

The long-term performance of failed Initial Public Offerings (IPOs) on the Johannesburg Stock Exchange (JSE)

by

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ABSTRACT

One of the oldest and most popular phrases in business is: “*The only way to survive is to grow*” (Audretsch and Lehmann, 2005:6). However, more often than not the need to grow exceeds the financial resources available to accommodate the desired growth. One of the most popular methods to raise new capital is to issue an *Initial Public Offering*. Draho (2004:1) defines an *Initial Public Offering* (IPO) as the process where the shares of a private company become available to public investors for trading on the stock market.

Gao, Ritter and Zhu (2012), describes the increasing failure of IPO listings as a problem in the IPO “ecosystem” and deem the IPO market as “broken”. Fama and French (2004) claim that there has been a change in IPO characteristics over the years. All indications are that the IPO market internationally has deteriorated regarding issues such as underpricing, long term underperformance, failure and the number of IPO listings. The primary objective of this study is to assess the long-term performance of 347 IPO companies that were listed on the Johannesburg Stock Exchange (JSE) from 1996 to 2007. A quantitative research approach was adopted. Because of skewed data natural logarithmic transformations were performed on data with a Z-value exceeding +/- 2.58. Also, all relevant values were adjusted for inflation which made comparing the output of the data over different time periods more reliable. All the industries on the JSE will be divided into six main sectors, namely: basic material, consumer goods, industrial, financial and real estate, electronic and lastly venture capital

The main purpose of this study was to assist long-term investors in their long-term IPO investment selection process by presenting them with factors and characteristics which can assist them in differentiating between potentially failed and successful IPO companies. A significant negative relationship was found between failure and BHAR. It was found that failed IPO displayed an average BHAR of -60.69%. Other companies, which include surviving, delisted (for reasons other than failure) or merged IPOs, noted to have an average BHAR of -19.52%. Successful companies displayed an average BHAR of -3.26%.

Taking the findings of this study into consideration the following was recommended to investors to be able to identify IPOs with high failure risk and potential poor long-term performance. With regards to cyclical markets, investors need to be particularly cautious when investing in an IPO which lists during a hot market period. When considering the board of listing, the AltX proved to have the most company failures as well as the worst long-term performance. With regards to the sector of listing, it was recommended to avoid sectors which experience high volumes of listings. It was also found that companies with a smaller age before listing displayed worse long-term underperformance and were more likely to fail. An initial offer price of below 175.97 cents and an issue size smaller than R232.43 million greatly improves the chances of poor long-term performance and company failure.

The possibility of poor long-term performance as well as IPO failure is also increased when the day one MAAR is 136.47% or greater. Therefore, it is recommended to investors to take all the market factors, company characteristics and initial share price movements mentioned above into consideration when making an investment decision, as it will assist them in being able to identify potential failing IPO companies with poor long-term performance.

Keywords: Initial Public Offerings, Johannesburg Stock Exchange, Alternative Exchange, Long-term Performance, Initial Underpricing, Failure, Success, Company Characteristics, Cyclical Markets.

ABSTRAK

Een van die oudste en gewildste frases in die besigheidswêreld is: "Die enigste manier om te oorleef is om te groei" (Audretsch en Lehmann, 2005: 6). Maar dikwels is die behoefte om te groei groter as die finansiële hulpbronne wat beskikbaar is om die verlangde groei te akkommodeer. Een van die populêrste maniere om nuwe kapitaal in te samel om 'n *Initial Public Offering (IPO)* uit te reik. Draho (2004: 1) definieer 'n *IPO* as die proses waar die aandele van 'n private maatskappy beskikbaar gestel word vir openbare beleggers vir verhandeling op die aandelemark.

Gao, Ritter en Zhu (2012), beskryf die toenemende mislukking van *IPOs* as 'n probleem in die *IPO* "ekosisteem" en ag die *IPO* mark as "gebroke". Fama en French (2004) beweer dat daar 'n verandering in *IPO* karaktereenskappe oor die jare was. Alle aanduidings is dat die internasionale *IPO* mark verswak rakende kwessies soos *underpricing*, negatiewe langtermyn opbrengste, mislukking en die aantal nuwe *IPOs* wat op die beurs lys. Die primêre doel van hierdie studie is om die prestasie van 347 *IPO* maatskappye wat op die Johannesburgse Effektebeurs (JSE) gelys het van 1996 tot 2007 te bestudeer.

Die hoofdoel van hierdie studie is om langtermyn-beleggers te help in hul *IPO* keuringsproses deur die melding van faktore en eienskappe wat hulle kan help om te onderskei tussen potensieel mislukte en suksesvolle *IPO* maatskappye. 'N Beduidende negatiewe verhouding was gevind tussen mislukking en posetiewe langtermyn opbrengstes. Daar is gevind dat mislukte *IPOs* 'n gemiddelde *BHAR* van -60,69% gehad het. Ander maatskappye, wat oorleef, gedenoteer (vir ander redes as mislukking) of saamgesmelt het, het 'n gemiddelde *BHAR* van -19,52% gehad. Suksesvolle maatskappye het 'n gemiddelde *BHAR* van -3,26% gehad. 'N Kwantitatiewe navorsingsbenadering is aangeneem. As gevolg van skewe data was natuurlike logaritmiëse transformasies op die data uitgevoer met 'n Z-waarde van meer as +/- 2.58. Ook, alle relevante waardes was aangepas vir inflasie wat die vergelyking van opbrengstes van die data oor verskillende tydperke meer betroubaar maak. Al die maatskappye op die JSE was verdeel in ses sektore.

Met betrekking tot die bevindings in die data-analise sal die volgende aanbeveel aan beleggers gemaak word om in staat wees om hoë risiko *IPOs* en potensieel swak langtermyn presterende *IPOs* te identifiseer. Met betrekking tot sikliese markte,

beleggers moet veral versigtig wees wanneer 'n *IPO* wat lys tydens 'n warm mark periode. Met betrekking tot die bord (*Main board of AltX*) waar die *IPO* lys, was dit gevind dat meeste maatskappy wat lys op die AltX misluk en ook die slegste langtermyn prestasie getoon het. Met betrekking tot die sektor waarin die maatskappy lys, beleggers word aanbeveel om sektore wat hoë volumes van nuwe maatskappye wat lys ervaar te vermy, veral gedurende warm mark te vermy. Dit was ook gevind dat maatskappye met 'n kleiner ouderdom swakker presteer oor die langtermyn en meer waarskynlik was om te misluk. 'N aanvanklike aanbod prys van 175,97 Suid-Afrikanse sent en kleiner en 'n lysings grootte kleiner as R232.43 miljoen verhoog die kans van swak langtermyn opbrengste en mislukking.

Die moontlikheid van swak langtermyn opbrengste sowel as *IPO* mislukking word verhoog wanneer die dag een *MAAR* 136,47% of meer is. Beleggers word dus aanbeveel om al die mark faktore, die maatskappy eienskappe en aanvanklike aandeelprys bewegings in ag te neem wanneer 'n belegging besluit geneem moet word, aangesien dit hulle sal help om potensiële mislukte *IPO* maatskappye te identifiseer met swak langtermyn opbrengstes.

Sleutelwoorde: Aanvanklike Openbare Aanbod, Johannesburgse Effektebeurs, Alternatiewe Beurs, Langtermyn prestasie, Aanvanklike Pys, Mislukking, Sukses, Maatskappy Eienskappe, Sikliese Markte.

DECLARATION

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KEY TERMS

IPO:	Initial Public Offering
JSE:	Johannesburg Stock Exchange
AltX:	Alternative Exchange
ALSI:	All Share Index
CPI:	Consumer Price Index
Log N:	Natural Logarithmic Transformation
MAAR:	Market-Adjusted Abnormal Return
BHR:	Buy-and-Hold Returns
BHAR:	Buy-and-Hold Abnormal Return
P/E:	Price to Earnings ratio
Long-term underperformance:	The relative negative returns earned on an IPO investment for an extended period.
Initial underpricing:	The difference in the offer and the closing price on the day of listing.
Offer/Issue price:	The price per share at the beginning of the first day of trading
Offer/Issue size:	The amount of shares multiplied by die number of shares issued. It is also in referred to as Gross Proceeds.
Age of the company:	The age of the company refers to the number of years in existence before listing as a public company.
Cyclical markets:	The market can either be hot or cold. A hot market period is characterised by a high number of listings. A cold market period is characterised by a low number of listings.

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CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

One of the oldest and most popular phrases in business is: “*The only way to survive is to grow*” (Audretsch and Lehmann, 2005:6). However, more often than not the need to grow exceeds the financial resources available to accommodate the desired growth. One of the most popular methods to raise new capital is to issue an *Initial Public Offering*. Draho (2004:1) defines an *Initial Public Offering* (IPO) as the process where the shares of a private company become available to public investors for trading on the stock market. Firer, Ross, Westerfield and Jordan (2008:480) make mention of some of the benefits of private companies going public. Their findings relate to an IPO company attaining additional funding to grow, to increase the company’s marketability and also to create an exit strategy for existing shareholders. Timmons, Spinelli and Adams (2012:414) give some additional reasons why private companies go public. Some of the main reasons relates to the increase the company’s net worth. In addition, the company would broaden their shareholder base and, in doing so, attains funding for growth and new investment opportunities. As a result of going public, the company improves its credibility, liquidity and marketability for both the investor, the owners, and in some cases, also for the employees.

Over the years IPOs have been associated with a variety of anomalies and phenomena. The most common anomaly associated with IPOs across world markets, are initial underpricing and long-term underperformance. Initial underpricing can be seen when the closing price is higher at the end of the first day of trading than the initial offer price. Loughran and Ritter (2004:15) define first-day returns as the change from the offer price to the closing market price. Zhu (2011:47) found initial underpricing to be present in various stock markets: Argentina (46.67%), Australia (22.44%), Finland (34.19%), Hungary (99.76%), Pakistan (75.93%) and Singapore (29.40%). It can thus be deduced that new investors often take advantage of underpriced IPOs by buying the shares prior to listing at the offer price and selling it within the first few days of trading. The reasons for this short-term speculative buy-

and-sell strategy of many IPO investors include taking advantage of IPO underpricing, but at the same time, minimizing the risk of long-term underperformance and, even more importantly, avoiding the risk of possible long-term failure of the IPO company (Firer, Ross, Westerfield and Jordan, 2012:472).

