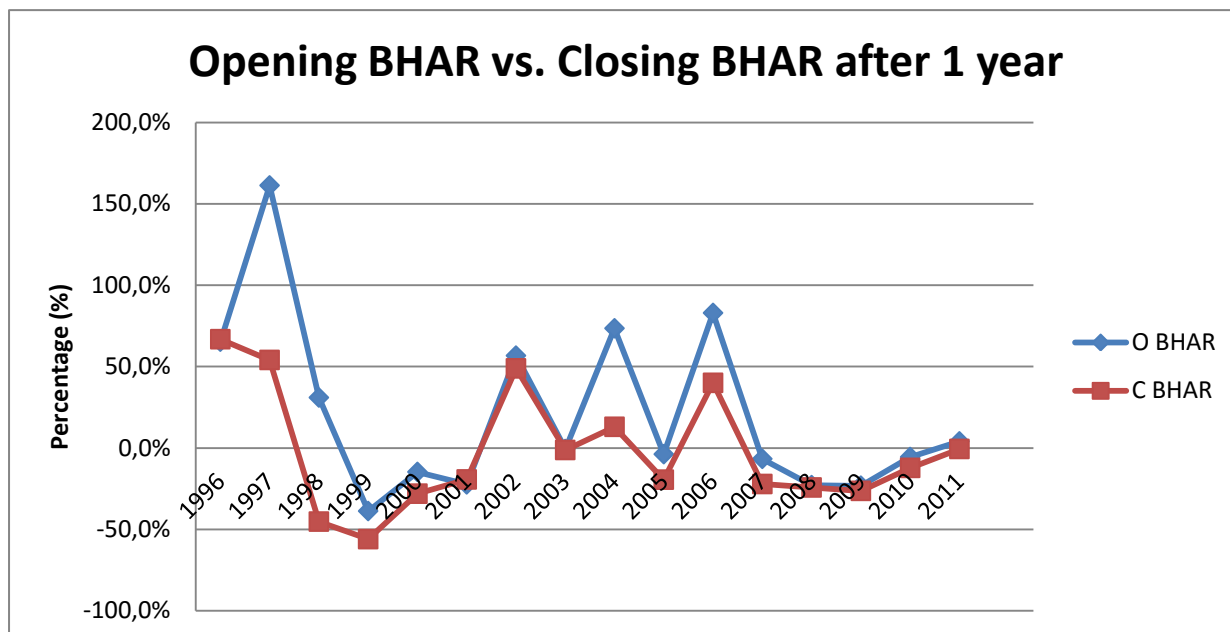
Figure 5.2: Opening BHAR versus closing BHAR for IPOs from 1996-2011.

In Figure 5.2, the opening BHAR of the first year is compared with the closing BHAR of the first year. The opening BHAR was calculated by using the initial offer price; thus, before underpricing occurred. The closing BHAR used the share price at the end of the first day with underpricing. The annual performance achieved over the 16-year period clearly varied, as there were certain periods with higher medium-term performance. The IPOs that achieved better medium-term performance were affected by the hot and cold market periods, as companies tended to perform better in the hot market periods. This trend reveals that the market tended to overreact with the opening BHAR and clearly compensated for it with the decline in the closing BHAR, once underpricing was accounted for. Thus, the difference between the annual performance of IPOs on the JSE using the opening BHAR versus the closing BHAR was at its biggest in hot market periods because of the high levels of underpricing in the hot market periods. For the rest of this study, only the opening BHAR was used.

Table 5.62 was constructed to document the levels of medium-term performance for the individual companies attempting to list during the period of 1996 to 2011.

Table 5.62: Absolute returns (BHR) versus the number of IPOs

Category of abnormal returns (BHR)	No. of IPOs	% of IPOs	Opening BHR	
			BHR Year 1	3 Year Avg. BHR
<-40.0%	116	29.7%	-65.4%	-73.6%
-39.9% to -0.1%	83	21.3%	-21.1%	-17.8%
0% to 39.9%	78	20.0%	15.8%	20.1%
≥40.0%	113	29.0%	213.8%	36.7%
Total (Mean)	**390**	**100.0%**	**41.2%**	**-12.0%**

Table 5.62 shows that IPOs that underperformed in the market in the first year of listing had bad absolute returns over a three-year period. However, it is a good thing to see that IPOs that initially received a positive first year BHR of more than 40% still had positive returns over a three-year period, even though the value diminished from an average of 213.8% to merely 36.7%. It is interesting to see that IPOs that had a medium-term performance of between 0-40% had a 4.3% increase in their average three-year medium-term performance. Thus, IPOs listed on the JSE between 1996 to 2011 received positive absolute returns in the first year; however, they underperformed in the medium term (three years).

Table 5.63: The Relative Returns (BHAR) Versus the Number of IPOs

Category of abnormal returns (BHAR)	No. of IPOs	% of IPOs	Opening BHAR	
			BHAR Year 1	3-year Avg. BHAR
<-50.0%	109	27.9%	-80.8%	-88.4%
-49.9% to -0.1%	115	29.5%	-24.0%	-50.4%
0% to 49.9%	81	20.8%	19.7%	-2.5%
≥50.0%	85	21.8%	229.7%	6.0%
Total (Mean)	**390**	**100.0%**	**30.3%**	**-39.8%**

Table 5.63 reveals that 57.4% of the IPOs underperformed in their first year of listing in relative terms, compared to 77.9% of IPOs that underperformed over a three-year period. It is also observed from Table 5.63 that the average relative returns received are lower than the average absolute returns indicated in Table 5.64. It is perturbing that IPOs that initially received positive first-year returns (BHAR) of more than 0% to 49.9% had an average of -2.5% over three years. Finally, Table 5.63 reveals that 78.2% of the IPOs underperformed in the market in the medium term, while only 21.8% of IPOs had positive returns over a period of three years.

5.4.1 The relationship between MAAR and the medium-term performance

Table 5.64 was constructed, as it was expected that the MAAR of the first day could be used to predict the level of medium-term performance for both absolute and relative returns.

Table 5.64: The Effect MAAR has on the Absolute Returns (BHR)

First day MAAR	No. of IPOs	% of IPOs	First day MAAR	Opening BHR	
				BHR Year 1	BHR 3-year Avg.
<0	92	23.6%	-11.5%	-6.6%	-10.4%
0%-19.9%	159	40.8%	7.8%	1.6%	4.8%
20%-99.9%	100	25.6%	45.4%	54.0%	-29.5%
≥100%	39	10.0%	260.8%	282.4%	-37.7%
Total	**390**	**100.0%**	**38.2%**	**41.2%**	**-12.0%**
Pearson Sig.				**0.000***	**0.190**

Significant at 1%

Table 5.64 confirms that the MAAR of the first day significantly affected the first-year opening BHR (absolute returns). It is also revealed that if the MAAR of the first day was negative, so were the absolute returns after the first year of listing, whereas IPOs with a positive MAAR performed positively in the medium term. Although there was no significant relationship between MAAR and the three-year BHAR, IPOs had an average absolute return of -12.0% over a period of three years.

Table 5.65: The Effect MAAR has on Relative Returns (BHAR)

First day MAAR	No. of IPOs	% of IPOs	First day MAAR	Opening BHAR	
				BHAR Year 1	BHAR 3-year Avg.
<0	92	23.6%	-11.5%	-19.6%	-37.2%
0%-19.9%	159	40.8%	7.8%	-8.3%	-30.4%
20%-99.9%	100	25.6%	45.4%	44.6%	-45.3%
≥100%	39	10.0%	260.8%	269.0%	-72.4%
Total	**390**	**100.0%**	**38.2%**	**30.3%**	**-39.8%**
Pearson Sig.				**0.000***	**0.282**

Significant at 1%

Table 5.65 indicates that the MAAR of the first day significantly influenced the opening BHAR (relative returns) of the first year, as IPOs with a positive MAAR of the first day would perform positively in the medium term. Finally, it is observed that

IPOs underperformed in the market over three years, as the relative returns were -39.8% with no significant relationship between MAAR and the three-year BHAR.

5.4.2 Medium-term performance versus the hot and cold markets

This subsection reveals the medium-term performance of IPOs listed in the hot and cold market periods. Table 5.66 was constructed to show the significance between the MAAR of the first day and the medium-term performance of IPOs during hot and cold market periods.

Table 5.66: The Main Board versus AltX and the Effect MAAR had on the Medium-term Performance (BHR and BHAR)

Market Periods	Measurement	First day MAAR	Opening BHAR	
			BHAR Year 1	BHAR 3 Year Avg.
Hot	Mean	53.3%	38.3%	-56.7%
	Std. Dev	114.2%	222.1%	82.3%
	Median	17.3%	-16.8%	-80.9%
	Sample Size	262	262	218
	% of IPOs	67.2%	67.2%	67.1%
Cold	Mean	7.3%	14.1%	-5.4%
	Std. Dev	21.3%	122.7%	143.4%
	Median	2.9%	-8.2%	-36.3%
	Sample Size	128	128	107
	% of IPOs	32.8%	32.8%	32.9%
Total	**Mean**	**38.2%**	**30.3%**	**-39.8%**
	Std. Dev	**96.8%**	**195.3%**	**108.8%**
	Median	**9.9%**	**-12.9%**	**-72.1%**
	Sample Size	**390**	**390**	**325**
	% of IPOs	**100.0%**	**100.0%**	**100.0%**
ANOVA Sig.		**0.000***	**0.251**	**0.000****

Significant at 1%

From Table 5.66, it is observed that the relationship between the MAAR of the first day and the medium-term performance of IPOs during hot and cold market periods over a three-year period is significant. Table 5.66 clearly shows that IPOs listed during hot market periods received substantially higher relative returns than those that listed during cold market periods in the first year of listing; however, this was found not to be significant. The IPOs that listed during hot market periods performed substantially worse over a period of three years when compared to the IPOs that listed during the cold market. Neneh (2013:147) had similar findings with the relative

returns of -95.95% during the hot market, while the cold market returns were 13.18%. Her study documented the medium-term performance of IPOs over a period of 5 years. This confirms that IPOs listed during hot periods do perform significantly worse over a three-year period than IPOs listed during cold market periods.

5.4.3 Medium-term performance versus the Main Board and the AltX

This subsection reveals the medium-term performance of IPOs listed on the Main Board and the AltX. Table 5.67 was prepared to show the significance between the MAAR of the first day and the medium-term performance of IPOs listed on the Main Board or the AltX.

Table 5.67: The Main Board versus AltX and the Effect MAAR had on the Medium-term Performance (BHR and BHAR)

JSE Listing Boards	Measurement	First day MAAR	Opening BHAR	
			BHAR Year 1	BHAR 3-year Avg.
Main Board	Mean	26.8%	34.4%	-26.8%
	Std. Dev	72.4%	204.2%	122.5%
	Median	6.2%	-6.6%	-57.4%
	Sample Size	264	264	222
	% of IPOs	67.7%	67.7%	68.3%
AltX	Mean	62.2%	21.7%	-67.8%
	Std. Dev	131.4%	175.7%	62.7%
	Median	21.2%	-29.3%	-89.1%
	Sample Size	126	126	103
	% of IPOs	32.3%	32.3%	31.7%
Total	**Mean**	**38.2%**	**30.3%**	**-39.8%**
	Std. Dev	**96.8%**	**195.3%**	**108.8%**
	Median	**9.9%**	**-12.9%**	**-72.1%**
	Sample Size	**390**	**390**	**325**
	% of IPOs	**100.0%**	**100.0%**	**100.0%**
ANOVA Sig.		**0.001***	**0.549**	**0.001***

Significant at 1%

Table 5.67 reveals a significant relationship between the MAAR of the first day and the medium-term performance of IPOs listed on the Main Board and the AltX. Table 5.67 clearly shows that IPOs listed on the Main Board achieved substantially higher returns over a period of one year; however, both the Main Board and AltX still underperformed in the market over a period of three years. Although both listing

boards underperformed in the market over three years, the Main Board performed significantly better when compared to the AltX.