In addition, it is important to take note that the long-term underperformance of IPOs contributes to initial underpricing. Long-term underperformance is defined by Liu (2009:76) as the negative return of an IPO compared to the market for an extended period of time. Due to the worldwide phenomenon of poor long-term performance of IPOs, it has been found that companies deliberately underprice their shares to compensate for potential poor long-term performance and also to attract more investors (Firer *et al.*, 2012:472). Long-term underperformance has been researched and documented globally (Santos, 2011:1; Drobetz, Kammerman and Wälchli, 2005:261; Govindasamy, 2010:1; Gounopoulos, Nounis, Stylianides, 2008:16, Habib and Ljungqvist, 2001:343). Comprehensive evidence was found that IPOs underperform with a substantial percentage relative to the market over a three-year, five-year and ten-year period. Long-term underperformance of IPOs can be defined as "...relative to other companies, investors appear to lose out by continuing to hold the shares of a company that have recently gone public" (Yuhong, 2010:2). The average negative return, relative to the market, earned over an extended period of time can also be defined as long-term underperformance (Liu 2009:76). The level of long-term underperformance of IPOs has been found to vary across different markets worldwide. In the US, IPOs underperformed the market by 23.4% (Ritter and Welch, 2002:1795). Schuster (2003) studied the long-term underperformance of European IPOs and found underperformance in Germany (11.66%), France (19.01%), Italy (41.85%), Netherlands (15.58%), Spain (30.21%) and Sweden (12.70%). Further, long-term underperformance was also documented for England (21.98%), Thailand (41.70%), China (29.60%) and Japan (34.49%) (Goergen, Khurshed and Mudambi, 2007; Vithessonthi, 2008; Cai, Lui and Mase, 2008; Kirkulak, 2008).

Other studies (Fischer and Pollock 2004; Certo *et al.*, 2001, Weber and Willenborg, 2003) also found that companies wanting to go public are faced with immense risks. Damodaran (2011:350) states that a loss of control may be experienced due to the issuing of new shares. The shareholders of a public company have a big influence

as to which decisions are taken in the company. This poses a threat to the existing management as going public may bring about a change in control and a possible restructuring of the company. The higher level of disclosure of being a public company also means that the company won't be able to hide any losses and great emphasis will also be placed on ethics and corporate social responsibility. Damodaran (2011:350) further adds that the legal requirements, combined with the additional costs associated with being a public company, can also be a determining factor in the decision to go public. Some other risks include: the liability of a public company being new in the market and not being a private company anymore; a change in the company's management and overall organizational transformation that also poses a real risk and contributes to the possibility of long-term underperformance and even failure (Fischer and Pollock 2004:463).

In research done on IPO survival and failure in the United States (Beaver 1966, Altman 1968 and Ohlson 1980), the United Kingdom (Inman 1991 and Amini and Keasey, 2013), Germany (Audretsch and Lehmann, 2005) and Australia (Cybinski 2001) it was observed that certain company characteristics and market factors play a critical role in the long-term aftermarket performance of IPOs. A variety of other studies (Hughes and Lee, 2006, Sohail and Raheman, 2009; Sahoo and Rajib, 2010; Demer and Joos, 2007; Carpentier and Suret, 2011) also found several indicators which had a real impact on IPO failure. These indicators can be divided into company characteristics (market capitalization, age of the company and sector of listing), issue related characteristics (offer price movement of IPO shares, hot and cold market cycles and board of listing), market related factors (market to book value and price to earnings ratio) and pre-financial ratios (return on assets, return of equity, debt to equity ratio, operating profit margin, total asset turn over, current ratio, quick ratio). Therefore, investors could benefit substantially if they were able to identify the market factors and company characteristics that can help explain and even predict IPO failure.

1.2 PROBLEM STATEMENT

An *Initial Public Offering* (IPO) creates the ideal opportunity for investors to earn above average returns and share in the company's success as it grows (Foerster, 2003: online). However, more often than not the trend observed and documented

across different stock markets have been that the long-term success rate of IPOs are decreasing (Platt, 1995, Gao, Ritter and Zhu, 2013, Weber and Willenborg, 2003; Fischer and Pollock 2004; Certo, Covin, Daily and Dalton, 2001). Other studies also indicate a steady increase in IPO failure over the last twenty years despite the fact that the average company displays promising fundamentals in terms of the age of the company, an increase in the average size of the offerings and favourable accounting ratios (Weild, 2011; Demer and Joos, 2006; Fischer and Pollock, 2004). Consequently, higher levels of underpricing, coupled with long-term underperformance and declining numbers of listings, are often associated with increasing failure rates of IPOs. Research pertaining to IPO failure on the JSE is very limited, the greater body of research conducted on failure relates to overseas markets (Foster-Johnson, Lewis, Seward, 2001; Amini and Keasey, 2013; Fischer and Pollock, 2004; Li, Zhang, Zhou, 2006; van der Goot, Giersbergen and Botman, 2009; Espenlaub, Khurshed and Mohamed, 2012 and Vismara, Paleari and Ritter, 2012). The decline in the success rates of IPOs have in most cases resulted in failure of the companies rather than survival. Additionally, as a possible result of the increased failure observed, a steep decline in the number of IPO listings have also been documented.

Gao, Ritter and Zhu (2012:1664) describes the decline of IPO listings as a problem in the IPO “ecosystem” and deem the IPO market as “broken”. The steep decline in the popularity of issuing an IPO could, to a large extent, be explained through the equally as concerning and significant increase in the failure rate of newly listed companies. When defining IPO failure, various studies classify failure in a variety of ways. Burhop and Chambers (2010:10) classify failure of an IPO as the liquidation of the company or where shareholders end up receiving no return on their investment. Fischer and Pollock (2004:470), and Espenlaub, Khurshed and Mohamed (2012:434) classify IPO failure as the delisting of a company from the primary stock exchange. Demers and Joos (2005:11) view failure as a share which traded at or below \$1 for their period of time.

Between 1980 and 1991 it was observed that more than two out of five small US IPO companies have delisted within the first ten years of trading due to poor performance (Fama and French, 2004:230). In their study Demers and Joos (2005:37) specifically analysed the difference between high technology firms and non-technology firms.

They divided their 3 990 US IPO sample into three main categories, namely: non-tech, high-tech and Internet IPOs. Each of these categories displayed failure rates of 19.7%, 16.4% and 20.8% respectively. Still concerning the US IPO markets, Bradley, Cooney, Dolvin and Jordan (2006:21) noted the five-year failure of US penny stocks to be 51.4%. Kooli and Meknassi (2007:39) also found that after five years 44.82% of their original US IPO sample failed or were involved in mergers or acquisitions.

However, failure is not limited to just the US IPO market. Substantial failure rates of new equity issues were also observed in Canada. Carpentier and Suret (2011:109) documented an average failure rate of 48.52% for a sample of 2373 IPO companies. Only 13.81% of all the companies were deemed to be surviving successfully. Additionally, Carpentier and Suret (2011:111) pointed out that in the long-term only 10% of all Canadian IPOs are successful and that 60% of all IPOs fail. When analysing the failure of small British IPOs, with the main focus being on companies that were listed on the Alternative Investment Market, Amini and Keasey (2013:725) noted that the overall failure rate of all IPO listings were 66.85%. Further, 27.05% of the IPOs remained listed and only 6.10% of the whole sample graduated to become listed on the London Stock Exchange (main board). Although there are some IPO success stories on the JSE, such as British American Tobacco, Curro Holdings, Zeder Investments and Vodacom, the bulk of investors still end up selecting IPOs with poor long-term performance. Neneh (2013:177) found that out of a sample of 310 IPOs which were listed on the JSE between 1996 and 2007, only 32 were classified as a success whereas 65 companies were deemed to have failed. The rest of the companies were either acquired or just merely surviving.

It can thus be deduced that it is very important, from an investor's point of view, to be able to distinguish between potentially successful versus potentially failing IPO companies. Mirza (2005:35), states that the modern theory in financial economics revolves around the investor being able to maximize his return for a given level of risk. Asma (2010:8) adds that the main aim of any investor is to be able to generate the maximum amount of return both in relative as well as absolute terms. However, Smit and Neneh (2014:60) state that investors find it difficult to initially identify underpriced IPO stocks which are most likely to succeed. When investing in an IPO, investors encounter a phenomenon known as information asymmetry. Information asymmetry occurs when one group of investors have more information than the

other group. Consequently, if some investors are at an information advantage compared to others, some investors will experience disappointing returns (Lattimer, 2006:83). According to Álvarez and González (2005:331) the hype created by an IPO may cause an overreaction by the market, which can lead to a speculative decision by investors to invest a substantial amount in an IPO without sufficient information and thus resulting in disappointing returns on their investment. Additionally, the presence of information asymmetry has also been found to lead to another phenomenon, known as the “winners curse”. According to the “winners curse” uninformed investors (which usually include the majority of all investors) will subscribe for all the different IPO shares (Agarwal, 2006:31). However, because they are uninformed they will find themselves predominantly holding overpriced IPO shares that have disappointing long-term performance, which will ultimately lead to the investor experiencing losses as a result of poor initial selection.

The failures, disappointing long-term performance and difficult selection process of IPOs, combined with a host of other contributing factors, have led to the misperception that the IPO market is an unattractive and a very risky market where it is extremely difficult for companies to survive and for investors to earn above average returns. It can therefore be assumed that the need exist to study the long-term performance of failed IPOs, specifically on the JSE. Market factors and firm characteristics which have a significant impact on the performance of these failed IPOs over the long-term needs to be considered. Their impact also need to be made known to assert whether they are able to serve as explanations of poor long-term IPO performance on the JSE. Additionally, the vagueness of the selection process (to distinguish which IPOs are most likely to be successful and which are most likely to fail), the “winners curse” and information asymmetry which also contribute to poor long-term IPO performance and failure need to be addressed.

1.3 RESEARCH PURPOSE

Primary Objective

The primary objective of this study is to assess the long-term performance of 347 IPO companies that were listed on the Johannesburg Stock Exchange (JSE) from 1996 to 2007. The main purpose of this study is to be able to assist long-term

investors in their IPO selection process by presenting them with factors and characteristics which can assist them in differentiating between potentially failed and successful IPO companies.

Secondary Objectives

It is of critical importance for investors with a long-term buy-hold strategy to be able to improve their selection of potentially successful IPOs to maximize returns. The secondary objectives of this study are thus:

- To study the performance of IPOs listed on the JSE from 1996 to 2007.
- To compare the failure of IPOs on the JSE to failure of IPOs in other markets internationally and to determine if the IPO environment on the JSE is better or worse compared to the rest of the world.
- To assert whether the yearly long-term returns of IPOs change significantly over a seven year period on the JSE.
- To determine if the IPOs underperformed the JSE in total absolute and total relative terms over a seven year period.
- To report on the day one performance of IPOs on the JSE from 1996 till 2007; and to find out whether initial share price returns had a determining impact on long-term IPO returns and failure.
- To determine whether company characteristics can be used to explain the long-term returns and failure of IPOs listed on the JSE.
- To examine if IPO failure and long-term returns can be explained through market factors.