5.4.4 Description of medium-term performance

This section reveals that the MAAR of the first day can be used to predict the medium-term performance of IPOs on the JSE. It is very interesting to see that IPOs that initially were more underpriced on the first day of trading tended to perform substantially better in the medium term over a period of one year. It was also found that IPOs that listed during a hot market periods outperformed those that listed during the cold market period substantially after one year of listing; however, the three-year performance for the hot market IPOs was substantially worse than that of the cold market periods. Finally, it was observed that IPOs listing on the received better returns in the first year following the initial listing than IPOs listed on the AltX did. Still, both the Main Board and the AltX underperformed in the market over a period of three years, confirming that South African IPOs underperform in the medium term.

CHAPTER 6

CONCLUSION

6.1 Introduction

The aim of this chapter is to give feedback about the study that was undertaken to investigate factors and characteristics that impcat the level of underpricing of IPOs in South Africa. This study found ways in which it could assist investors in achieving superior returns on their investments by improving the IPO-selection process. Consequently, the typical investor would ask which of the factors and characteristics explained and examined in this study can be used to predict the MAAR of the first day. To answer this question, the empirical chapter documented the different levels of underpricing followed by the factors and characteristics that were highlighted in both Chapters One and Four that impact underpricing. The factors and characteristics included the hot and cold market periods, the Main Board versus the AltX, the different sectors in the JSE, company characteristics and financial factors. From the empirical chapter (Chapter 5), possible answers to the objectives set in Chapter 1 can be formulated. This creates an opportunity to elaborate on the results while proposing some recommendations for potential future investors.

The purpose of this chapter is to provide the reader with a discussion of the empirical research findings. The chapter is divided into four sections: The first section provides a discussion regarding the theoretical findings. The second section gives feedback about empirical findings observed in Chapter 5. The third section gave feedback about the objectives of the study. The fourth provides recommendations to future investors, IPO companies and researchers while finally presenting the study limitations.

6.2 Discussion of the Theoretical Chapters

The discussion presents the theoretical findings of the thesis up to Chapter 4, the methodology chapter. The conclusions of the theoretical chapters are presented below.

6.2.1 The proposal (Chapter 1)

This chapter gave a broad overview about the study and the problems faced in the IPO environment. According to Spinelli and Adams (2012:395), going public is seen as a very important event in the life of a young company, as it provides the company access to additional equity capital. Agarwal (2006:7) defines an IPO as the first time a company sells its securities to the public. Hansen and Jørgensen (2010:4) add that underpricing happens when investors have an opportunity to earn positive returns on newly issued stock on a stock market. Ljungqvist (2004:1) claims that underpricing is a dilemma in all the stock exchanges around the world. Neneh (2013:201) found that there are two important factors regarding IPOs, namely short-term performance (underpricing) and long-term performance (underperformance). Khurshed and Mudambi (2002:698) define short-term performance as the returns obtained in the market days and sometimes weeks after the immediate listing, whereas Drobetz *et al.* (2005:254) define underperformance as poor returns received on an IPO over a long period.

High levels of underpricing are witnessed around the world, as Neneh and Smit (2013:898) found JSE IPOs to be underpriced on average by 67.51% on the first day of trading. Boulton *et al.* (2007:28) mention levels of underpricing for the following countries: Indonesia (41%), Malaysia (41%), South Korea (44%), Taiwan (13%) and Thailand (26%). This confirms that there is disparity amongst the levels of underpricing around the world. To make matters worse, Drobetz *et al.* (2005:271) found that Swiss IPOs were underperforming in the market by 7.45% after three years, by 21.71% after four years, and 62.5% after eight years. M'kombe and Ward (2002:12) found that IPOs on the JSE were underperforming in the market by 21.09% after three years and by -61.56% after five years, whereas Neneh (2013:133) found the underperformance to be 56.33% after three years and 64.37% after five years. This confirms that underpricing and long-term underperformance are evident in most countries, regardless of the periods observed.

For this study, underpricing was viewed as the most important factor. To improve the selection process of IPOs, several market-related factors, company characteristics and financial factors that could potentially affect the level of underpricing were identified. These were elaborated in Chapter 3 (underpricing of IPOs).

The proposal chapter includes a primary objective and numerous secondary objectives and briefly discusses the research mythology, the literature review and the empirical study for this study. It finally focuses on the importance of the study and gives a very brief description of the contribution and limitations of the research study.

6.2.2 A general overview of IPOs (Chapter 2)

Chapter 2 provides insight into the history of IPOs worldwide and in South Africa. The stock market has a very prominent role in the economy, as the price of shares and the value of publicly owned companies are established on the stock market (Neneh, 2013:202).

The chapter begins by focussing on the role the security exchange plays in the IPO process. Younesi *et al.* (2012:141) states that IPOs are the first issuance of securities with the purpose of selling shares to the wider public. Levinson (2011:8) adds that this is a form to raise additional capital to finance corporate endeavours. The securities exchange has financial systems that help to carry out vital roles such as fund channelling to individuals or organisations that have the funding that is required to make investment opportunities happen. The second part of the chapter documents the history of IPOs. Levinson (2011:8) states that the idea of stock markets has been around for a while, as the issuing of corporate stocks was established by the Dutch East India Company in 1602. According to Abdulrahim (2013:3), the stock exchange plays an important role in the economy of any country, as it symbolises the commerce of the modern world.

The JSE has been functioning for more than 127 years and is the second oldest stock exchange in Africa (Jefferis & Smith, 2005:66; Mahama, 2013:14). Mahama (2013:14) adds that the JSE is also the largest stock exchange in Africa, as it consists of 90% of the market capitalisation in Africa. In Chapter 2, the full history of the JSE is discussed, from the founding of gold at Langlaagte in 1886 to the temporarily closure of the JSE due to the Anglo Boer War between 1899 to 1901 and during the First World War between 1914 to 1915. It also includes the new virtual trading game launched in 2013. The legislation regarding listing an IPO is discussed, as well as the price associated with going public for IPOs on both the Main Board and AltX. The advantages and disadvantages of listing are discussed. The key players that assist companies in the listing process, such as the current

shareholders, the issuing company, the underwriters/investment bankers, the accountant, attorneys, the SEC and the investors, are discussed in full.

The final section of the chapter documents the difference between the Main Board and the AltX. Sher (2006:32) states the importance of the King Code of Corporate Governance, as the King Code is a list of mandatory requirements to which a company should adhere if it wishes to be listed on the JSE. Currently, the third King Code is implemented. The listing requirements for the AltX and the Main Board, which include the appointment of board members, the balance of power and the appointment of financial directors, are discussed in full. The last focus of the chapter is on the financial criteria that allow a company to list on the JSE. Again, the differences between the Main Board and the AltX are discussed; it is clearly visible that the less stringent requirements for the AltX are there to entice smaller companies to list their offerings on the AltX.

6.2.3 Underpricing of IPOs (Chapter 3)

The different theories behind underpricing and the existence of underpricing in different markets around the world are documented in Chapter 3. The chapter begins by explaining the term *underpricing,* which occurs when the offer price of newly issued shares is lower than the trading price of the first day (Adams *et al.*, 2008:67). Buchheim *et al.* (2001:2) add that underpricing is a potential loss of initial investment for the shareholders of a company, as money is left on the table. Agathee *et al.* (2012:20) state that underpricing creates an investment opportunity for opportunistic investors if they can acquire the correct IPO at the offer price and sell it in the aftermarket at a sizeable profit.

The next focus was on the different levels of underpricing around the world. IPOs from industrialised economies, emerging industrialised economies (EIEs) and developing countries were compared. It was clearly visible that the EIEs were the countries with the highest levels of underpricing, although the industrialised economies had the greatest presence of the 48 countries sampled. The focus then shifted to the levels of underpricing on the JSE, and it was visible that underpricing did occur on the JSE, as numerous other South African studies confirm (Alli *et al.*, 2010:13; Neneh & Smit, 2013:898; Van Heerden & Alagidede, 2012:133). Thus,

underpricing is an occurring phenomenon on the JSE, as numerous South African studies have proven its existence.

The chapter then proceed to document behavioural theories behind underpricing. These theories set out to explain why underpricing occurs and how investors can use these theories to either obtain returns on their investments or how to avoid failure and disappointment. According to Brau and Fawcett (2006:409), CFOs attempt to act rationally when it comes to IPOs, as they look for certain characteristics in a company that can improve the success rate of the IPO. Karlis (2008:83) found that behavioural explanations were also linked to companies intentionally underpricing their IPOs to attract uninformed investors for additional funding. The behavioural theories include information asymmetry, underwriter's assistance, the winner's curse, the signalling hypothesis, lawsuit avoidance, and the efficient market theory.

Next, it was necessary to document the factors and characteristics that affect the level of underpricing of IPOs around the world. These factors are very important, as they were used in the empirical chapter as indicators of what the level of underpricing would be for an IPO on the first day of listing. The factors and characteristics were split up into market-related factors, which included the hot and cold market periods, Main Board versus the AltX, and the sectors in the JSE. According to Govindasamy (2010:14), IPOs are cyclical by nature, as the frequency of IPOs differs for hot and cold market periods. Numerous studies referred to in chapter three have found that IPOs time their listings to coincide with hot market periods because hot market periods usually have a higher volume of offerings, frequent oversubscription of offerings and overly optimistic investors. Mkhize and Msweli-Mbanga (2006:86-87) mention that the AltX IPOs tend to be much smaller and riskier than the Main Board IPOs; however, the AltX IPOs yield significantly higher returns. The JSE consists of 10 sectors, but this study reduced them to six, namely basic materials, consumers, industrial, electronic and technology (IT), financial, and the AltX. This made it easier to analyse the IPOs, as some groups would have been extremely small while others would have been too large, causing irregularities and inconsistencies in the findings.

The next section focused on the company characteristics, which included the age of an IPO before initial listing, the offer price, the amount of shares issued, and the market capitalisation. Gounopoulos *et al.* (2009:14) and Neneh and Smit (2014:3) found that older IPOs (that had more experience prior to listing) tend to have a lower failure rate than younger IPOs have. Yang and Ding (2012:8) add that older IPOs have better aftermarket performance than younger IPOs have. The size of the offering refers to the offer price and the market capitalisation. Numerous studies found that the larger the size of the offering was prior to listing, the less underpriced the IPO was. The last factors were the financial ratios, which consisted of financial variables, financial ratios, and the market-related ratios. The financial variables included the turnover, NPAT, total assets, and shareholders' equity. According to Neneh (2013:87), investors base up to 60% of their investment decisions on financial factors such as the debt ratio and the ROE. The financial ratios included the debt ratio, current ratio, ROA, ROE, whereas the market-related ratios included the P/E and the MV/BV ratios.

The final part of the chapter documents the long-term performance of IPOs on the JSE. As stated in Chapter 1, IPOs tend to underperform in the market in the long term. Therefore, it is important to measure the effect the underpricing of the first day has on the long-term performance of IPOs. The next subsection focused on the absolute and relative returns and the reasons why IPOs delist from a stock exchange. Absolute returns are returns on an investment that are not benchmarked against an index, whereas relative returns are benchmarked against an index, such as the JSE All-share Index (ALSI). For this study, the relative returns were considered superior, as they are benchmarked relatively to the market. IPOs delist from the stock exchange for many reasons; however, the main reasons for delisting are violation of exchange requirements, suspension, poor performance, mergers and acquisitions.

6.2.4 Research methodology (Chapter 4)

This chapter explains the methods that were used in the empirical chapter. The sample consisted of 390 IPOs out of a possible 484 listed on the JSE from 1996 to 2011. The study has a response rate of 80.6% which indicates the validity and accuracy of the study. The sample was reduced to ensure the accuracy of the data;

this was done by removing unavailable data, inconsistencies and unexplainable outliers. To further ensure the accuracy of the data natural logarithms were used to reduce the Skewness present in the data, while the offer price and market capitalisation were also adjusted for inflation by using the CPI.

The main focus of this study was to use the MAAR of the sample as a measurement of short-term performance. The factors and characteristics identified in chapter three were also included in this chapter, as these determinants would be used to see whether the initial level of underpricing (MAAR) could be influenced by the identified factors and characteristics. The chapter also documents the methodology, which included the research design, the sample and the data, how the data were used against the benchmark, the ALSI. Next, the measurements techniques, namely the MAAR, BHR and BHAR, were discussed. The MAAR measured the level of underpricing, whereas BHR (absolute returns) and BHAR (relative returns) were used to determine the level of underperformance in the medium to long term. The factors and characteristics that were identified in chapter three are also presented and discussed in full.

6.3   Discussion of the Findings (Chapter 5)

Chapter 5, presents a discussion of the research findings, which are based upon the level of underpricing, the importance of measuring Skewness and rectifying the outliers by using natural logarithms. Finally the factors and characteristics that impact the level of underpricing were documented.

6.3.1   Underpricing

From the results of the empirical research, it was found that IPOs listed on the JSE were severely underpriced, as observed in Table 6.1.

Table 6.1: Comparing the MAAR

MAAR	First Day	First Week	First Month
Mean	38.2%	38.9%	40.2%
Median	9.9%	8.6%	5.1%
Std. Dev.	96.8%	96.2%	120.7%
Skewness	4.7	4.1	4.7
T-Statistic	7.8*	8.0*	6.6*

Significant at 1%

The MAAR of the first day, first week and first month were underpriced on average by 38.2%, 38.9% and 40.2% respectively. These findings are consistent with those of Neneh (2013:121), Smit (2014:7) and Van Heerden and Alagidede (2012:133). This confirms that the phenomenon of underpricing occurs on the JSE. However, it was also found that there were high levels of standard deviation present in the MAAR. In addition the Skewness present in the normal distribution was concerning because of the inconsistencies and outliers in the data. The Skewness of the data lead to the conclusion that the mean MAAR is not a true reflection of the level of underpricing and challenges the validity and reliability of other research findings reporting high levels of underpricing based upon the mean MAAR. To rectify these problems, natural logarithms were used, which ensures that the data set is as close to a normal distribution as possible and improves the reliability of the study.

Table 6.2: Natural Logarithm MAAR

Logged MAAR	First Day	First Week	First Month
Mean	23.0%	22.1%	17.3%
Std. Dev.	42.3%	46.0%	54.2%
Skewness	1.5	1.0	0.6
T-Statistic	10.6*	9.4*	6.2*

Significant at 1%

Using the natural logs, the new levels of underpricing were reduced significantly to 23.0%, 22.1% and 17.1% on the first day, first week and first month respectively. The standard deviation and the Skewness were also reduced significantly, and the results were found to be significant at the 1% level of statistical significance. The empirical findings also revealed that the MAAR of the first day and the first week and first month were positively correlated. This meant that the MAAR of the first day could be used to accurately predict the MAAR of the first week and the first month; thus, for the rest of the chapter only the MAAR of the first day and the percentage increase in MAAR were used. It was observed that the percentage increase in MAAR from the first day to the first month were correlated negatively; however, the regression was very low, as it fit only a small portion of the sample. This makes it almost impossible to predict the percentage increase in the MAAR of the first month using the MAAR of the first day.

6.3.2 The characteristics of the sample of the study

The sample of IPOs consisted of 390 IPOs from a possible 484 over a period of 16 years, from 1996 to 2011. The study had a response rate of 80.6%, indicating a true reflection of the IPOs listed on the JSE for the selected period. Some of the IPOs originally sampled had to be excluded because of inconsistencies among the various data sources. These unexplainable outliers could have jeopardised the reliability of the data; therefore, they were removed for consistency and accuracy.

From the number of listings per year, it was clearly visible that IPOs tended to be cyclical in nature, as the average number of listings were 24.4 per year. From 1996 to 2011, there were two periods that exceeded the average number of listings per year; these periods are regarded as hot market periods. The hot market periods on the JSE were 1997 to 1999 and 2006 to 2007. The remaining years were all classified as cold market periods. South African studies by Govindasamy (2010:60), Lawson and Ward (1998:17) and Neneh and Smit (2013:900) also documented the phenomenon of hot and cold market periods on the JSE. The empirical data further revealed that the majority of IPOs (67.2%) listed during hot market periods, confirming that IPOs on the JSE attempted to time their listings, causing the phenomena of hot and cold market periods.

The next section focused on the two listing boards on the JSE, the Main Board and the AltX. It was observed that almost 68% of the IPOs listed on the JSE were listed on the Main Board, indicating that the Main Board was the favourite amongst IPO issuers. A very interesting observation was made when comparing the hot and cold market periods of the two listing boards. It was revealed that IPOs listing on the Main Board slightly favoured the hot market periods. as 56.3% listed during hot market periods, whereas 87.3% of the AltX IPOs listed during a hot market period. This reveals that smaller companies are enticed to list during hot market periods, as they believe they can raise additional capital.

According to this study, the Main Board is divided into five sectors, namely the basic material, consumer, industrial, financial and electronic, and technology (IT) sectors. Although the AltX is also classified as a sector, it still stands alone and does not form part of the IPOs (sectors) of the Main Board. The financial and consumer sectors were the most popular among the IPOs of the Main Board, as they represented

18.7% and 16.4% of the IPO sample respectively. It was also observed that IPO issuers favoured the electronic and technology (IT), industrial, and consumer sectors during hot market periods, as these sectors had the majority of their listings during hot market periods.

With regard to company characteristics, it was observed that there were inconsistencies in the data, as almost 28% of the IPOs had changed their names in the same year of listing, which indicates an age before listing of zero years which is highly unlikely. Predominantly, this was the case with regard to companies that changed their names just before the initial listing, with no indication of their years of existence. To ensure the consistency of the data, these IPOs had to be excluded from analyses of 'years prior to listing', which reduced the sample size substantially. From the sample, it was observed that the median age of companies on the JSE was 7 years. When the ages of IPOs in the specific sector were compared, it was found that the IPOs of the financial sector were the youngest of the group, as 67.3% of financial companies on the JSE were younger than 5 years when they listed. The oldest companies were listed in the consumer and industrial sectors.

For the offer price and the market capitalisation, the consumer price index (CPI) was used to adjust for inflation. For the inflation-adjusted market capitalisation and offer price, natural logarithms were used to reduce the Skewness of the data.

Table 6.3: Inflation-adjusted Offer Price

Measurements	Inflated Offer Price Log
Mean (Cents)	1,335.8
Median (Cents)	365.9
Std. Dev.	4,960.0
Skewness	12.6
Adjusted Mean (Cents)	**410.3**
Z Skewness	**4.9**

Table 6.3 shows that the average inflation-adjusted offer price was very high, causing the data to be very skew; this is confirmed by the high standard deviation. After the offer price had been adjusted by using natural logarithms, it was observed that the Skewness and the average inflated offer price dropped significantly. The average inflation-adjusted offer price was reduced from 1,335.8 cents to 410.3 cents.

Table 6.4: Inflation-adjusted Market Capitlization

Measurements	Inflated Market Cap. Log
Mean (R m)	4,429.1
Median (R m)	431.4
Std. Dev.	33,993.7
Skewness	17.1
Adjusted Mean (R m)	**536.5**
Z Skewness	**6.7**

After the adjustments for inflation and natural logarithms, the data were much less skew than they had been initially, and the average adjusted market capitalisation was reduced from R4,429.1 million to R536.5 million.

The last factors were the financial factors, which included the financial variables, financial ratios and market-related ratios. The financial variables confirmed that the majority of the IPOs listed on the JSE were small, as IPOs listed on the JSE typically had a turnover of less than R100 million, with an average of R87.3 million. The median NPAT for the IPOs was R6.9 million; however, there were extreme outliers, as 30.3% of the sample had NPAT of more than R20 million, with an average of R502.8 million. The typical IPO also had total assets below R300 million and had shareholders' equity worth less than R200 million. This confirmed that the majority of companies on the JSE were relatively small.

From the financial ratios, it was observed that the majority of the IPOs (51.5%) had a debt ratio of less than 40%, which was good because those IPOs were financed with more equity than debt. The current ratio revealed that 79.6% of IPOs had a current ratio of more than 1 and would most likely be able to meet their obligations. From the ROA and ROE, it was revealed that the majority of IPOs had a positive financial leverage, as the ROA had an average of 6.1%, while the ROE was 11.6%. The average P/E of 19 over the 16-year period is extremely close to that of the current P/E ratio of 19.5 in 2015. The average MV/BV was 2.8, indicating that the market value of equity, exceeding the book value substantially, was used to determine the initial offer price.

6.3.2 Factors and characteristics affecting underpricing

The cold market period of 1996 was added to the second cold period of 2000 to 2005 for the analyses of the hot and cold market periods. It was observed that the first hot market period was significantly more underpriced than the second hot period. The hot and cold market IPOs were underpriced on average by 32.9% and 5.1% respectively. This is very close to the figures found by Lawson and Ward (1998:17), who documented the hot and cold market returns to be 34% and 12% respectively for the period of 1975 to 1995. Lattimer (2006:233) and Neneh (2013:146-147) also found that hot market IPOs were significantly more underpriced than cold market IPOs. It was observed that, during the cold market periods, the MAAR significantly dropped to 6.5% and 2.5% respectively.

When the Main Board and the AltX were compared, it was revealed that IPOs listed on the AltX were significantly more underpriced than IPOs listed on the Main Board were. Mkhize and Msweli-Mbanga (2006:86-87) also found that IPOs listed on the AltX tended to be significantly more underpriced than IPOs listed on the Main Board were.

The different Main Board sectors on the JSE revealed that the technology and electronic (IT) sector (36.6%), financial sector (17.1%) and consumer (16.1%) sector were underpriced the most in comparison with the other Main Board sectors. This confirmed that IPOs displayed different levels of underpricing, depending on the sector in which they were listed.

From the company characteristics, it was observed that the younger companies tended to have higher levels of underpricing than companies older than 15 years did before initial listing. The Inflation-adjusted market capitalisation revealed that IPOs smaller than R400 million tended to be significantly more underpriced than larger IPOs did. With regard to the inflation-adjusted offer price, it was found that IPOs with an offer price of below 400 cents had significantly higher levels of underpricing than IPOs with larger offer prices had. Finally, the company characteristics and the MAAR of the first day were correlated, which revealed that the company characteristics (inflation-adjusted market capitalisation and the inflation-adjusted offer price) could be used to predict the MAAR of the first day. It was found that the more shares were issued before listing, the lower the MAAR of the first day would be. The same was

observed with regard to the inflation-adjusted market capitalisation and the inflation-adjusted offer price which, simply means that the bigger the company was prior to listing, the lower the level of initial underpricing would be. However, the regression analysis revealed that the age of an IPO prior to listing could not be used to predict the MAAR of the first day.