The market factors and company characteristics which have been considered when examining the long-term performance of failed IPOs on the JSE, are included in the table below.

Table 1.1 Company characteristics and market factors

Company Characteristics	Market factors
Offer price	Sector of listing
Offer size	Cyclical market periods
Age of the company	Board of listing

1.4 CONTRIBUTION

Many studies done on IPOs over the years have focused on different aspects of post-IPO aftermarket performance (Santos, 2011; Drobetz, Kammerman and Wälchli, 2005; Gounopoulos, Nounis and Stylianides, 2008). However few studies have predominantly focused on the market factors and company characteristics impacting the long-term performance of failed IPO companies in a South African context. Therefore, this study contributes to the existing literature of IPO studies on the JSE. Another benefit is that the sample size is very comprehensive and up to date, which will allow any interested party to have access to timely findings pertaining to IPO long-term performance and failure on the JSE.

This study is also of particular importance to companies, existing shareholders and possible investors, as they are constantly looking for methods, models and measurements to forecast and predict financial distress and prevent any losses of their original investment. Therefore, this study will also improve the selection process for investors whereby they will be able to identify failing IPO companies and also assist them to rather invest in potentially successful IPOs, which will allow them to earn above average long-term returns. As a result of improving the selection process for investors, companies will also be able to price their shares more correctly and hence “leave less money on the table” during the process of going public.

The characteristics and factors covered in this study will also assist the underwriters of IPO companies. Underwriters will be able to identify and distinguish between possible successful and failing companies. This will substantially decrease the risk for an investment bank looking to underwrite an IPO with a high failure risk. The findings will also act as an early warning system to identify any irregularities in the company which may lead to failure. This study will thus make it possible for

companies, existing shareholders and investors to react in a timely manner, while also improving the selection process by being able to differentiate between possible favourable and unfavourable IPO opportunities.

The other main contribution of this study is that is made use of natural logarithmic transformations in addressing skewed data. The use of natural logarithmic transformation on skewed data is crucial in ensuring more representative and reliable data.

1.5 OVERVIEW OF RESEARCH METHODOLOGY

This study will follow a research methodology that will firstly cover a comprehensive review of existing literature pertaining to the difficulty of the IPO selection process for investors and the disappointing long-term performance of IPOs, as well as the failure of IPOs worldwide. Secondly, the establishment of empirical evidence from IPOs on the JSE related characteristics and factors impacting on failure have been documented.

1.5.1 Literature Review

The review of existing literature by a wide variety of credible authors have been sourced in order to support this study. By comparing the findings in this study to other studies will improve the body of knowledge on the subject.

The literature review for this study will look at various aspects of scientific literature pertaining to IPOs (initial under-pricing, long-term performance, failure, market factors and company characteristics). Some of the main aspects that have been covered include: the size of the shares issued, the “hot market issue”, theories and concepts of financial ratios, initial abnormal performance, and long-term performance.

The information for this study have been retrieved from of a large body of literature pertaining to IPOs. Only sources that contain credible data such as international and local peer-reviewed journals, conference proceedings, finance books, working papers, unpublished dissertations, internet sources and other research materials obtained from the digital and hard copy library of the University of the Free State, have been used.

1.5.2 Research Design

Because of the different research problems and questions, a combination of different measurement techniques was used. A quantitative research approach was adopted for the purposes of this study. Quantitative research is a study in which the findings are mainly the product of statistical summary and analysis (Ghauri and Gronhaug, 2005:204).

1.5.3 Data Collection

In this study, various combinations of secondary data was used. Secondary data was obtained from information on the new IPO listings on the JSE from 1996 to 2007. Data was sourced from McGregor-BFA database, JSE database, and Bloomberg South Africa, in which the annual financial reports, financial statements, daily share price movements (closing, average and volume) offering price, closing prices of IPO companies was collected.

1.5.4 Population and Sample

A total population of 426 companies issued an IPO on the JSE between 1996 and 2007. However, only 347 had sufficient information for the purpose of this study, which gave a 81.46% population strength. Given the size of the sample relative to the population, it can be concluded that the findings of this study is a reliable and true reflection of IPO performance on the JSE for the 12 year period till 2007.

1.5.5 Measurement Techniques and Calculations

The following measurement techniques was used to assist in the measuring and explaining of IPO long-term performance, initial under-pricing, failure, factors and characteristics:

- Market-Adjusted Abnormal Return (MAAR)
- Buy-and-Hold Abnormal Return (BHAR)
- Buy-and-Hold Return (BHR)
- The JSE All Share Index (ALSI)

1.5.6 Data Analysis

Microsoft Excel and the Statistical Package of Sciences (SPSS) statistical software programmes was used to analyse all statistical data in this study. Correlation

coefficients, cross-tabulations, chi-square, one-way analysis of variance (ANOVA), t-test, levels of significance and multiple regression analysis was gathered from these programs.

1.6 LIMITATIONS

Although other studies on the JSE made use of the cumulative abnormal return (CAR) technique (Neneh, 2013:213; Mashaba, 2014:45 as well as M'kombe and Ward, 2015:9) this study measured long-term performance of IPOs by only making use of the buy-hold-abnormal return (BHAR) technique. The JSE All Share Index was the only benchmark used to compare the long-term performance of IPOs and to put their performance into perspective in a South African context. Because this study predominantly focuses on the long-term performance of IPOs on the JSE, only companies which were listed until 2007 could be considered to make sure that there is sufficient data for seven years after the company issued an IPO.

Moreover, although this study considers a wide variety of characteristics such as offer price, offer size, board of listing and cyclical markets, other variables such as the management of the company, company financials and the track record of the company were not included for consideration. The reason why the management of the company was not included in this study is because the measurement of the prestige of the management is very subjective and differs across existing literature. In addition, the only market factors that were considered were hot and cold market cycles, the sector of listing, the board of listing and to a lesser extent South Africa's economic climate.

Although the database of this study is very comprehensive, there was still data from a few select companies that could not be gathered which resulted in excluding incomplete companies and meant that the original data sample shrunk to give a final response rate of 81.46%. Also, as a result of the limited literature available pertaining to failure of IPOs on the JSE, the findings and conclusions will in most cases be compared against and put into context by referring to other international studies on IPO failure.

1.7 CHAPTER OUTLINE

Chapter 1: Proposal and Research

This chapter introduced the concept of what an IPO is and the overview of this study. This chapter also included the problem statement, the research objectives, and the contribution of this study and also gave a brief overview of the research methodology.

Chapter 2: Introducing Initial Public Offerings

The aim of this chapter is to present a strong background to the IPO process as a whole. Therefore, mention was made of the importance of a stock market as a facilitator between the potential investor and the issuing company. This chapter will also examine the decision to go public and the pros and cons associated with it. In addition, the role players in the IPO process, such as the existing shareholders, the issuing company, the underwriter and the new investors, will also be discussed.

Chapter 3: Initial Public Offerings Performance

In this chapter the long-term performance, the initial underpricing, information asymmetry, winners curse, “left money on the table” and failure of IPOs was discussed in depth by referring to prior studies done on the JSE as well as in other stock markets.

Chapter 4: Factors and Characteristics impacting Initial Public Offerings

This chapter will discuss and explain the company characteristics (market capitalization, age of the company and sector of listing), issue related characteristics (offer price movement of IPO shares, hot and cold market cycles and board of listing), market related factors (market to book value and price to earnings ratio) and pre-financial ratios (return on assets, return of equity, debt to equity ratio, operating profit margin, total asset turn over, current ratio, quick ratio) associated with IPO failure.

Chapter 5: Research Methodology

The aim of this chapter is to discuss the research methodology to be used in the study. The research objectives, research design, method of data collection as well as the data sample was mentioned and described. The measuring techniques to measure IPO performance will also be discussed. The market-adjusted abnormal return (MAAR) technique was employed to measure initial underpricing. The buy-and-hold abnormal return (BHAR) technique was used to measure the long-term performance. The definition of failure, delisting, mergers, survival and success will also be presented as well as the definition of the key terms to be used in the interpretation of the data. Other aspects which were covered in this chapter include the selection of the benchmark, the use of event time analysis and the categorising of all the industries on the JSE into six main sectors.

Chapter 6: Data Analysis

This chapter began by presenting descriptive statistics and characteristics of the data sample. Such as the average level of initial underpricing and long-term underperformance, the cyclical nature of IPO listings on the JSE, the listings per sector, etc. The data analysis chapter will include all the tables and graphs derived from the method of data analysis, such as correlation coefficients, cross tabulations, chi-squares and t-statistics. Further, the findings have been interpreted and put into context by comparing it with the benchmark as well as other studies across the world.

Chapter 7: Conclusions and Recommendations.

This chapter will discuss the findings and conclusions of the data analysis. Recommendations will also be made to the investor based on the findings and conclusions. In addition, areas of further study will also be recommended.

1.8 CONCLUSION

This chapter defined the concept of what an IPO is as well as the reasons why companies choose to go public. The main reasons why companies go from private to public relate to raising external funding, increasing the company's net worth and creating an exit strategy for existing shareholders. This chapter also made mention

of some of the most common phenomena and anomalies associated with IPOs across the world. Initial under-pricing and long-term underperformance were found to be the most common anomalies as it was established to be evident in most stock markets. It was further established that initial underpricing of IPOs can be explained through poor long-term performance. Other phenomena such as “the winners curse” and information asymmetry were also discussed.

The failure of IPOs were identified and established to be the main focus of this study. Evidence to confirm the substantial increase in IPO failure across different stock markets around the world was presented. Largely due to these phenomena, high failure rates and other factors and characteristics, investors find it very difficult to identify unfavourable IPO investments and end up selecting IPOs with poor returns.

In addition this chapter provided a brief overview of this study and discussed the contribution, limitations, data analysis and chapter outline. The next chapter will discuss the process to go public on the JSE, why companies would consider going public, the advantages and disadvantages of going public and also the parties involved in an IPO.

CHAPTER 2

INTRODUCING INITIAL PUBLIC OFFERINGS

2.1 INTRODUCTION

In order to understand the concept of what an IPO is and where it finds its place in the lifecycle of a company, the following needs to be understood clearly: the background on the IPO process, the importance of the stock market as a facilitator between the potential investor and the issuing company, the decision to go public and the role players in the IPO process (such as the existing shareholders), the issuing company, the underwriter as well as the new investors. As described by Latham and Braun (2010:670) the progression from being a private company to being a public company is one of the most significant milestones in the life cycle of a company. The transition from being a private company to a public company usually occurs via an IPO. An IPO is defined by Zimmerer and Scarborough (2005:393) as: "A method of raising equity capital in which a company sells shares of its shares to the general public for the first time". There are usually a wide variety of motives for companies to go public and these motives can differ from company to company (Andersson and Westling 2009:3). Brealey and Myers (2003:15) define an IPO as follow: "The original sale of a company's securities to the wider public for the first time in the primary market". This chapter aims to clearly distinguish between the primary and secondary market. The significant role which the stock market fulfils will also be discussed. A stock exchange effectively creates a platform which facilitates the buying and selling of shares between listed companies and investors.