The last part of the underpricing focussed on financial factors. The financial variables (turnover, NPAT, total assets and shareholders' equity) found that the majority of IPOs listed on the JSE were rather small and risky. The smaller an IPO was prior to initial listing (NPAT below R20 m), the higher the level of underpricing would be on the first day of trading. The total assets and the shareholders' equity also revealed that the smaller an IPO was prior to listing, the more underpriced the offering was on the first day of trading. From the financial ratios, it was found that IPOs with lower debt ratios were more prone to underpricing than IPOs with high levels of debt were; this was not expected, as a higher debt ratio carries more risk. The current ratio and the ROA were insufficient to provide any significant findings; however, it was found that the higher the ROE was before initial listing, the lower the level of underpricing was. Finally, the market-related ratios showed that IPOs with a P/E ratio of above 50 were substantially more underpriced than IPOs with smaller P/E ratios were, whereas the MV/BV proved no significant results in predicting the MAAR of the first day.

The medium-term performance of IPOs is not an critical part of this study; however, it was found that the initial level of underpricing could be used to determine the medium-term (three-year) performance of IPOs on the JSE. The absolute (BHR) and relative (BHAR) performance were measurements for medium-term performance, as discussed in Chapter 3. When IPOs were categorised by the level of underperformance, it was revealed that the absolute (BHR) returns for IPOs over a one-year period and three-year period were 41.2% and -12% respectively. Thus, it is observed that the IPOs perform very well over a period of one year, whereas they underperformed in the market over a period of three years. With regard to relative returns, it was revealed that the returns relative to the market after one year and three years were 30.3% and -39.8% respectively. This confirms that IPOs underperformed in the market over a period of three years. Govindasamy (2010:37)

also found that IPOs listed on the JSE between 1995 and 2006 tended to underperform in the market by 50% after three years (medium-term performance). Although IPOs underperformed in the market over a period of three years, it was observed that the cold market IPOs obtained better returns. Main Board and AltX IPOs underperformed in the market over a period of three years; however, the Main Board received better returns when compared to the AltX.

The high levels of initial underpricing observed on the JSE might entice investors to randomly buy IPO shares at the offer price and resell them at the first day of trading at a premium. The winner's curse theory, combined with the low number of IPOs that generated above-average returns (MAAR above 20%), discredits this approach.

6.4 Objectives

In this section, the extent to which the research objectives formulated in Chapter 1 have been reached is measured. To improve investment decisions, the primary goal was to determine which factors and characteristics significantly impact the level of IPO underpricing on the JSE.

The secondary objectives that supported the primary objective for this research were to:

- ascertain which factors and firm characteristics significantly affected the underpricing of IPOs internationally;

- identify the short-term performance of the 390 companies on the JSE listed from 1996 to 2011;

- measure and analyse the level of IPO underpricing on the first day and in the first week and first month on the JSE in South Africa;

- determine if hot and cold markets affected the level of underpricing of IPOs on the JSE;

- determine whether the size of the issue, the offer price and the use of the Main Board or AltX and certain financial factors affected the level of IPO underpricing;

- determine whether there were different levels of underpricing across the six different sectors on the JSE;

- compare hot and cold markets periods to see which yielded the best investment opportunities for investors; and

- improve investors' short-term returns in their selection of IPOs.

6.4.1 Achievement of the objectives

The primary objective was achieved, as the empirical chapter found that IPOs on the JSE were significantly underpriced. The second part of the primary objective was to identify the factors and characteristics that affected the level of underpricing of IPOs on the JSE. The primary objective was achieved, as the secondary objectives of this study were realised as follows:

- The first secondary objective was to **ascertain which factors and firm characteristics significantly affected the underpricing of IPOs internationally.** This objective was achieved as reported in Chapter 3, section 3.4 – Factors and characteristics impacting underpricing of IPOs.

- The second objective was **to identify the short term performance of the 390 companies on the JSE listed from 1996 to 2011.** This was achieved as reported in Chapter 5, Table 5.28, where the level of underpricing was compared to the number of IPO listings.

- The third secondary objective was **to measure and analyse the level of IPO underpricing on the first day, first week and first month on the JSE in South Africa.** This was achieved as reported in Chapter 5, Table 5.31, where the MAAR figures of the first day, first week and first month were calculated.

- The fourth objective was to determine whether **hot and cold markets had an impact on the level of underpricing of IPOs on the JSE.** In Chapter 5, the entire section 5.3.2 – The effect hot and cold markets have on the JSE – was dedicated to this objective.

- The fifth objective aimed **to determine whether the size of the issue, the offer price, the use of the Main Board or AltX and certain financial factors affected the level of IPO underpricing.** In Chapter 5, this was achieved as reported from section 5.3.3 – Underpricing versus the Main Board and the AltX – until the end of section 5.3.6 – Financial factors and underpricing.

- The sixth objective was **to determine whether there were different levels of underpricing across the six (6) different sectors on the JSE.** This was achieved in section 5.3.4 – The JSE sectors and the level of underpricing.

- The seventh objective, **comparing hot and cold markets to see which yielded the best investment opportunities for investors,** was achieved in sections 5.3.2 – The effect hot and cold markets have on the JSE, and 5.4.2 – Medium-term performance versus the hot and cold markets.

- The eighth and final objective was **to improve investors' short term returns in their selection of IPOs**. This objective was achieved throughout chapters 5 and 6, as the data and the conclusions should help investors to make better investment decisions in the near future.

6.5 Recommendations

The recommendations are based upon the conclusions in the theoretical and empirical chapters. It should be remembered that this study focussed on the short-term underpricing of IPOs on the JSE; therefore, the majority of the conclusions relate to the short-term performance of IPOs and how investors can use the factors and characteristics that affect the level of underpricing.

6.5.1 Advice for future investors

With reference to the results of the study and the conclusions drawn, future investors can be advised as follows:

- IPOs are highly underpriced on the first day of trading; therefore, investors who require high returns should acquire shares at the offer price and sell them at the end of the first day of trading, as the value of shares decreases towards the end of the first month.

- During hot market periods, IPOs are significantly more underpriced than cold market IPOs are; however, investors should be cautious, as these IPOs are usually oversubscribed and tend to underperform in the market in the medium term.

- The younger an IPO is prior to listing (less than 15 years of age) the more underpriced the offering is on the first day of trading.

- Larger IPOs have lower levels of underpricing; therefore, investors striving to achieve short-term performance should invest in IPOs with an offer price below 400 cents and a market capitalisation of less than R400 m.

- The AltX is more attractive to potential investors, as it carries higher levels of underpricing; however, investors who acquire medium- to long-term returns should be cautious, as IPOs listed on the AltX underperform in the market.

- Investors that want to earn possible high returns on the Main Board should focus on IPOs of the electronic and technology (IT), financial and consumer sectors; as these are the most underpriced Main Board IPOs.

- Investors seeking medium term performance on their investments should consider buying underpriced IPO shares and selling them after the first year of listing. This is because there is a significant correlation between the initial level of underpricing and the medium term performance of IPOs over a one year period.

6.5.2 Advice for IPO companies

Based on the results of this study, the following recommendations regarding the IPO selection process are made:

- Older companies (older than 15 years prior to listing) were IPOs that had lower levels of underpricing when compared to younger IPOs on the JSE. Therefore, companies should try to avoid listing as long as possible, as older IPOs leave less money on the table.

- IPOs listed during hot market periods have higher levels of underpricing and tend to underperform in the market over a period of three years. Thus, as far as possible, it should be endeavoured to time the listing during cold market periods to achieve lower levels of underpricing and better medium-term performance.

- When listing on the JSE, the AltX receives on average higher levels of underpricing and worse medium-term performance. Potential IPOs should strive to list on the Main Board to avoid leaving money on the table.

- IPOs with high levels of initial underpricing tend to underperform the market over a period of three years, investors should thus avoid underpricing as high levels of initial underpricing leads to medium term underperformance.

6.4.2 Limitations of the study

During the study, the following limitations became evident:

- The focus of the study was on the short-term performance of IPOs; thus, the BHR and BHAR measurements over a period of three years are not sufficient for investors seeking long-term performance measurements.

- The study focused only on the JSE and not other stock exchanges around the world that could be benchmarked.

- The JSE All-share Index was the only benchmark used in the study.

6.5.3 Recommended research topics for future researchers

Based on the results of this study, the following recommendations are made with regard to possible future research:

- The major contribution of this study and for future researchers is to identify the level of Skewness and to use natural logarithms to counter the inappropriate use of the mean MAAR as an indication of the level of underpricing.

- To ensure the accuracy of data, any inconsistencies and outliers should be isolated. These include, but are not limited to, the difference in turnover, NPAT, total assets, shareholders' equity, the offer price, market capitalisation, etc.

- The offer price and the market capitalisation should be adjusted for inflation because of the high inflation rate experienced in South Africa. This should be done by using the consumer price index (CPI).

- Future researchers should compare similar market periods with each other.

- The age, offer price and market capitalisation should be considered when determining the short-term performance of IPOs on the JSE.

- The influence of underwriters on the level of underpricing of IPOs on the JSE could be researched.

- The relationship between the initial level of underpricing and the medium-term performance should be addressed.

- For a more accurate long-term performance analysis of IPOs, a proper long-term performance measurement should be used, such as five and ten years after initial listing.

6.6 Chapter Summary

This chapter concludes the study on the factors and characteristics that affect the level of underpricing on the JSE. Conclusions were drawn from the empirical research (Chapter 5). This chapter proceeded to focus on discussions of the theoretical concept, the findings, the objectives and achievements, the limitations of the study, and recommendations made for future researchers and investors. Based on the completion of the secondary goals, it can be concluded that this study met its primary objective.

IPOs on the JSE are significantly underpriced on the first day of listing, especially during hot market periods. The high levels of underpricing can be attributed to behavioural theories such as information asymmetry, underwriter's assistance, the winner's curse, the signalling hypothesis, lawsuit avoidance and the efficient market theory. The factors and characteristics identified during the chapter confirm that hot and cold market periods, the JSE listing boards (Main Board versus AltX), the JSE sectors and the company characteristics (age, offer price, market capitalisation) are all extremely important predictors of the level of underpricing. A few financial factors

can be used to help predict the MAAR of the first day; these include the pre-listing NPAT, total assets and equity shares before listing, and the P/E ratio. The results of the medium-term performance (absolute and relative returns) reveal that IPOs can achieve positive returns over the first year; however, they underperform in the market over a period of three years.

It would be beneficial for investors to consider the factors and characteristics that were identified to be of importance in this study when choosing future IPOs for investment purposes. The factors and characteristics can act as a guide to improve the IPO-selection process. The major contribution of this study was, however, the identification of the level of Skewness typically associated with underpricing, which invalidates the use of the mean MAAR to accurately predict the level of underpricing. Using natural logs address this problem and it is also recommended that natural logs should be used for all data that has high levels of Skewness, such as the offer price and market capitalisation.

REFERENCES

Abdulrahim, S.S. 2011. *Nigerian stock returns and macroeconomic variables: Evidence from the APT model.* Master's of Business Administration. Eastern Mediterranean University of Gazimangusa, North Cyprus.

Adams, M, Thornton, B & Hall, G. 2008. IPO Pricing Phenomena: Empirical Evidence Of Behavioral Biases. *Journal of Business & Economics Research*, 6(4):67-74.

Agarwal, S. 2006. The *new issue puzzle: IPO pricing in the hot and cold markets in India.* This dissertation is submitted as a part of the requirements for the award of the MA Finance and Investment.

Aggarwal, R.K., Kringman, L. & Womack, K.L. 2002. Strategic IPO underpricing, information momentum and lockup expiration selling. *Journal of Financial Economics*, 66(1):105-137.

Agathee U.S., Sannassee, R.V. & Brooks, C. 2012. The underpricing of IPOs on the stock exchange of Mauritius. Accepted Version. *United Kingdom: University of Reading*, 1(1):1-38.

Ahmad-Zaluki, N.A. & Abidin, S. 2011. IPO pricing in Malaysia: An analysis of REITs and non-REITs. *International Journal of Economics and Management*, 5(1):319-332.

Alli, K.L., Subrahmanyam, V. & Gleason, K.C. 2010. Short- and long-run performance of initial public offerings in postapartheid South Africa. *Journal of African Business*, 11(1):1-25.

Alti, A. 2006. How Persistent Is the Impact of Market Timing on Capital Structure? *The Journal of Finance*, 111(4):1681-1710.

Al-Yaman, S.H. 2009. *The long term performance of IPO in the Mena Region.* Master's thesis of Arts in Financial Economics. American University of Beirut.

Andersson, R. & Westling, E.J. 2009. *Can first day returns of initial public offerings be explained by individual financial ratios?* Master's thesis in Accounting and Financial Management. Stockholm School of Economics.

Asma, T.S. 2008. *A study on empherical listing of capital asset pricing model.* Master's thesis in Business Administration. University of Mysore, Mysore.

Baker, M. & Wurgler, J. 2012. *Behavioral corporate finance: A current survey.* Forthcoming in *Handbook of the Economics of Finance: Volume 2, edited by George M. Constantinides, Milton Harris, and Rene M. Stulz. Handbooks in Economics. New York, NY:* Elsevier.

Bansal, R. & Khanna, A. 2012. Determinants of IPOs initial return: Extreme analysis of Indian market. *Journal of Financial Risk Management*, 1(1):68-74.

Bhana, N. 2010. The stock market reaction to criticism of corporate governance practices of companies listed on the JSE. *Investment Analyst Journal,* 7(1):1-12.

Barkat, M. & Terry, R. 2013. *A re-evaluation of event-study methodology.* Available: http://ssrn.com/abstract=2214509 (Accessed 21 October 2015).

Beaumont, H.P. 2004. *Financial engineering principles: A unified theory for financial product analysis and valuation.* New Jersey: John Wiley & Sons Inc..

Beukes, A. 2010. Limited arbitrage: The South African evidence. *Journal of Finance and Accountancy*, 1(1):1-10.

Booth, L. 2010. *The cost of going public: Why IPOs are typically underpriced.* Available: http://www.financepractitioner.com/financing-best-practice/the-cost-of-going-public-why-ipos-are-typically-underpriced?page=1 (Accessed 14 April 2015).

Brau, J.C. & Fawcett, S. 2006. Initial public offerings: An analysis of theory and practice. *The Journal of Finance*, 111(1):399-436.

Brau, J.C., Ryan, P.A. & DeGraw, I. 2006. Initial public offerings: CFO perceptions. *The Financial Review,* 41(1):483–511.

Brau, J.C., Couch, R.B. & Sutton, N.K. 2012. The desire to acquire and IPO long-run underperformance. *Journal of Financial and Quantitative Analysis*, 47(3):493-510.

Brown, P, Gallery, G, & Goei, O. 2006. Does market misevaluation help explain share market long-run underperformance following a seasoned equity issue? *Accounting and Finance*, 46(1):191-219.

Borges, M.R. 2007. Underpricing of initial public offerings: The case of Portugal. *International Atlantic Economic Society*, 13(1):65-80.

Boulton, J.T., Smart, B.S. & Zutter, J.C. 2007. *IPO underpricing and international corporate governance.* Working paper, Miami University: Oxford.

Busaba, W.Y. 2006. Bookbuilding, the option to withdraw and timing of IPOs. *Journal of Corporate Finance*, 1(12):159-186.

Buchheim, A, Grinstead, A., Janssen, A., Juan, A. & Sahni, A. 2001. *Buy, sell, or hold? An event study analysis of significant single day losses in equity value.* Working paper, Kellogg Graduate School of Management.

Burger, J. 2010. *Financial analysis.* Available: http://johanhburger.com/financial-analysis// (Accessed 24 August 2015).

Cairney, C., Chivaka, R., Fourie, H., Joubert. D., Haji, A.M., Pienaar, A., Roos, S.A., Stack, L., Streng, J., Swartz, G., Williams, J. 2012. *Principles of management accounting: A South African perspective.* Republic of South Africa: Oxford University Press Southern Africa (Pty) Ltd

Carter, R.B., Dark, F.H. & Singh, A.K. 1998. Underwriter reputation, initial returns and the long-run performance of IPO stocks. *The Journal of Finance,* 53(1):285-311.

Certo, S.T., Holcomb, T.R. & Holmes, R.M. 2009. IPO research in management and entrepreneurship: Moving the agenda forward. *Journal of Management,* 35(6):1340-1378.

Chambers, D. & Dimson, E. 2006. *Better regulation and underwriter reputation have done nothing for IPO underpricing over the 20th century: Empirical evidence from IPOs on the London Stock Exchange.* United Kingdom: Department of Economics, Oxford.

Chang, K., Kim, Y.C. & Shim H. 2013. *Weak firms follow strong firms in hot IPO markets.* Available: https://scholar.google.dk/citations?view_op=view_citation&hl=da&user=CP0bv2 gAAAAJ&citation_for_view=CP0bv2gAAAAJ:0EnyYjriUFMC (Accessed 19 March 2015).

Chen, C.R. & Mohan, N. J. 2002. Underwriter spread, underwriter reputation and IPO underpricing: A simultaneous equation analysis. *Journal of Business Finance and Accounting* 29(3):521–540.

Chipeta, C. & Jardine, A. 2014. A review of the determinants of long run share price and operating performance of initial public offerings on the Johannesburg Stock Exchange. *International Business & Economics Research Journal*, 13(5):1161-1176.

Chiraphadhanakul, V. & Gunawardana, K.D. 2005. The factors affecting IPO return in Thai Stock Market. *The International Journal of the Computer, the Internet and Management*, 13(2):1-6.

Chung, K.H., L,i M. & Yu, L. 2005. Assets in place, growth opportunities and IPO returns. *Financial Management,* 1(1):65-88.

Coakley, J, Hadass, L & Wood, A. 2008. Hot IPOs can damage your long-run wealth! *Applied Financial Economics*, 18(1):1111-1120.

Cubbin, E., Eidne, M., Firer, C. & Gilbert, E. 2006. Mean reversion on the JSE. *Investment Analyst Journal*, 61(1):39-48.

Damodaran, A. 2011. *Applied Corporate Finance.* 3rd edition. United States of America: John Wiley & Sons, Inc.

Davidoff, S.M. 2011. *Why I.P.O.'s get underpriced.* Available: http://dealbook. nytimes.com/2011/05/27/why-i-p-o-s-get-underpriced/?_php=true&_type=blogs& _r=0/ (Accessed 10 June 2014).

Doeswijk, R.Q., Hemmes, H.S.K. & Venekamp, R.H. 2006. 25 Years of Dutch IPOs: An examination of frequently cited IPO anomalies within main sectors and during hot- and cold-issue periods. *De Economist*, 154(1):405-427.

Demers, E. & Joos, P. 2005. IPOs failure risk: Determinants and pricing consequences. Rochester, New York: University of Rochester.

Demers, L. & Joos, P. 2007. *IPOs, Evaluating failure risk.* Available: http://knowledge.insead.edu/business-finance/ipos-evaluating-failure-risk-2114/ (Accessed 10 June 2014).

Dempsey, A. & Pieters, H.N. 2009. *Inleiding tot finansiële rekeningkunde.* 7th edition. South Africa: LexisNexis.

Djama, C., Martinez, I. & Serve, S. 2012. *What do we know about delisting? A survey of the literature.* Available: https://ideas.repec.org/p/ema/worpap/2012-38.html (Accessed 15 April 2015).

Drobetz, W., Kammermann, M. & Wälchli, U. 2005. Long-run performance of initial public offerings: The evidence for Switzerland. *Schmalenback Business Review,* 57(1):253-275.

DuCharme, L.L., Malatesta, P.H. & Sefcik, S.E. 2000. *Earnings management: IPO valuation and subsequent performance*. Washington: University of Washington.

Dunbar, C.G. 1998. The choice between firm-commitment and best-efforts offering methods in IPOs: The effects of unsuccessful offers. *Journal of Financial Intermediation*, 7(1):1-49.

Fama, E.F. 1997. Market efficiency, long-term return and behavioral finance. *Journal of Financial Economics,* 49(1); 283-306.

Findlaw, Inc. 1999. *IPO basics, investment bankers, underwriters and other key players.* Available: http://www.inc.com/articles/1999/11/15746.html/ (Accessed 19 May 2014).

Firer, C., Ross, S.A., Westerfield, R.W. & Jordan, B.D. 2012. *Fundamentals of corporate finance.* 5th edition. United Kingdom: McGraw-Hill.

Frankfurter, G.M. 2007. Market Efficiency cum Anomalies, or Behavioral Finance? *Homo Oeconomicus*, 24(1):81-93.

Gajewski, J.F. & Gresse, C. 2008. *IPO underpricing, post-listing liquidity and information asymmetry in the secondary market.* Savoye: Université de Savoie.

Gao, Y., Mao, C.X. & Zhong, R. 2006. Divergence of opinion and long-term performance of initial public offerings. *The Journal of Finance Research*, 29(1):113-129.

Gao, X., Ritter, J.R. & Zhu, Z. 2012. *Where have all the IPOs gone?* Florida: University of Florida.

Giudici, G. & Roosenboom, P. 2002. *Pricing initial public offering in Europe: What has changed?* Rotterdam: Erasmus University.

Gompers, P.A. & Lerner, J. 2001. The really long-run performance of initial public offerings: The pre-NASDAQ evidence. *Journal of finance,* 58(4):1335-1392.

Gondo, G.M.K. 2007. *Two-part study on the alternative exchange of South Africa (AltX): A study on the underpricing of new equity issues listed on the alternative exchange of South Africa and the effect of specific use of disclosure on underpricing.* Master's in Financial Management. Cape Town: University of Cape Town.

Gounopoulos, D., Nounis, C. & Stylianides, P. 2007. *The short and long term performance of initial public offerings in the Cyprus Stock Exchange.* Available http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1002974 (Accessed 2 March 2015).

Gounopoulos, D, Merikas, A, & Nounis, C. 2009. Global Shipping IPOs performance. *Maritime Policy and Management*, 36(1):1-25.

Govindasamy, P. 2010. *The long-run performance of initial public offerings in South Africa*. Master's in Business Administration. University of Pretoria: Gordon Institute of Business Science.

Hansen, M.L. & Jørgensen, L.G. 2010. *Underpricing and long-run operating performance of initial public offerings: Evidence from Scandinavia.* MSc. In Finance & International Business. Aarhus University: Aarhus School of Business.

Habib, M.A. & Ljungqvist, A.P. 2001. Underpricing and entrepreneurial losses in IPOs: Theory and evidence. *The Review of Financial Studies,* 14(2):433-458.

Hamilton, J. 2014. Analysis of current economic conditions and policy. Available: http://econbrowser.com/archives/2014/02/use-of-logarithms-in-economics (Accessed 09 October 2015).

Hanley, K.W. 1993. The underpricing of initial public offerings and the partial adjustment phenomenon. *Journal of Financial Economics*, 1(34):231-250.

He, P. 2007. A theory of IPO waves. *The Review of Financial Studies,* 20(4):983-1020.

Helwege, J. & Liang, N. 2002. Initial public offerings in hot and cold markets. Working paper. Available: http://www.federalreserve.gov/pubs/feds/2003/200304/200304pap.pdf (Accessed 20 March 2015).

Hollestelle, G. 2008. *An empirical study on the explanatory power of the CAMP β, firm size, book-to-market ratio and leverage on average stock returns in Europe.* Master's thesis Economics and Business. Amsterdam: University of Amsterdam.