Although it may seem quite beneficial for companies to go from private to public, there are some implications and costs to consider (Gehrig and Strömberg 2009:3). These implications include administrative costs, adverse selection and also a greater degree of disclosure on company information. In addition, the impact on the key role players in the IPO process, such as the existing shareholders, the issuing company, the underwriter and the new investors have been discussed. These role players each have conflicting interests in the IPO process. They have conflicting interests because the issuing company and existing shareholders want to raise the maximum amount of capital with the least amount of dilution of equity and control, while the investor

wants to buy the newly issued shares at the lowest price possible. The underwriter acts as an intermediary representing the interests of the existing shareholders, the IPO company and the investors (Jenkinson and Ljungqvist, 2001:86).

2.2 THE ROLE OF THE STOCK MARKET

A stock market is a capital market in which securities can be freely exchanged in a regulated environment (Firer *et al.*, 2012:466). Lasher (2010:188) considers a stock exchange as being a financial system which forms part of the larger economy of a country. Draho (2004:116) found a direct link between the pace of economic growth and companies who have access to external capital. These companies also help the economy grow by making use of the well-developed stock markets to allocate external funds more efficiently. Fama and French (2004:229) note that the heart of any modern capitalist system is a market where equities are traded publicly. Therefore, a stock exchange is vital in generating economic growth and stimulus. The JSE, for example, makes it possible not only for local investors but also for international investors to invest in local listed companies. The inflow of foreign investment into South Africa is vital for economic growth as it will aid listed companies in expanding and growing their business and also in creating jobs. Harmilapi and Kain (2012:1) view a stock exchange as a place where companies go public and raise funds in the form of issuing shares. The main advantage of going public is to be able to issue shares in exchange for external funding that can be used for growing the company and to take on big projects which would not have been otherwise possible (Chanin 2010:1). Thus a stock market creates the ideal platform for companies to obtain interest free external funding. A stock exchange can also be described as a central location where buyers and sellers of securities meet to conduct trades (Mishkin, 2013:71). A stock market also creates an environment for investors to potentially earn above average returns, provided they initially select the correct shares to invest in. Therefore, a stock exchange is vital not only to the economic growth and stimulus of a country, but also for companies looking to raise interest free external funding. It is also vital for investors looking for above average returns (Van Heerden and Alagidede, 2012:130). Draho (2004:110) makes supporting observations by stating that a quality stock market and the decision to go public are inseparably woven together. He states that the quality of a stock market is

usually measured by price efficiency, market depth and liquidity. The quality of these attributes will also have a significant impact on a company's decision to use an IPO as an exit strategy for existing shareholders.

Correia, Flynn, Uliana and Wormald (2013:13-4) further identify that the main responsibilities of the JSE include the following: facilitating the capital raising process for companies in the primary market, ensuring the existence of a secondary market for share trading in order for investors to buy and sell securities, monitoring the performance of listed companies by measuring the movements in the share price, to enhance the public profile of the company and to improve disclosure for existing and potential investors to insure transparency in the market. Thus, a stock market can be described as an organized market which creates an opportunity where existing shares can be bought and sold easily, while also making comprehensive information available to potential investors with regards to the company's financial position, share price and share volumes (Indian Financial Market, 2008:73).

It is also important to note that the stock market can be divided into a primary market and a secondary market (Nidhi, Payel and Vinod, 2010:1). Mishkin (2013:70) points out that the primary market is a financial market where new security issues are sold to initial buyers, whereas a secondary market is a financial market where previously issued securities can be traded amongst investors. This trading of shares can either take place directly with another investor or it can take place indirectly through a broker. A broker is an agent for an investor who matches the need of the buyer with the offering of the seller (Mishkin, 2013:70).

After understanding the vital role a stock market fulfils and the different workings of the stock market, it is also important to take note of the listing requirements of the Johannesburg Stock Exchange to get a good understanding of the type and size of the companies that list on the JSE.

2.3 JOHANNESBURG STOCK EXCHANGE AND LISTING CRITERIA

The Johannesburg Stock Exchange was founded in November 1887 by Benjamin Woollan. After the discovery of gold in Gauteng many mining and financial companies were established. The JSE was originally found to create a market place where shares in these new companies could be traded. As the years

progressed the JSE evolved from a floor-based trading market to a modern electronic securities exchange. In June 1996 the floor-based open outcry trading system was closed and replaced with a screen based system referred to as the JET system. As a result of the introduction of the JET system transparency, efficiency of trade as well as security improved. The JET system also encouraged more buyers and sellers to participate in trading, thus trade volumes on the JSE increased significantly since 1996. Further, in July 1999 the JSE introduced STRATE, also known as “Share Transactions Totally Electronic”, which enabled almost all transactions to be settled electronically. By 2002 all the counters of the JSE adopted the STRATE system (Correia *et al.*, 2013:13-4). The JSE also consists of two boards where companies can list, namely The Main Board and the AltX (Alternative Stock Exchange). Issues such as the funding requirements and the size of the company as well as what the company aims to achieve through the listing, will determine whether it will list on the JSE Main Board or on the AltX.

The Main Board of the JSE is for listed companies who have 20% listed issued capital, R8 million assessed profit history over the last three years and have a minimum of R25 million subscribed capital, whereas when listing on the AltX, a minimum of R2 million share capital is required (JSE, 2015:online). The AltX was founded in October 2003 and the purpose of it was to create a platform for small to medium size high growth businesses who want to go public, but who were not big enough to list on the JSE Main Board (Manikai, 2011:8). Therefore, the AltX caters for a segment of the market which would otherwise not have gone public because of the major listing requirements of the JSE Main Board. Firer *et al.* (2012:469) points out that the AltX was specifically designed with the following business types in mind; fast growing start-up businesses, family-owned businesses, black economic empowerment (BEE) companies and also junior mining companies. Therefore, from an investor’s point of view, it is very advantageous to have some AltX companies in their portfolio, as some of these companies have the potential to become Main Board companies. The transition from the AltX to the Main Board will more often than not yield above average returns (Brown, 2004:7-8).

In addition, when a company considers listing on the JSE it must consider and adhere to the listing requirements. Together with some of the listing requirements

mentioned above, the table below documents the listing requirements for the Main Board as well as the AltX.

Table 2.1: Listing requirements on the JSE

REQUIREMENT	MAIN BOARD	ALT X
Share capital	R25 million	R2 million
Profit history	3 years	N/A
Pre-tax profit	R8 million	N/A
Shareholder spread	20%	10%
Number of shareholders	500	100
Sponsor/DA	Sponsor	Designated adviser
Publication of financial results in press	Compulsory	Voluntary
Number of transaction categories	3	2
Special requirements	N/A	Financial director
Educational requirements	N/A	All directors to attend the Directors Induction Programme (DIP)

(Source: JSE, 2015: online)

As seen in the table above there are significant differences in the listing requirements between the JSE Main Board and the AltX. The main aim for the difference in the listing requirements is to create a financial market environment where big established companies as well as smaller high growth start-up companies can list. More often than not, the small companies who list on the AltX eventually evolve into large companies which will migrate to the JSE Main Board. In addition, when considering the JSE's listing requirements in combination with stock exchanges in the USA, Britain, China and Nigeria, it becomes apparent that listing requirements differ from exchange to exchange. In order to offer shares to the public the company needs to comply with the requirements set out by the JSE, only after which an IPO can be offered to the public where the company sells its shares for the first time in the primary market (Amadeo, 2012:5 and Firer *et al.*, 2012:466).

2.4 MOTIVES FOR GOING PUBLIC

When a company decides to list, there will always be a motive behind going public. Marchisio and Ravasi (2001:18) did a study on the decision to go public in Italy. The table below records their findings according to a seven point Likert scale.

Table 2.2: Motives for going public

<i>Reasons</i>	Mean	Std. Deviation
To finance growth and development	5,73	1,51
To facilitate external growth	5,56	1,50
To improve the company's image and to increase its status	5,33	1,53
To increase the company's visibility	5,08	1,60
To diversify source of finance	4,81	1,82
To help the development of strategic alliances	4,54	1,74
To support managerialization of the company	4,27	1,65
To benefit from tax breaks	3,21	1,54
<u>To manage a succession passage</u>	3,19	1,99
To let shareholders sell part of their stocks	3,17	2,25
To balance the debt/equity level	3,15	1,84
To benefit from a favorable trend of the Stock Exchange	2,90	1,51
To involve new shareholders	2,83	1,95
To involve new people in the governance	1,90	1,31

(Source: Marchisio and Ravasi, 2001:18)

Clearly noticeable in the table above is the fact that the top five reasons to go public relates to financial restructuring, growth and marketability. Pour and Lasfer (2013:4850) argue that companies only approach the market to raise funds in order to rebalance their capital structure. Neneh (2013:21) also points out that motivation to go public may include financial factors, harvesting, publicity and talent attraction. The table below reports the top ten main reasons for companies going public on the JSE.

Table 2.3 Motives for listing on the JSE

REASONS FOR LISTING	No of companies	%
Raise capital now and in the future	19	63%
Raise the business profile and create brand awareness	11	37%
As an exit strategy and to unlock value for shareholders	9	30%
Forced to list by the holding company in unbundling	4	13%
Benchmark the price for BEE and avoid empowerment discounting	4	13%
Drive reorganisation, governance and compliance	4	13%
Retirement of debt	4	13%
Get recognition of the business strategy	4	13%
Facilitate establishment and management of employee share schemes	3	10%
Improve credibility with stakeholders	3	10%

(Source: BDO Research Project into JSE Listing, 2011)

As seen in the table above the main reasons to go public include: to raise additional capital, to create awareness about the company and also to create a harvesting opportunity. The following section aims at discussing some of these motives for going public in more detail.

2.4.1 Financing

An IPO offers a source of alternative funding to companies choosing to go public. The ability to raise new capital in the primary market should be a particularly attractive option for high growth and highly leveraged companies with large current and future investments opportunities (Pagano, Panetta and Zingales, 1998:39). Tsutsumi (2010:10) affirms that new capital raised during the IPO issue can contribute significantly towards increasing the company's capital resources and subsequently encourage growth and the acceptance of future projects. Poulsen and Stegemoller (2005:9) suggest that capital raised from an IPO will be invested in

company projects which management deems to be most important. The acceptance of projects is vital for the growth and expansion of a company, especially when focusing on an increase in market share. Projects are accepted or rejected on the basis of net present value and the calculation of the internal rate of return. Damodaran (2011:567) defines a good project as one that earns more than the cost of equity if cash flows are estimated on an equity basis, or the cost of capital if cash flows are measured on a pre-debt basis. He further stresses that the acceptance of good projects by the company typically leads to increased flexibility in setting dividend policy. He subsequently defends it against pressure from shareholders demanding higher dividends.

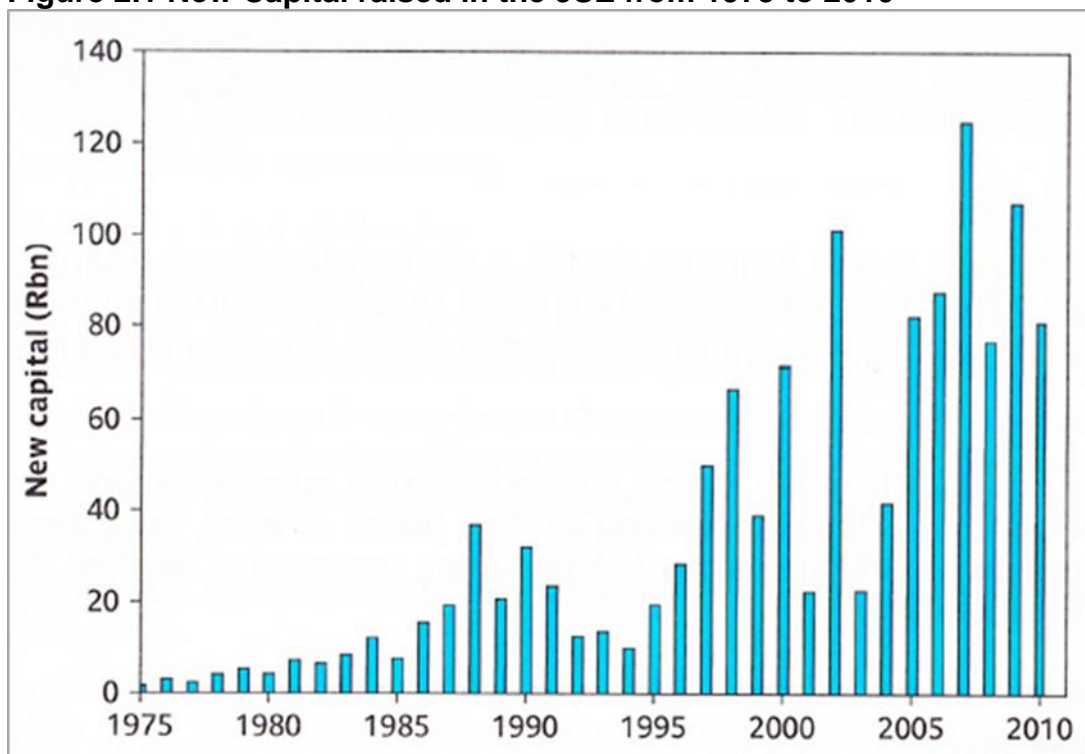
In addition, Poulsen and Stegemoller (2005:10) state that companies may also resort to going public as a result of the company moving beyond its optimal capital structure in terms of using debt which may result in a shortage of cash. A shortage of working capital can lead to a host of troubling implications, such as insolvency which may result in bankruptcy and possible liquidation. Song, Padoynitsyna, Vander, Bij, and Halman (2008:17) also affirm that sufficient working capital is one of the most important characteristics of a successful business. Furthermore, a shortage of working capital is not the only negative effect caused by a company that operates beyond its optimal capital structure. The increase in lending (bank debt) in a bid to solve cash flow problems will result in a substantial increase in fixed interest payments. Therefore, companies may also go public as a means to protect themselves against high borrowing rates and to maintain an optimal capital structure (Pagano *et al.*, 1998:29). The optimal capital structure is the point at which the mixture of debt and equity is the cheapest for the company. A possible reason for a company moving beyond its optimal capital structure can be explained by the growth rate of the company. It is not uncommon for a company to grow faster and accept more projects than it can handle. Therefore, an IPO offers a source of new capital to companies who are constrained in terms of available funding options for projects, growth and investments (Neneh, 2013:22). Baeclay and Smith (2005:10) remarked that there is a strong relationship between growth of a company and the changes experienced in its financial structure.

The financial motive for going public may further be strengthened by the often claimed advantage of reduced cost of credit. The reduction in the cost of credit can

mainly be attributed to the company's improved bargaining position as a result of being a publicly traded company (Pagano *et al.*, 1998:53). On the equity side a big incentive to issue shares in exchange for capital is the fact that funding obtain from shares issued, is in effect a non-payable, interest free loan. Geddes (2005:8) also believes that equity presents two major advantages over bank debt, namely: equity does not have to be repaid and equity also does not require regular payments as a company can choose when to pay dividends. In addition, Loudoffice (2005:2) confirms the paramount advantage of raising funds via an IPO by making mention of the fact that there is no immediate negative impact on the cash flow of the company as is the case with bank debt, which is accompanied with a stream of fixed interest payments.

The figure below by Firer *et al.* (2012:468) confirms the growing popularity of the JSE as a means to raise new capital, especially when considering that more capital had been raised from the years 2001 to 2010 than all the combined capital raised from 1975 to 2000.

Figure 2.1 New Capital raised in the JSE from 1975 to 2010



(Source: Firer *et al.*, 2012:468)

The increasing popularity of looking at stock markets for new capital was also observed across the rest of the world. In the year 1990 \$11 billion was raised by IPO

offerings. The capital raised shot up to \$176 billion in the year 2000 (Geddes 2005:7). Therefore by going public, a company may have greater access to resources, especially equity which can be raised with two main goals in mind being expanding the business and operating with the optimal mixture of debt and equity.

2.4.2 Harvesting

Having a good harvesting strategy in place is what distinguishes a successful business from the rest (Spinelli and Adams, 2012:561). The term harvesting has become synonymous as a means to exit from an investment. Therefore harvesting can be seen as a means by which investors and owners draw a return on the investment they made (Tajnikar, Bončca and Zajec, 2007:535). Draho (2004:11) describes an IPO as the first step in helping an existing shareholder to exit.

Investors could also choose to harvest as they may feel the business is at the optimal point to do so. Mason (2007:263) also views harvesting as a manner in which financial gains experienced through the business can be realised. Additionally harvesting can generally be seen as the activity by which investors reap the value of investment with the intention of using the profits. An investor may therefore choose harvesting their investment either through exiting their investment or by gradually divesting themselves by deducting the value of their investment from the company's free cash flow over an extended period of time (Tajnikar *et al.*, 2007:536). Harvesting can also be seen as one of the stages in the entrepreneurial investment process (Smith and Smith, 2000:566). Isaksson (2006:10) makes mention of three main stages of the venture capital cycle: contracting and valuation, value creation and the creation of an exit strategy. Thus, from the view point harvesting can be seen as the finale phase of the venture creating process.

A variety of studies (Leonetti, 2008, Timmons and Spinelli, 2004, Fischbach, 2005) established that harvesting is a strategy whereby owners minimise their risk of being in the business by converting their investments into cash or selling their shares. Moore, Petty, Palich and Longenecker (2008:281) affirm that investors prefer harvesting as a means to cash in on the value of their investment and in the process reduce risk and also create future opportunities. Timmons (1994:654) adds that an entrepreneur should establish and grow a company but also keep harvesting in mind. Their advice is to "keep harvest options open and think of harvesting as a

vehicle for reducing risk and for creating future entrepreneurial choices and options, not simply selling the business". Thus, Timmons (1999:575) argues that harvesting is not the end of the line for the business; harvesting is merely the point at which "the seeds of renewal and reinvestments are sown". Consequently, harvesting can be considered as a process to retain and recycle entrepreneurial capital.

Kensinger, Martin and Petty (2000:84) consider harvesting as a means to help the business grow and also to provide exiting stakeholders with liquidity for their investment. Seeing a clear route to harvesting is not only of primary importance to the parties inside the business but also for outside shareholders looking to obtain liquidity for their original investment. More often than not outside shareholders have expectations about their investment which usually includes taking the company public or the company being acquired by another company (Kensinger *et al.*, 2000:81). The point and the manner in which owners and investors choose to exit should be in the best interest of all parties. However, this is not always possible as it is very important to note that certain circumstances and characteristics have a big influence on the selection of a harvesting strategy (Tajnikar *et al.*, 2007:535). Timmons *et al.*, (2012:562) present entrepreneurs with seven harvesting options, which include: capital cow, employee share ownership plan, management buyout, merger, outright sale and offering an IPO. However, they consider going public as the most attractive of all the options. When a private company chooses to go public as a harvesting strategy it is a strong indication of the future plans for the company and the direction the company is heading in. It could be considered to be a very strong signal of possible future growth where by the company looks to expand in its current market or look to diversify into other related markets (Timmons *et al.*, 2012:563). Martinez and Perron (2004:14) adds that an IPO is the route managers and stakeholders take in order to create liquidity and be able to exist from their original investment. An IPO provides the ideal environment where existing shareholders can not only generate above average returns on their original investment but also diversify their investment.

Geddes (2005:12) offers some advice to owners considering taking a company public. Because potential investors are highly strung and very suspicious, it is not advisable for existing shareholders, and especially management, to offload their shares to the public at the point of IPO. The market could view this as negative sign

and may think that bad news is right around the corner, because shareholders inside the company have more knowledge about the health of the company than outside shareholders and potential investors. Geddes (2005:12) further adds that the underwriter will advise existing shareholders to sell their share systematically over time and also to bundle their shares together with new shares. Consequently, in reality it takes a number of years before liquid gains are possible after going public (Timmons *et al.*, 2012:563)

Private companies may also choose to go public for non-financial reasons which pertain to marketability, increased awareness and talent attraction (Ritter and Welch, 2002:5).

2.4.3 Marketability

Firer *et al.*, (2012:467) add benefits other than financial advantages of private companies going public, which include marketing advantages and attracting the public's attention for an increase in capital raised. Marketability of shares becomes especially critical when trying to sell a minority share in a private company. Schulze, Lubatkin and Dino (2003:181) elucidate that minority shareholders are faced with issues such as illiquidity, valuation of shareholding and especially conflicts of interest between parties.