How, J.C.Y., Izan, H.Y. & Monroe, G.S. 1995. Differential information and underpricing of initial public offerings: Australian evidence. *Accounting and Finance*, 1(1):88-105.

Hu, W.Y. & Ritter, J.R. 2007. *Multiple bookrunners in IPOs.* Available: http://bear.warrington.ufl.edu/Ritter/work_papers/Bookrunners_1206_2007.pdf (Accessed 27 February 2015).

Ibbotson, R.G., Sindelar, L. & Ritter, J.R. 1994. *The market's problems with the pricing of initial public offerings.* Journal of Applied Corporate Finance, 7(1):66-74.

International Financial Reporting Standards (IFRS) 2015. *IFRS application around the world jurisdictional profile: South Africa.* Available: http://www.ifrs.org/Use-around-the-world/Documents/Jurisdiction-profiles/South-Africa-IFRS-Profile.pdf (Accessed 21 May 2015).

Institute of Directors Southern Africa. 2009. *King Code of Governance for South Africa 2009.* South Africa: Institute of Directors in Southern Africa.

Jefferis, K. & Smith, G. 2005. The changing efficiency of African stock markets. *South African Journal of Economics*, 73(1):54-67.

Johannesburg Stock Exchange. 2004. *JSE Limited ("JSE").* Available: https://www.jse.co.za/content/JSESpecificationsItems/Guidelines%20to%20Listing%20on%20the%20JSE.pdf (Accessed 27 June 2014).

Johannesburg Stock Exchange. 2012. *JSE Listing Requirements.* Available: https://www.jse.co.za/content/JSEEducationItems/Service%20Issue%2017.pdf (Accessed 27 June 2014).

Johannesburg Stock Exchange. 2014. *Proposed listing and other fees.* https://www.jse.co.za/content/JSEPricingItems/Updated%20Listing%20Fees%20-%202014%20v3.pdf (Accessed 18 April 2015).

Johannesburg Stock Exchange. 2015. *Memorandum.* Available: https://www.jse.co.za/content/JSEICANoticeItems/2015/FTSE-JSE-Africa/20150828%20Market%20Consultation%20SA%20Resources%20Sector.pdf (Accessed 20 October 2015).

JSE. 2015. *JSE Overview.* Available: https://www.jse.co.za/about/history-company-overview (Accessed 12 April 2015).

Kabajeh, M.A.M., Nu'aimat, S.M.A.A.L. & Dahmash, F.N. 2012. The RELATIONSHIP between the ROA, ROE and ROI ratios with Jordanian insurance public companies market share prices. *International Journal of Humanities and Social Science*, 2(11):115-120.

Karlis, L. 2000. IPO Underpricing. *The Park Place Economist*, 8(1):81-89.

Kenourgios, D.F., Papathanasiou, S. & Melas E.R. 2007. Initial performance of Greek IPOs, underwriter's reputation and oversubscription. *Managerial Finance*, 33(5):332-343.

Kerins, F, Kutsuna, K & Smith, R. 2003. *Why Are IPOs Underpriced? Evidence from Japan's Hybrid Auction-Method Offerings.* Working paper. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=414421 (Accessed 10 October 2015).

Kiymaz, H. 1999. The initial and aftermarket performance of IPOs in an emerging market: evidence from Istanbul stock exchange. *Journal of Multinational Financial Management*, 10(1):213-227.

Kooli, M. & Suret, J.M. 2002. *The underpricing of initial public offerings: Further Canadian evidence.* Working paper. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=297120 (Accessed 16 November 2014).

Khurshed, A. & Mudambi, R. 2002. The short-run price performance of investment trust IPOs on the UK main market. *Applied Financial Economics*, 1(12):697-706.

Kucukkocaoglu, G. 2008. Underpricing in Turkey: A comparison of the IPO methods. *International Research Journal of Finance and Economics,* 1(13):162-182.

Lattimer, B.C. 2006. *The short- run equity underpricing puzzle in South Africa with an emphasis on the winner's curse hypothesis.* Master's thesis in Commerce. Johannesburg: University of the Witwatersrand.

Lawson, R., & Ward, M. 1998. Price performance of newly listed shares on the Johannesburg Securities Exchange. *Investment Analyst Journal*, 47(1):17-31.

Levinson, L. 2011. *An Analysis of the Accuracy and Determinants of Earnings Forecast of Companies Listing on the Alternative Exchange of South Africa.* Master's thesis. University of Cape Town.

Lexicon. 2015. Definition of price-to-book ratio. Available: http://lexicon.ft.com/ Term?term=price_to_book-ratio (Accessed 24 August 2015).

Lian, Q, & Wang, Q. 2009. Does the Market Incorporate Previous IPO Withdrawals When Pricing Second-Time IPOs. *Financial Management*, 1(1):357-380.

Lin, T.H. 1996. The certification role of large block shareholders in initial public offerings: The case of venture capitalists. *Quarterly Journal of Business and Economics*, 35(2):55-65.

Ljungqvist, A. 2004. *Handbooks in finance: Empirical corporate finance.* New York: Salomon Center Stern School of Business, New York University and CEPR.

Ljungqvist, A., Nada, V. & Singh, R. 2006. Hot Markets, Investor Sentiment and IPO Pricing*. *Journal of Business*, 79(4):1667-1702.

Lombaard, C., Van der Merwe, L., Kele, T. & Mouton, S. 2011. *Elementary statistics for business and economics*. Revised edition. South Africa: Heinemann Publishers (Pty).

Loughran, T., Ritter, J.R. & Rydqvist, K. 2015. Initial public offerings: International insights. *Pacific Basin Finance Journal*, 1(2):1-8

Lowry, M. & Schwert, G.W. 2001. *IPO market cycles: Bubbles or sequential learning?* Working paper. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=242755 (Accessed 16 November 2014).

Lowry, M., Officer, M.S. & Schwert, G.W. 2008. *The variability of ipo initial returns.* Working paper. Available:

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=904683 (Accessed 16 November 2014).

Liu, L.X., Sherman, A.E. & Zhang, Y. 2013. *The long-run role of the media: evidence from initial public offerings.* Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1737544 (Accessed 19 June 2014).

Mahama, A.C. 2013. *The state of African stock markets.* Bachelors degree thesis in International Business. Finland: Arcada University of Applied Sciences.

Maksimovic, V. & Unal, H. 1993. Issue size choice and "underpricing" in thrift mutual-to-stock conversions. *The Journal of Finance*, 18(5):1659-1692.

Mantshantsha, S. 2014. Pricier market makes share investing trickier. Available: http://www.financialmail.co.za/moneyinvesting/2014/01/16/pricier-market-makes-share-investing-trickier (Accessed 25 October 2015).

Martinez, S. & Perron, P.M. 2004. *The valuation and pricing of initial public offerings.* Master of Science in Management. Massachusetts: Massachusetts Institute of Technology.

Marx, J., Swardt, C., Smith, M.B. & Erasmus P. 2011. *Financial management in Southern Africa.* 3rd edition. South Africa: Pearson Education South Africa (Pty).

Mazviona, B.W. & Nyangara, D. 2014. Does firm size affect stock returns? Evidence from the Zimbabwe Stock Exchange. *International Journal of Business and Economic Development*, 2(3):1-5.

Mitchell, M,L, & Stafford, E. 2000. Managerial Decisions and Long-Term Stock Price Performance. *Journal of Business* 73(3):1-56.

Mhlanga, D. 2013. Johannesburg Stock Exchange history. Available: http://www.property24.com/articles/johannesburg-stock-exchange-history/16977, (Accessed 21 July 2015).

M'kombe, C. & Ward, M. 2002. Aftermarket price performance of initial public offering on the JSE. *Investment Analyst Journal*, 1(55):7-20.

Mkhize, H. & Msweli-Mbanga, P. 2006. A critical review of the restructuring of the South African capital market. *International Review of Business Research Papers*, 2(2):80-91.

Neneh, B.N. 2013. *Returns on initial public offerings (IPOs) on the Johannesburg Securities Exchange (JSE): Success and failure patterns.* Doctoral thesis. Bloemfontein: University of the Free State.

Neneh, B.N. & Smit, A.V.A. 2013. Underpricing of IPOs during hot and cold market periods on the South African Stock Exchange (JSE). *International Journal of Social, Management, Economics and Business Engineering,* 7(7):895-902.

Neneh, B.N. & Smit A.V.A. 2014. *Determinants of IPO survival on the Johannesburg Securities Exchange (JSE).* Bloemfontein: University of the Free State.

Ntim, C.G. 2012. Why African stock markets should formally harmonise and integrate their operations. *African Review of Economics and Finance*, 4(1):53-72.

Ofek, E. & Richardson, M. 2003. DotCom mania: The rise and fail of internet stock prices. *The Journal of Finance*, 153(3):1113-1137.

Paavola, M. *Empirical Tests of Asset Pricing Models in Finnish Stock Market.* Master's thesis. Lappeenranta University of Techology.

Pástor, L. & Veronesi, P. 2005. Rational IPO waves. *The Journal of Finance*, 110(4):1713-1757.

Peller, A. 2013. *Survivability and intra-industry effects of initial public offerings: An empirical analysis.* Doctor of Philosophy in Managment. Höhenkirchen: Univeristy of St. Gallen, School of Management, Economics, Law, Social Sciences and International Affairs.

Peristiani, S. & Hong, G. 2004. Pre-IPO *Financial performance and aftermarket survival.* New York: Federal Reserve Bank of New York.

Rajasekar, S., Philominathan, P. & Chinnathambi, V. 2013. *Research methodology.* Available: http://arxiv.org/abs/physics/0601009v3 (Accessed 17 June 2014).

Razafindrambinina, D & Kwan, T. 2013. The Influence of Underwriter and Auditor Reputations on IPO Under-pricing. *European Journal of Business and Management*, 5(2):199-212.

Rekik, Y.M. & Boujelbene, Y. 2013. Tunisian IPOs underpricing and long-run underperformance: Highlight and explanation. *E3 Journal of Business Management and Economics*, 4(4):93-104.

Ritter, J.R. 1991. The long-run performance of initial public offerings. *The Journal of Finance*, 46(1):3-27.

Ritter, J. & Welch, I. 2002. *A review of IPO activity, pricing and allocations*. Working paper. Massachusetts: University of Florida & Yale University.

Rock, K. 1986. WHY NEW ISSUES ARE UNDERPRICED*. *Journal of Finance Economics*, 15(1):187-212.

Rose, S., Spinks, N. & Canhoto, A.I. 2015. *Tests for the assumption that a variable is normally distributed. Management research: Applying the principles*. Available: http://documents.routledge-interactive.s3.amazonaws.com/9780415628129/Chapter%2013%20-%20Tests%20for%20the%20assumption%20that%20a%20variable%20is%20normally%20distributed%20final_edited.pd (Accessed 11 October 2015).

Princeton University Library. 2008. *Log transformations.* Available: http://dss.princeton.edu/online_help/stats_packages/stata/log.html (Accessed 21 August 2015).

South African Institute of Chartered Accountants (SAICA). 2013. *Headline Earnings*. Johannesburg: The South African Institute of Chartered Accountants.

Schultz, R. 2003. Pseudo market timing and the long-run underperformance of IPOs. *The Journal of Finance*, 153(2):483-517.

Sharenet. 2015. JSE all-share. Available: http://www.sharenet.co.za/v3/quickshare.php?scode=J203 (Accessed 25 October 2015).

Seitibraimov, A. 2012. UNDERPRICING AND LONG-TERM PERFORMANCE OF INITIAL PUBLIC OFFERINGS FROM CIS. *Kyiv School of Economics*, 1(1):1-42.

Sher, H. 2006. A closer look at listings. *Heinonline,* 14(1):30-35.