Draho (2004:39) defines the marketability of a share as: "The function of all investors who are aware of it and know its risk-return properties". Tsutsumi (2010:10) confirms this observation by mentioning that an IPO creates an opportunity to increase the public's awareness and knowledge about the company. When a company lists on the JSE it will enjoy high media interest; this will attract international investors to invest in the company. Garner, Owen and Conway (1994:17) affirm that both good and bad news need to be disclosed by the company when going public. Still, as a company builds a credible reputation it will not only attract customers, but also suppliers who prefer to work with credible well-known companies. The listed company can also enjoy the option to make the relevant shares available for trading on the London Stock Exchange. The company can become eligible for inclusion in the FTSE/JSE Africa Index Series creating additional exposure for the company in question, both locally and internationally. The company can also be marketed to investors with the assistance of the JSE Business Development team (JSE 2015:

online). Evans (2006:17) adds that the increased business attention of going public not only leads to public awareness, but also enhances the business's reputation with lenders, customers and suppliers.

2.4.4 Talent Attraction

Private companies will sometimes go public to increase transparency and awareness about the company and to attract talent to the company (Ritter and Welch, 2002:5). Investors consider the quality of employees and managers as one of the main factors in the decision to invest (Longenecker, Petty, Palich and Hoy, 2012:231). The team managing a company is therefore of critical importance to the success of the company as a public traded entity. Geddes (2005:25) remarks that being a publicly listed company may lead to an increase in the recruiting and retention of high quality employees.

The liquidity generated by going public has also allowed companies to use shares as a means of compensation. Gregoriou (2006:217) affirms that highly skilled employees are not only attracted to IPO companies by shares as a form of compensation, but also by the increased liquidity of the shares gain by going public as opposed to the liquidity of shares in a private company. Martinez and Perron (2004:15) found that public companies prefer to use shares to reward, retain and attract new employees to the company. Share-based compensation was also found to increase productivity and loyalty, while also helping to attract top talent without incurring cash expenses (US Equities, 2012: online)

Although marketability, talent attraction and harvesting are some of the main motives to take note of when a company goes public, the most important motive still remains financing. However, regardless of the motives for going public, the advantages and disadvantages of being a public company should always be taken into account.

In summary, it was noted that there are a variety of motives for companies to go public. These motives included: the company being able to raise external funding from new investors, existing shareholders, being able to harvest or sell their share in the company, the company being able to increase their awareness and liquidity for minority shareholders and finally it was noted that another motive includes the

attracting of high performing employees. Next, the possible advantages and disadvantage of issuing an IPO have been discussed.

2.5 ADVANTAGES AND DISADVANTAGES OF GOING PUBLIC

In the decision to go from private to a public company, there are a host of advantages and disadvantages to consider. This section will aim to present and discuss the most apparent advantages and disadvantages of a being a public company.

2.5.1 Advantages

The advantages to companies going from private to public include:

- Access to alternative sources of funding;
- Increased liquidity;
- Increased value;
- Ancillary advantages.

2.5.1.1 Access to alternative sources of capital

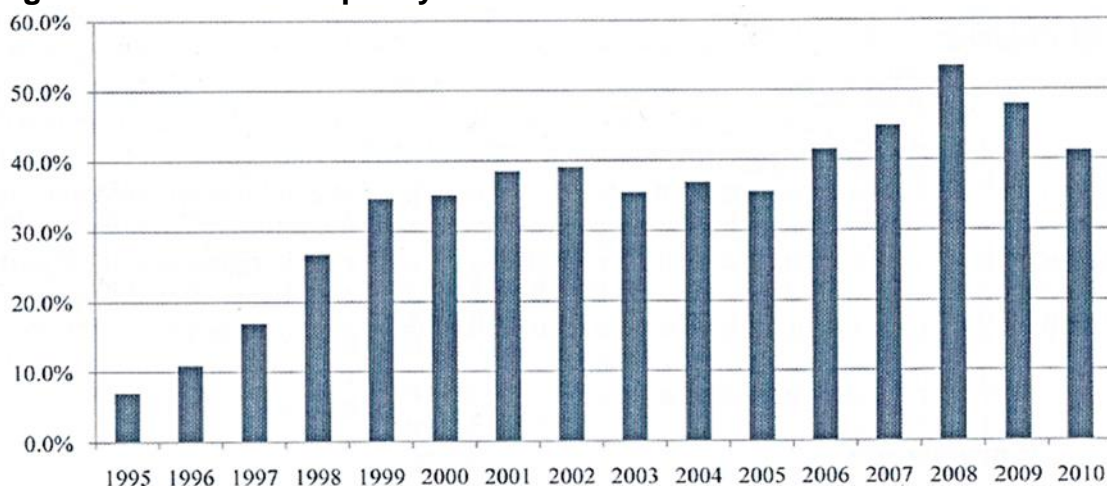
Companies who have access to sources of external funding, such as a market, are much more likely to expand faster and exceed growth expectations than companies who have restricted sources of funding (Draho, 2004:116). Accordingly, companies consider the access to alternative sources of capital as the main advantage above all others when going public (Chanin, 2010:1). The reason for this is that an IPO company is usually a high leveraged, high growth company that is in need of external capital to fund potentially profitable projects. Tsutsumi (2010:10) affirms that new capital raised during the IPO issue can contribute significantly towards increasing the company's access to capital resources and subsequently encourage growth and expansion. Geddes (2005:25) adds that the requirement of a public company needing to be more transparent increases investors' confidence. This subsequently makes it easier for a public company to raise capital for expansion projects in comparison with a private company of a similar size. Additionally, the public debt market is more accessible to public companies than non-listed companies. As a result listed companies can grow faster and gain a bigger market share.

2.5.1.2 Increased liquidity

Liquidity is the ability to convert an asset into cash quickly without reducing the price of the asset too much (Mishkin, 2013:97). Hence, there is a trade-off between the speed at which an asset can be sold and the price of the asset. For a listed company the trade-off between price and speed is relatively low, because of the depth of a stock exchange and the always present, buyers and sellers. However in the case of a privately held company, the trade-off is much higher due to the few buyers and sellers participating in the private equity market. Therefore, by issuing an IPO a company make their shares available for public trading which is much more liquid than the shares of a private company (Neneh, 2013:26).

Draho (2004:39) argue that investors are willing to pay a premium for liquidity. He further goes on to state that another advantage of going public is the fact that as the company's liquidity increases, the cost of equity will decrease. Consequently, as a result of increased liquidity gained from going public, the issuing company is able to decrease its cost of equity while increasing the price of its shares. Correia *et al.* (2013:13-11) mentioned that liquidity on the JSE further increased since the introduction of the automated trading system and also due to relatively low trading costs. The figure below illustrates the liquidity of the JSE from 1995 to 2010. Liquidity is indicated by the percentage of turnover to market capitalization of the company.

Figure 2.2 Increased liquidity on the JSE



(Source: Correia *et al.*, 2013:13-11)

As observed in the figure above the liquidity ratio on the JSE increased from 5% in 1995 to 44% in 2010. Moreover, liquidity peaked at 55% in 2008 indicating that the

shares of listed companies on the JSE have become highly liquid as time has passed.

Additionally as discussed earlier, increased liquidity also enables a company to offer their shares as a form of compensation to employees and increased liquidity also creates a harvesting strategy for existing shareholders.

2.5.1.3 Increased value

Timmons *et al.* (2012:414) view the increase in value of the company when moving from a private to public company as one of the main advantages. The requirements of operating as a publicly traded company (such as the availability of annual reports and also of company information), reduces uncertainty about the company for investors and therefore increases the value of the company (Geddes, 2005:24). Hence a company listed on a stock exchange is worth much more than similar companies which are privately held and have no information available for public use. Additionally, Geddes (2005:24) further states that because of the increased liquidity of a listed company's shares, investors are willing to pay a premium for these shares. It is reasonable to estimate the liquidity premium to be in the 30% range. Therefore, the value of the company increases even further due to investors who are willing to pay on average, 30% premium for liquidity.

The increased market value of a company wanting to go public is in some cases immense when considering the P/E (Price-to-Earnings) ratio. The P/E ratio of a company is an indication as to how much an investor is willing to pay for R1 reported profit. Two of the biggest companies on the JSE - SABMiller and Naspers - trade on P/E ratios of 37 times and 97 times respectively. In the case of Naspers, this means that investors are willing to pay R97 for R1 reported profit. Additionally companies on the JSE remain highly valued at with average P/E ratio of 17 times (Van Heerden, 2015:15).

2.5.1.4 Ancillary advantages

Additional advantages of going public include the following: when going from a private to public company, it forces the management of the company to stipulate a clear direction for the company through a detailed business strategy. Going public

may also result in an improved management and financial structure (Geddes, 2005:25).

Timmons *et al.* (2012:414) add that public companies also enjoy increased bargaining power in transactions. Other benefits include: improved credibility with customers, vendors and other key players. Going public also provides a tax-free strategy when acquiring other companies by using shares as payment rather than cash. Fischer and Pollock (2004:464) also state that a public company can more easily engage in acquisitions that expand the boundaries of the business which can also provide a way to enter new geographic markets.

2.5.2 Disadvantages

The disadvantages to companies going from private to public include:

- Increased disclosure;
- Cost of going public;
- Loss of control;
- Ancillary disadvantages.

2.5.2.1 Increased disclosure

In the transition process of going from a private to a public company, the number of parties who have and who want access to timely company information increases dramatically. Ritter (1998:5) states that as a company goes public it becomes accountable to a much larger group of relatively unknown investors. Accountability from the company's side comes in the form of increased transparency and disclosure pertaining to making financial results and news about the company available to the public. Joe, Louis and Robinson (2009:6) place emphasis on the fact that individual or private investors appear to react negatively to increased media exposure, whereas institutional investors react as if they could forecast the performance of the public company with the information available.

Additionally, it is not only the investors who will be demanding increased disclosure, but also the stock exchange the company is listed on. The stock exchange will also require the company to make information pertaining to any new developments within the company available to the public, regardless if the developments are good or bad.

Company information will initially be made available in pre-listing statements or in a prospectus (Firer, *et al* 2012:466). The increased disclosure demanded from a stock exchange is done to assist investors in making informed buy, sell or hold decisions and to ultimately increase investor's confidence (Geddes, 2005:26).

The increase in disclosure would also have a noticeable impact on the privacy of the company, especially on the management of the company (Correia *et al.*, 2013:13-5). As a result of going public managers will now be required to make any and all information available pertaining to the company's financial results, management salaries and management benefits. Moreover, as a company goes public it runs the risk of making known or even losing its competitive advantage (Neneh, 2013:29). Due to the availability of a public company's information, competitors could effortlessly follow and track the company's news and financial results to uncover its competitive advantage and weaknesses.

On the other hand, increased disclosure is not all bad. Botosan (1997:324) found evidence which suggests that an increase in disclosure is associated with a lower cost of equity. The reduction in the cost of equity will mean that a company are able to raise additional funds more cheaply, invest in more projects and also increase the company's value.

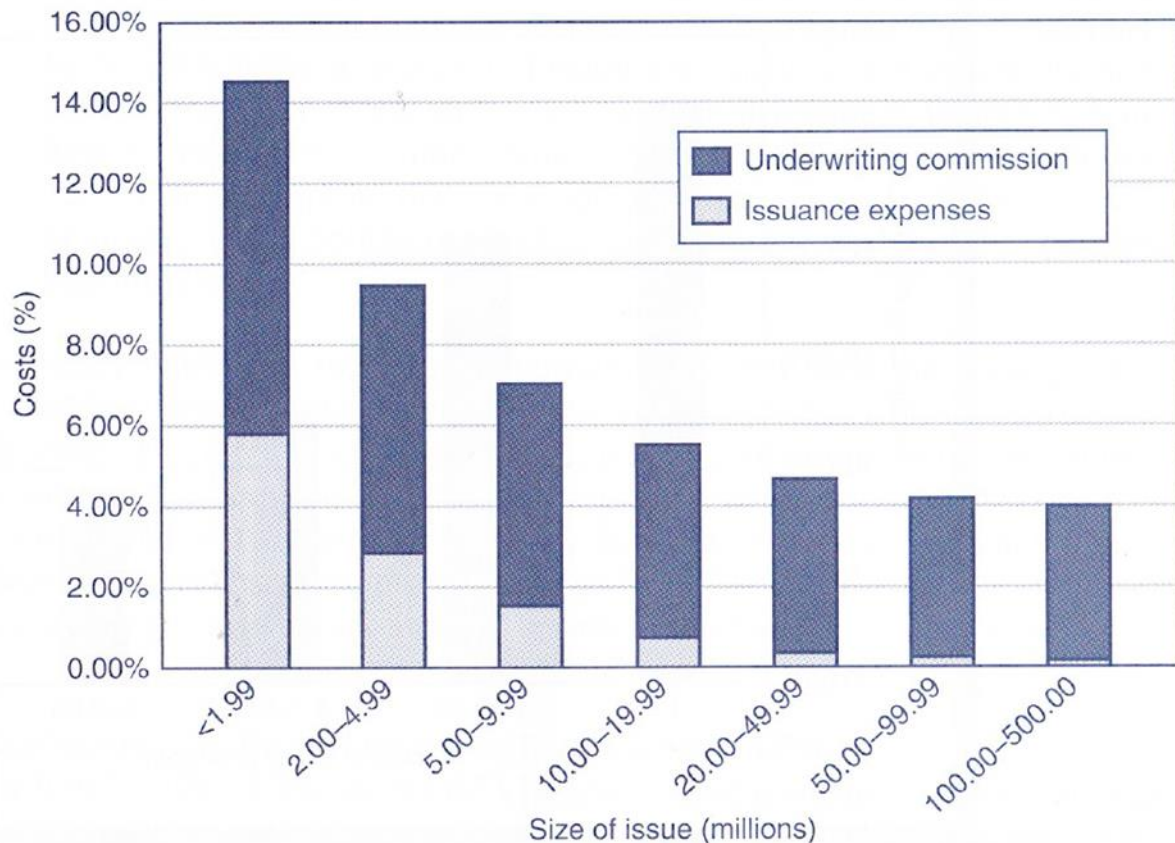
2.5.2.2 Cost of going public

In order to become quoted on a stock exchange, a company has no other option than to bear all the costs associated with an IPO, in the hope that being a publicly traded company will yield long-term rewards that will justify the short-term costs (Jargot, 2006:16).

There are a host of costs involved when going public. These costs can be grouped into four main categories, namely: short-term, long-term, direct and indirect costs. Deazeley (2008:3) makes mention of some short-term costs associated with an IPO which include: road show fees, accounting fees, underwriter's fees and printing fees. Additionally, Damodaran (2011:352) provides three main short-term costs associated with the issuing of an IPO. The first cost to consider is the legal and administrative costs, which include filing fees and the cost of preparing comprehensive financial and registration statements. Correia *et al.* (2013:13-5) add that because of the

increase in on-going reporting standards, an investment in an information system will be inevitable, which further increases the cost to issue an IPO. The second substantial short-term cost companies need to take note of, is the commission the underwriters will take in exchange for their services. From the figure below it can clearly be observed that as the size of the IPO increases the commission that the underwriters take decreases.

Figure 2.3: IPO issue size and Underwriters commission



(Source: Damodaran, 2011:353)

Another cost to take into account when issuing an IPO is the level of underpricing on the issue. Gehrig and Strömberg (2009:4) are of the opinion that underpricing occurs when shares are initially sold at a price that is below the closing market price at the end of the first day of trading. Underpricing however is considered to be an indirect cost rather than a direct cost. Moreover, underpricing is one of the ever present phenomena when studying IPOs, therefore it will be discussed in detail in the chapters to follow. Firer *et al.* (2012:474) are of the opinion that there are additional direct and indirect costs involved when going public. The authors summarized these costs in the table below.

Table 2.4: The cost of issuing an IPO

Other direct costs	JSE listing fees range from 0,2% of capital raised for a R5 million IPO to 0,004% for a R50 billion IPO. Document inspection fees are of the order of R36 000. Professional advisors fees (e.g. sponsors, corporate advisors, lawyers, accountants, transfer secretaries and public relations consultants fees). Printing costs are incurred in the production of the prospectus; advertising costs arise because of the requirement to place print advertisements of the IPO. Other costs attached to the listing include creation duty on share capital, issue duty, marketable securities tax if any existing shares are transferred to new owners, bank charges and brokerage.
Indirect costs	These include the costs of management time spent working on the new issue.

(Source: Firer *et al.*, 2012:474)

The fourth and final cost involved in issuing an IPO is the long-term costs. These costs include the ability of the company to remain listed on the exchange in the aftermarket, the ongoing investment in assets and also the possibility of long-term underperformance and poor growth (Jargot, 2006:16).

Moreover, the minimum time to take a company from private to public is on average six months and many successful *Initial Public Offerings* take over one year. However when a bearish market cycle is experienced, a successful IPO can take several years (Evans, 2006:3). Furthermore, as a result of going public during a downturn in the market will result in additional capital being located to the IPO process which will, in turn slow down the growth rate of the company and also have a negative impact on the financials of the company. Geddes (2005:25) further adds that there are also costs associated with the remaining listed on a stock exchange, such as: stock exchange fees, management time and expensive ongoing audits. Poulsen and Stegemoller (2005:4) consider selling a business to be a better option as appose to issuing an IPO when considering all the costs involved with going public.

2.5.2.3. Loss of control

One of the most well know characteristics of a public company is the fact that all the decisions in the company are taken by a collective body of interested parties known as the board of directors. Unlike a private company where, in most cases, a single person (which will most likely be the owner) will call all the shots, a public company has a board of directors (commonly consists of elected or appointed members) which will make all decisions in the best interest of all shareholders. Firer *et al.* (2012:8) affirm that the board of directors and especially the financial manager's

main goal is to act and take decisions in the best interest of shareholders. Acting in such a manner will keep shareholders' interests at heart and will lead to an increase in the share price, whereas a disregard of shareholders' interest will result in a decrease in the share price.

Going public and having a board of directors does not come without sacrifices. The company will experience a noticeable change with regards to the ownership and control structure of the company (Zheng and Li, 2008:442). According to Bansal and Khanna (2012:73) one of the main factors to consider when a company reaches the milestone to go public, is the effect it will have on the management structure, ownership structure and controlling rights of the company. Damodaran (2011:350) states that a loss of control may be experienced due to the issuing of new shares. The shareholders of a public company have a big influence as to what decisions are taken in the company. This poses a threat to the existing management as going public may bring about a change in management and a possible restructuring of the company. Therefore, shareholders (including the board of directors) have the power to exert pressure for the removal of management if they feel the company is mismanaged. Conclusively, the owners and management of a company going from private to public are completely at the mercy of the shareholders and board of directors concerning their fate.

In an effort to provide solutions to the loss of control, Greenstein, Korff, Reicin, Colbrand and Robinson (2000:7) are of the opinion that companies can do the following: limit the number of shares sold to the public, ensure a broad distribution of shares sold, create tiered classed shares with different voting rights and agree on voting rights with existing shareholders before going public.

2.5.2.4 Ancillary disadvantages

Garner *et al.* (1994:18) emphasise the fact that investors have become short-term orientated and only focus on semi-annually or quarterly financial results for relatively quick returns. When the company does not meet the expectations of analysts' investors may lose confidence in the share. As a result of the short-term focus of investors, managers are often left with no choice but to pursue short-term strategies instead of long-term goals.

Additionally the company may have a misperception about the liquidity gained from going public. Without enough shares outstanding and a good underwriter, there may be no real market for the shares resulting in no liquidity (Timmons *et al.*, 2012:414). Correia *et al.* (2013:13-5) add that management will need to make time to assist in the IPO process, and even after going public, top management will need to give constant feedback on developments within the company to all interest parties. However, building a good relationship and spending time with interested parties, especially those within the financial community, may prove to be vital in times of need, such as when a hostile take-over takes place. Moreover, because of the increased attention the company draws to itself in a bid to sell shares, investors may become very sensitive to bad news about the company. Ethical business practice will also be expected from the company and its managers.

Conclusively, Damodaran (2011:350) is of the opinion that the advantages outweigh the disadvantages when going public. It is especially applicable on high growth companies with substantial investment opportunities that need external funding. However, the tradeoff will be smaller for companies with lower growth and investment opportunities, who have substantial internal cash available and whose owners place a lot of emphasis on managing the company themselves.

In summary, it was noted that the advantages of issuing an IPO include: the access to alternative sources of capital to fund the required growth, increased liquidity of shares and that investors are willing to pay a premium for liquidity, also the fact that the value of a public company is more than a similar private company. Other advantages mentioned included increased accountability from management and also better bargaining power with credit providers. Some of the disadvantages of going public included: increased disclosure and transparency to all parties involved, also the long-term, short-term, direct and indirect cost were discussed, and the loss of control was discussed. Other disadvantages mentioned include managers becoming short-term orientated and also the fact that liquidity is not experienced immediately after going public. Next, the process to go public will be discussed.

2.6 THE PROCESS TO GO PUBLIC

The following section aims to provide a very brief overview of the process to go public. A basic knowledge of the process will assist in better understanding the sections which will follow.