Smit, A.V.A, & Neneh, B.N. 2014. *Initial PUBLIC OFFERINGS (IPOs) on the South African Stock Exchange (JSE): Can underpricing assist investors in their decision making process?* Unpublished work. Bloemfontein: University of the Free State.

Smit, A.V.A. 2015. *Two consecutive hot market periods: Is the IPO market in South Africa changing over time?* Unpublished work. Bloemfontein: University of the Free State, Faculty of Economic and Management Sciences.

Softschools. 2005. *Apartheid Timeline.* Available: http://www.softschools.com/ timelines/apartheid_timeline/44/ (Accessed 21 March 2015).

Spinelli, S. & Adams, R.J .2012. *New venture creation: Entrepreneurship for the 21st Century.* 9th edition. New York: Mcgraw-Hill/Irwin.

Standard Bank. 2015. *Glossary.* Available: https://securities.standardbank.co.za/ ost/nsp/BrochureWarepublic/Ost/education_centre/glossary.html (Accessed 23 October 2015).

Tadawul. 2015. *About Us.* Available: http://www.tadawul.com.sa/wps/portal/!ut/p/c1/ 04_SB8K8xLLM9MSSzPy8xBz9CP0os3g_A-ewIE8TIwODYFMDA08Tn7AQZx 93YwN3l_3g1Dz9gmxHRQB7GACB/ (Accessed 16 November 2015).

Taranto, M.A. 2002. *Why managers are willing to accept IPO underpricing.* Available: http://web.mit.edu/taranto/www/Taranto--IPOopt.pdf (Accessed 17 April 2014).

Teoh, S.H., Welch, I. & Wong, T.J. 1998. Earnings management and the long-run market performance of initial public offerings. *The Journal of Finance,* 53(1):1935-1974.

Teoh, S.H. & Wong, T.J. 2002. Why new issues and high-accrual firms underperform: The role of analysts' credulity. *The Review of Financial Studies*, 15(3): 869-900.

The Options Guide. 2009. *Price-to-earnings ratio (P/E ratio).* Available: http://www.theoptionsguide.com/price-to-earnings-ratio.aspx (Accessed 24 August 2015).

Department of Public Enterprises. 2004. *IPO Reference Manual.* South Africa: Department of Public Enterprises, South Africa.

Trading Economic. 2015. *South Africa Inflation Rate.* Available: http://www.tradingeconomics.com/south-africa/inflation-cpi (Accessed 20 August 2015).

Upadhyaya, S. 2013. *Country grouping in UNIDO statistics.* Working paper. Plek Austria: United Nations Industrial Development Organization, Vienna.

Van Heerden, G. & Alagidede, P. 2012. Short-run underpricing of initial public offerings (IPO's) in the Johannesburg Securities Exchange (JSE). *Science Sciencedirect*, 1(1):130-138.

Wang, Y. 2005. *Underpricing and long-run performance of Chinese IPOs.* Master's thesis of Science in Administration (Finance) Quebec, Canada: Concordia University.

Waring, M.B. & Siegel, L.B. 2005. The myth of the absolute return investor: Sheep in wolves' clothing. *The Investment Research Journal, Barclays Global Investors,* 8(3):1-14.

Wilbon, A.D. 2003. Competitive posture and IPO performance in high technology firms. *Journal of Engineering and Technology Management*, 1(20):231-244.

Yang, C.Y. & Ding, X. 2012. *The survival of initial public offerings in China.* Liverpool: Department of Business, Economics & Management, Liverpool University.

Younesi, N., Ardekani, A.M. & Hahemijoo, M. 2012. Performance of Malaysian IPOs and impact of return determinants. *Journal of Business Studies Quarterly*, 4(2):140-158.

Zamanian, G., Khodaparati, S. & Mirbagherijam, M. 2013. Long-run and short-run returns of initial public offerings (IPO) of public and private companies in

Teheran Stock Exchange (TSE) market. *International Journal of Academic Research in Business and Social Sciences,* 3(2):69-84.

APPENDIX A – IPO SAMPLE AND LISTING DATE

IPO No.	IPO COMPANY	List Date
1	1 Time	1996
2	Abacus Technology Holdings Limited	1996
3	ABRAXAS INVESTMENT HOLDINGS LIMITED	1996
4	Accentuate Ltd / Safic	1996
5	ACCORD TECHNOLOGIES LIMITED	1996
6	Acucap Properties Ltd	1996
7	ACUITY GROUP HOLDINGS LIMITED	1996
8	Acumen Holdings Limited	1996
9	Adapt IT Holdings limited: infowave	1996
10	Adcock Ingram Holdings Ltd	1996
11	Admiral Leisure World	1996
12	Adrenna (Quyn Holdings)	1996
13	ADvTECH Ltd	1996
14	AFGRI Ltd	1996
15	Afribrand Holdings Limited	1996
16	African Brick Centre limited	1996
17	African cellular Towers	1996
18	African Dawn Capital Ltd (ABC Cash)	1996
19	African Eagle Resources Ltd	1996
20	African Harvest Ltd	1996
21	African Media Entertainment Ltd	1996
22	AFRICAN PARTNERSHIPS LIMITED	1997
23	AFRICAN RAINBOW MINERALS GOLD LIMITED	1997
24	Afrimat Ltd	1997
25	AG Industries Ltd (African Glass)	1997
26	AH- vest Ltd (All Joys Food)	1997
27	Alert Steel Holdings Ltd	1997
28	ALEXANDER FORBES GROUP LIMITED	1997
29	ALLAN GRAY PROPERTY INVESTMENTS LIMITED	1997
30	Alliance Pharmaceuticals	1997
31	AM Moolla Group	1997
32	Amalgamated Appliance Holdings Ltd	1997
33	Amalgamated Electronic	1997
34	AMB Holdings Limited	1997
35	AMB PRIVATE EQUITY PARTNERS	1997
36	Ambit Properties Limited	1997
37	AMLAC LIMITED	1997
38	Ansys Ltd	1997
39	ApexHi Properties Limited	1997
40	Appleton Limited	1997
41	APS TECHNOLOGIES (PTY) LTD	1997
42	Aqua Online holdings: ABSEC	1997
43	Aquila Growth Limited	1997
44	ARB Holdings Ltd	1997
45	Arrowhead Properties Ltd	1997
46	Astral Food	1997
47	Astrapak Ltd	1997

48	Atlatsa Resources (Anooraq)	1997
49	Aveng Ltd	1997
50	Awethu Breweries Ltd	1997
51	B & W Instrumentation and Electrical Ltd	1997
52	Barnard Jacobs Mellet Holdings Limited	1997
53	Beget Holdings Limited	1997
54	Beige Holdings Ltd	1997
55	BHP Billiton Plc	1997
56	Bidbee Ltd	1997
57	BILLBOARD COMMUNICATIONS LIMITED	1997
58	BioScience Brands Ltd (Wellco Health)	1997
59	Blackstar Group SE	1997
60	Blue Financial services Ltd	1997
61	Blue Label Telecoms Ltd	1997
62	Bonatla Property Holdings Ltd	1997
63	BRC Diamonds (Delrand Resource Ltd)	1997
64	Brikor Ltd	1997
65	Brimstone Investment	1997
66	British American Tobacco Ltd	1997
67	BRYANT TECHNOLOGY LIMITED	1997
68	BSI Steel Ltd	1998
69	Buildmax Ltd	1998
70	Buildworks Group/Cons Infra	1998
71	Business connexion Grp L	1998
72	Bynx Limited	1998
73	Cadiz Holdings Ltd	1998
74	Calgro M3 Holdings Ltd	1998
75	CAPE EMPOWERMENT TRUST LIMITED	1998
76	Capital&Counties Prop plc	1998
77	Capitec Bank Holdings Ltd	1998
78	CARSON HOLDINGS LIMITED	1998
79	CBS Property Portfolio Limited	1998
80	Celcom Group Limited	1998
81	CELTRON TECHNOLOGIES LIMITED	1998
82	Central Rand Gold	1998
83	CENTURY CARBON MINING LIMITED	1998
84	Chemical Specialities Ltd	1998
85	CHESTER INVESTMENT HOLDINGS LIMITED	1998
86	Chet Industry Limited (Integrate cons)	1998
87	CHILLERS GROUP LIMITED	1998
88	Chrometco Ltd	1998
89	CIC Holding Limited CIC	1998
90	CIPLA Metpro (Enaleni Pharmaceuticals)	1998
91	Clicks Group Ltd	1998
92	Comair Ltd	1998
93	Command Holdings ltd	1998
94	Compu- Clearing Outsourcing Ltd	1998
95	Computer Configurations Holdings Limited	1998
96	Conduit Capital Ltd (The Appleton Bank)	1998
97	Consol Ltd	1998

98	ConvergeNet Holdings Ltd: vesta technology	1998
99	CORE HOLDINGS LIMITED	1998
100	Coronation Fund Managers ltd	1998
101	Country Bird Holdings Ltd	1998
102	COUNTRY FOODS LTD	1998
103	CRUX TECHNOLOGIES LIMITED	1998
104	Curro Holdings Ltd	1998
105	Datacentrix Holdings Ltd	1998
106	Datapro Group Ltd / Telecom	1998
107	DECOMAC HOLDINGS LIMITED	1998
108	Dialogue Group Hldgs Ltd	1998
109	Digicore Holdings Ltd	1998
110	Discovery Holdings Ltd	1998
111	Diversified Prop Fund Ld	1998
112	DNR CAPITAL LIMITED	1998
113	DYNAMIC VISUAL TECH HLD LD	1998
114	Eastern Platinum Ltd	1998
115	EC-Hold Limited	1998
116	E-data Holdings Limited	1998
117	Efficient Group Ltd	1998
118	Eland Platinum Hldgs Ltd	1998
119	Ellies Holdings Ltd	1998
120	Elvey Security Technologies	1998
121	EMERALD TOPBRAND SPORTS LIMITED	1998
122	Emira Property Fund	1998
123	ENERGY AFRICA LIMITED	1998
124	Enterprise Risk Management (Specialized Outsourc)	1998
125	ENVIROSERV HOLDINGS LIMITED	1998
126	ENX Group (Austro Group Ltd)	1998
127	EOH Holdings Ltd (Enterprise)	1998
128	Eqstra Holdings Ltd	1998
129	EQUINOX HOLDINGS LIMITED	1998
130	Erbacon Investment Holdings Ltd	1998
131	Esorfranki Ltd (ESOR)	1998
132	ESSENTIAL BEVERAGE HOLDINGS LIMITED:Essent	1998
133	Excel Medical Holdings Limited	1998
134	Exxaro Resources Ltd (Kumba)	1998
135	Exxoteq Ltd	1998
136	Fairvest Property Hldgs	1998
137	Faritec Holdings Ltd	1998
138	Fe SQUARED HOLDINGS LIMITED	1998
139	Ferrum Crescent Ltd	1998
140	Finbond Group Ltd	1999
141	First Uranium Corp	1999
142	Foneworx Holdings Ltd (Interconnective Sol)	1999
143	Forbes & Manhattan Coal Corp	1999
144	Fortress Income Fund Ltd	1999
145	FORZA GROUP LIMITED	1999
146	FREEWORLD COATINGS LTD	1999
147	Gijima Ast Group Ltd: abraxas	1999

148	GLOBAL TECHNOLOGY LIMITED	1999
149	GLOBAL VILLAGE HOLDINGS LIMITED	1999
150	Gooderson Leisure Corporation Ltd	1999
151	Grand Parade Investments Ltd	1999
152	Gray Security Services Limited	1999
153	Great Basin Gold Ltd	1999
154	GVM METALS LTD	1999
155	Hardware Warehouse Ltd	1999
156	HIX TECHNOLOGIES LIMITED	1999
157	Holdsport Ltd	1999
158	HOMECHOICE HOLDINGS LIMITED	1999
159	Hospitality Property Fund A Ltd	1999
160	Howden Africa holdings Ltd	1999
161	Huge Group Ltd	1999
162	Hulamin Ltd	1999
163	Ideco Group Ltd/Muvoni	1999
164	IDION TECHNOLOGY HOLDINGS LIMITED	1999
165	IFA Hotels and Resorts Ltd	1999
166	IFCA Technologies Ltd	1999
167	iFour Properties Limited	1999
168	Iliad Africa Ltd	1999
169	Imbalie Beauty Ltd (Placecol)	1999
170	INCENTIVE HOLDINGS LIMITED	1999
171	Indequity Group Ltd	1999
172	Indus Credit Co Africa H	1999
173	Infiniti Technologies Limited	1999
174	Infrasors Holdings Ltd	1999
175	Insimbi Refactory and Alloy Supplies Ltd	1999
176	Intertrading Limited	1999
177	Intervid Limited	1999
178	Interwaste Holdings Ltd	1999
179	Investec Plc	1999
180	Investec Property Fund Ltd	1999
181	IOTA Financial Services Limited	1999
182	IPSA Group Plc	1999
183	IQuad Group Ltd	1999
184	ISA Holdings Ltd (Y3K)	1999
185	IST Group Limited	1999
186	ITI TECHNOLOGY HOLDINGS LIMITED	1999
187	JEM TECHNOLOGY HOLDINGS LIMITED	1999
188	JSE Ltd	1999
189	Jubilee Platinum Plc	1999
190	KAGISANO GROUP HLDGS LD / Credit U	2000
191	KALAHARI GOLDRIDGE MINING COMPANY LIMITED	2000
192	KayDav group Ltd	2000
193	Keaton Energy Holdings Ltd	2000
194	Kelly Group Ltd	2000
195	Kimberley Consolidated Minning Ltd	2000
196	Kiwara Plc	2000
197	KROONDAL KPM	2000

198	Kumba Iron Ore Ltd	2000
199	Kwikspace Modular Buildings Limited	2000
200	Lewis Group Ltd	2001
201	Liberty International	2001
202	Life Health care Group Holdings Ltd	2001
203	Litha Health care Group Ltd / Mariyad	2001
204	Lonrho Africa plc	2001
205	m Cubed Holdings Ltd (Escher)	2001
206	Madison Property fund	2001
207	Magnum Global Funds	2001
208	Makalani Holdings Limited	2002
209	MAS Plc	2002
210	Massmart Holdings Ltd	2002
211	Masterfridge Ltd	2002
212	Mazor Group Ltd	2002
213	MB Technologies	2002
214	Megacor Holdings Ltd	2002
215	MERCURY ALPHA CAPITAL LIMITED	2002
216	Metmar Ltd	2002
217	Metoz Holdings Ltd	2003
218	METROPOLIS	2003
219	Micc Property Income Fnd	2003
220	Micrologix Limited	2003
221	MICROmega Holdings Ltd:legven	2003
222	Milkworx Ltd	2003
223	MILLIONAIR CHARTER LIMITED	2004
224	Miranda Mineral Holdings Ltd	2004
225	MiX Telematrix Ltd	2004
226	MMW Technology Holdings Limited	2004
227	MOLOPE FOODS	2004
228	Mondi Ltd	2004
229	MoneyWeb Holdings Ltd	2004
230	MORESPORT HOLDINGS LIMITED	2004
231	Morvest Ltd (Xantium Tech)	2004
232	Moulded Medical Supplies Ltd	2004
233	Mpact Ltd	2004
234	MSI HOLDINGS LIMITED	2004
235	Mustek Ltd	2004
236	Mvelaphanda Group Ltd	2005
237	NANDO'S GROUP HOLDINGS LIMITED	2005
238	NATIONAL CHICK LIMITED	2005
239	NATIONAL SPORTING INDEX LIMITED	2005
240	NBS Boland Group Ltd	2005
241	NE T1 APPLIED TECHNOLOGY HOLDINGS LIMITED	2005
242	NEDCOR INVESTMENT BANK HOLDINGS LIMITED	2005
243	Net 1 UEPS technologies Inc	2005
244	NetActive	2005
245	Netcare Ltd	2005
246	New Corpcapital Ltd	2005
247	New Euro Property Investment Plc	2005

248	NIMBUS HOLDINGS LMITED	2005
249	NOBLE MINERALS LIMITED	2005
250	Nova Educ & Tech Hlds Ld / Credit Vision	2005
251	Nutritional Holdings Ltd (Imuniti)	2005
252	Oando Plc	2005
253	Oasis Crescent Prop Fund	2005
254	O'Hagan's Investment Holdings Limited	2006
255	Old Mutual plc	2006
256	O-LINE HOLDINGS LIMITED	2006
257	Omega Alpha Int IT	2006
258	Onelogix Group Ltd (Venmil)	2006
259	Optimum Coal Holdings Limited	2006
260	OSI HOLDINGS LIMITED	2006
261	OTR MINING LIMITED	2006
262	Paladin capital Limited	2006
263	Pallinghurst Resources Ltd	2006
264	Pamodzi Gold Ltd	2006
265	PAN AFRICAN RESOURCE PLC	2006
266	Paragon Business Forms Limited	2006
267	Peermont Global Ltd	2006
268	PENTACOM HOLDINGS LIMITED	2006
269	Peregrine Holdings Ltd	2006
270	Phumelela Gaming and Leisure Ltd	2006
271	Pioneer Food Group Ltd	2006
272	PLASGROUP LIMITED	2006
273	Platmin Limited	2006
274	Poynting Holdings Ltd	2006
275	PRADA TECHNOLOGIES LIMITED	2006
276	President Steyn Gold (Skills Accel)	2006
277	Prima Toy and Leisure Group	2006
278	PRIMEGRO PROPERTIES LIMITED	2006
279	Primeserv Group Ltd	2006
280	Protech Khuthele Holdings Ltd	2006
281	PSV Holdings Ltd	2006
282	Purple Group Ltd / DecTronic	2006
283	Qala Group Limited: tallow	2006
284	RACEC Group Ltd	2006
285	RADIOSPOOR TECHNOLOGY HOLDINGS LIMITED	2006
286	Rare Holdings Ltd	2006
287	Raubex Group Ltd	2006
288	RBA Holdings Ltd	2006
289	Real Africa Durolink Holdings limited	2007
290	Rebosis Property Fund Ltd	2007
291	Rebserv Holdings	2007
292	Redefine Properties International Ltd	2007
293	Redefine Properties Ltd	2007
294	Reinet Investment SCA	2007
295	Remgro Ltd	2007
296	RENAISSANCE RETAIL GROUP LIMITED RENAISSANCE	2007
297	Resilient Property Income fund Ltd	2007

298	RETAIL APPAREL GROUP LIMITED	2007
299	Rockwell Diamonds INC	2007
300	Rolfes Holdings Ltd	2007
301	Royal Bafokeng Platinum Ltd	2007
302	SA French Ltd	2007
303	SA RETAIL PROPERTIES LIMITED	2007
304	SAB&T Ubuntu Holdings Limited	2007
305	Sanlam Ltd	2007
306	Sanyati Holdings Ltd	2007
307	Sea Kay Holdings	2007
308	SecureData Holdings Ltd (ERP.COM)	2007
309	SECUREDATA SOLUTIONS LIMITED	2007
310	Sekunjalo Investments Ltd	2007
311	SEMPRES INTERNATIONAL TECHNOLOGY HOLDINGS LIMITED	2007
312	Sephaku Holdings Ltd	2007
313	Set Point Technology Holdings Limited	2007
314	ShawCell Telecommunications Limited	2007
315	Shops For Africa Ltd	2007
316	SilverBridge Holdings Ltd/Synergy	2007
317	SIYATHENGA PROPERTY FUND LIMITED	2007
318	SMACSOFT GROUP LIMITED	2007
319	Software Connection Group Limited (Software)	2007
320	SOTTA SECURITISATION INTERNATIONAL LIMITED	2007
321	South Africa coal Mining holdings Ltd (Yomhlaba)	2007
322	SOUTH AFRICAN COAL MIN	2007
323	South Ocean Holdings Ltd	2007
324	SOUTHERN MINING CORPORATION LIMITED	2007
325	SPEARHEAD PROPERTY HOLDINGS LIMITED	2007
326	Spectrum Shipping Ltd	2007
327	Spur Corporation Ltd	2007
328	Square One Solutions Group Limited	2007
329	Stefanutti Stocks Holdings Ltd	2007
330	Steinhoff International Holdings Ltd	2007
331	Stella Vista Technologies Ltd	2007
332	STOCKS HOTELS & RESORTS LIMITED	2007
333	Stratcorp Ltd	2007
334	STREAMWORKS Group Limited	2007
335	SWEETS FROM HEAVEN HOLDINGS LIMITED	2007
336	SXR Uranium One Inc	2007
337	Synergy Inc Fund Ltd A L/U	2007
338	Taste Holdings Ltd	2007
339	TAUFIN HOLDINGS LIMITED	2007
340	Tawana Resources NL	2007
341	Teal Explore And Min Inc	2007
342	Technology Communication Holdings Limited	2007
343	TeleMaster Holdings Ltd	2007
344	Telkom SA Ltd	2007
345	TEREXKO LIMITED	2007
346	TERRAFIN HOLDINGS LIMITED	2007
347	Thabex Ltd	2007

348	The House of Busby Limited	2008
349	THE INTERNET GAMING CORPORATION LIMITED: Igaming	2008
350	The Spar Group Ltd	2008
351	Thuthukani Group Limited	2008
352	Tiger Automotive Limited	2008
353	Tile Afrika Holdings Limited	2008
354	Top Fix Holdings Ltd	2008
355	TOP INFO TECHNOLOGY HOLDINGS LIMITED	2008
356	Total Client Services Ltd	2008
357	TOURISM INVESTMENT CORPORATION LIMITED	2008
358	Tradehold Ltd	2008
359	Trematon Capital Investments Ltd	2008
360	TRIDELTA MAGNET TECHNOLOGY HOLDINGS LIMITED	2008
361	Trustco Group Holdings Ltd	2008
362	Truworths International Ltd	2008
363	TWP Holdings	2008
364	Ububele Holdings Ltd	2009
365	UCS Group Limited	2009
366	Unifer Holdings: credit sure	2009
367	Universal industries corporation Limited	2009
368	Value Com Holdings Limited	2009
369	Value Group Ltd	2009
370	Verimark Holdings Ltd	2009
371	VIKING INVESTMENTS & ASSET MANAGEMENT LIMITED	2009
372	Vodacom Group Ltd	2009
373	Vukile Property Fund Ltd	2009
374	Vunani Ltd	2010
375	Vunani Property Investment Fund Ltd	2010
376	Wescoal Holding Ltd	2010
377	Wesizwe Platinum Ltd	2010
378	Wetherlys Investment Holdings Limited	2010
379	WG Wearne Ltd	2010
380	WHETSTONE INDUSTRIAL HOLDINGS LTD	2011
381	WILDERNESS HLDGS LTD	2011
382	William Tell Holdings Ltd	2011
383	WineCorp Limited: savanha	2011
384	Witwatersrand Consolidated Gold Resource Ltd	2011
385	Women Investment Portfolio Holdings Limited	2011
386	Woolworths Holdings Ltd	2011
387	Workforce Holdings Ltd	2011
388	WORLD EDUCATIONAL TECHNOLOGIES LIMITED	2011
389	Zaptronix Ltd	2011
390	Zeder Investments Ltd	2011