Table 2.5: Basic process to go public

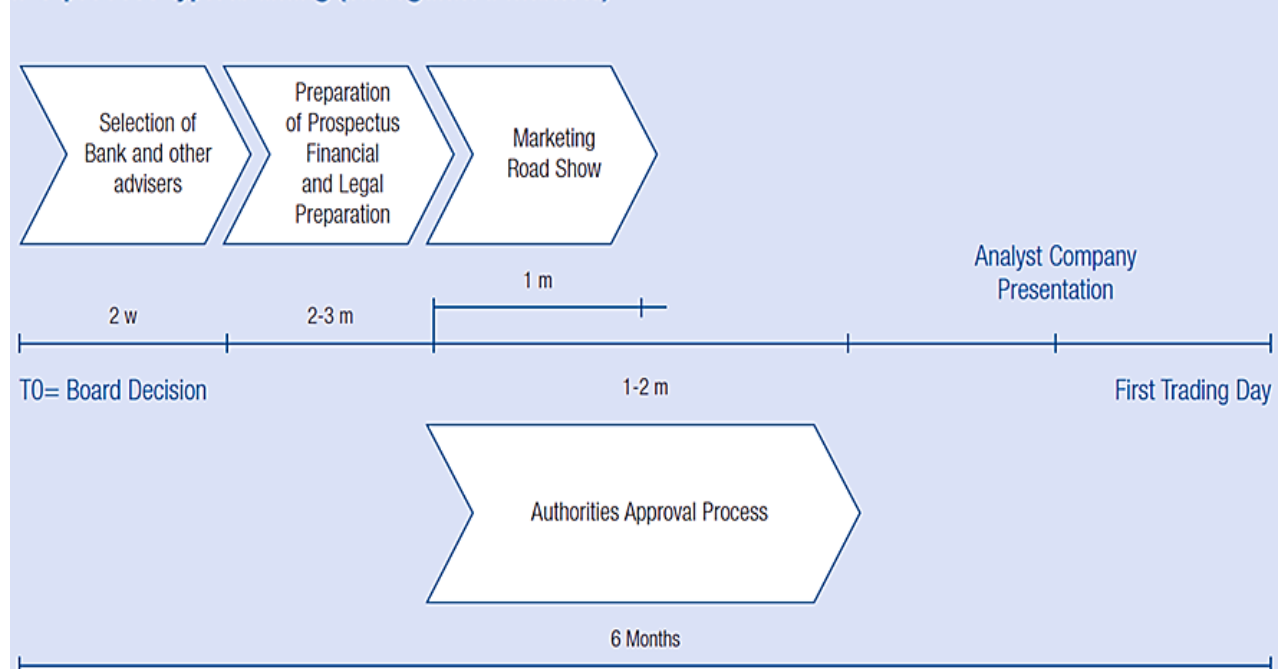
Step in process	Procedure
1 st	Agree with top management to take the company from private to public.
2 nd	Submit the required documents to the JSE by making use of the services of an underwriter.
3 rd	Issue a prospectus or a pre-listing statement. These documents issued by the company seeking a listing on the JSE.
4 th	Make all relevant company information available to the Securities and Exchange Commission (SEC).
5 th	Make the shares available for public trading.

(Source: Firer et al., 2012:466)

Additionally, a timeline of the process and procedures to go public can be found in the figure below:

Figure 2.4: The timeline to go public

IPO process typical timing (on regulated markets)



(Source: Lianee and Plantier, 2006:9)

Deduced from the figure above, it is important to acknowledge that it will require a significant amount of time to take the company from private to public. The time it

takes to go public is subject to the satisfaction of each party in the IPO process. The parties to the IPO process will be discussed in the next section.

2.7 PARTIES INVOLVED IN THE IPO PROCESS

As seen in Table 2.3 there are a variety of steps in the IPO process and in each step there is a party involved in the process. The following section will discuss the role of the following parties in the IPO process:

- Existing Shareholders;
- The Issuing Company;
- Underwriters;
- Securities and Exchange Commission (SEC);
- Investors.

2.7.1 Existing Shareholders

The shareholders of the company are essentially the combined owners of the business. Shareholders have the power to elect directors, who in turn appoint senior officers and managers which include the Chief Executive Officer and the Chief Financial Officer (Neneh 2013:30). However, it is important to keep in mind that shareholders also have the power to remove any director, executive or manager if they sense mismanagement, which will increase accountability of all managerial actions and will result in managers acting in the best interest of shareholders (Burkart, Gromb and Panuzi 2002:647).

From a private company point of view, Emmet (2003:10) elucidates that in the case of a shortage of working capital, the existing shareholders of the company may decide to finance the shortage in working capital either through share capital (which is essentially a personal investment) or a loan. However, as the business grows and accepts more and bigger projects, the need for working capital increases. The funding available may prove to be insufficient as the company expands and the existing shareholders will need to consider the various alternative sources of funding which are available. Nevertheless, it is important to recognise that attaining funding from different sources could have noticeable effects on the controlling rights of the company (Poulsen and Stegemoller, 2005:8).

Going public offers a valid and sustainable solution to the capital constrain issue existing shareholders may experience. By going public and moving to a public ownership structure presents an attractive prospect, as Poulsen and Stegmoller (2005:9) found that low insider ownership may result in a higher value being attached to management retention and control. Evans (2006:7) makes mention of the importance of the involvement of existing shareholders and especially senior management (such as the Chief Executive Officer and the Chief Financial Officer) in the process to go public. It is of the utmost importance for senior managers to delegate the IPO process by directing, planning, and coordinating all the parties involved. Brau, Ryan and DeGraw (2006:484) interviewed 438 chief financial officers and the responses from their interviews suggest that existing shareholders will choose to go public as a result of three interrelated strategic considerations, namely: growth, ownership control and liquidity. However, Nemethy (2011:129) makes it very clear that senior management needs to be very attentive to which existing shareholders and staff they involve in the process to go public. The reason for this is that involving too many parties may lead to the spreading of inaccurate news inside as well as outside the company, which may spell disaster before the company offered an IPO.

Ang, Cole and Lin (2000:86) emphasise that as a result of being a public company, existing shareholders could diversify their sources of funding as well as share any risks with other new shareholders while also benefiting from an possible increase in company value. Additionally, an IPO also provides the ideal opportunity for existing shareholders to divest themselves and cash in on their original investment (Brealey and Meyers, 2003:406). However, Field and Hanka (2002:472) make mention of “the lockup period” after going public. The lockup period is an agreement amongst insiders and existing shareholders to not sell any shares to any party for a specified period after going public. The reason for this is to gain investors’ confidence and to signal that insiders and existing shareholders are not attempting to cash out as a result of possible bad news.

2.7.2 The Issuing Company

Neneh (2013:31) regards the issuing company as an already existing entity that decides to sell shares to the public. Although existing shareholders can divest

themselves at almost any point after the “lock up” period expired, the company as a public entity will still remain. Geddes (2003:1) predominantly points out that the main objectives of an issuing company include: maximising proceeds, build a stable and broad ownership base, raise its profile, have options available for additional fund raising and acquisitions, ensure liquidity in the secondary market and finally launch a successful IPO. Ultimately the company’s main goal is to create value for their shareholders. Martinez and Perron (2004:20) affirm that the company can ensure shareholder satisfaction with regular and timely share price increases and also by making all information and news known to shareholders.

However, Evans (2006:5) rightly asserts that one of the biggest problems companies experience when going from private to public, has to do with the company’s culture. Some companies’ staff finds the transition especially difficult. Nevertheless, it is particularly advantageous when the company is managed by executives who enjoy running a public company and who are comfortable “singing for its supper” in the public arena. Evans (2006:12) further points out that most successful IPO companies clearly displayed superior performance over their rival in terms of both financial and non-financial characteristics.

Conclusively, the issuing company only has one chance to get the IPO right. Especially when considering the brutality of a market such as Wall Street, if an IPO is not satisfactory to the market or if the company misses its first year earnings forecast, it could have a devastating effect on the share price. A decline in the share price of 50% or more could be experienced. Consequently, if an issuing company does not launch an IPO successfully the first time, there may be no recovery (Simon and Schuster, 1988:16).

2.7.3 Underwriters

Underwriters are also known as investment banks. Rose and Hudgins (2010:543) define an underwriter as a service provider. These services include the pricing, selling, and organizing the issue, it may also include other additional services such as a road show to create awareness about the IPO company. In the process of creating awareness about the IPO offering, the underwriters also employ an action referred to as “book building”. Book building essentially entails an underwriter offering shares of the company which they intend to take public exclusively to

institutional investors at a fixed price (Gajewski and Gresse, 2006:18). Book building aids the underwriter in determining the demand for the respective shares. Once the demand for the shares are realised, the underwriter can then begin to price these shares for public trading. Only then the investment banks will purchase the shares from the company looking to go public (which are their clients), and resell the shares in the money and capital markets to new investors. Investment banks provide underwriting in exchange for commission on the issue. Commission typically consists of 2,5% of the total amount of new capital raised during the issue.

A variety of studies (Logue, 1973; Neuberger and Hammond, 1974; Chen and Mohan, 2002; Johnson and Miller, 1988; Jenkinson and Ljungqvist, 2001; Aberman, 2006; and Keaney and Sawyer, 2011) have proven the importance of companies choosing the correct underwriter. Evans (2006:8) offers advice to issuing companies to start “shopping” for underwriters at least one year before going public. The idea behind it is for companies wanting to go public to come of knowledge about how companies within the same industry and who are of similar size performed in the aftermarket under the mentoring of different underwriters. Lianee and Plantier (2006:16) compares the process in which a company chooses an investment bank to underwrite the issue as a beauty contest where the company invites no more than four underwriters to inform them about the company’s current position (financial and non-financial) and what it aims to achieve in the future after the listing. The underwriters are then presented with an opportunity to negotiate a deal with the issuing company. The meeting between the issuing company and the underwriters also creates an environment where the issuing company can question each investment bank on their track record and reputation. Johnson and Miller (1988:20) found that the level of the underwriter’s prestige is a clear signal to the market as to the riskiness of the issue. Therefore, the investment bank’s reputation is one of the most important factors companies need to consider when choosing an underwriter. Chen and Mohan (2002:537) affirm that the reputation of an underwriter can minimize the amount of money “left on the table” and subsequently also decrease the level of underpricing for the issuing company.

It is however important to acknowledge that an underwriter’s reputation is built on issuing a successful IPO. Therefore, the same manner in which a company can choose an underwriter, an investment bank may also choose which company it is

willing to underwrite. Investment banks tend to increase the amount of commission they take based on the riskiness of the issuing company (Goergen, Khurshed and Mudambi, 2007:414). Megginson and Smart (2008:203) note that if an underwriter considers an issuing company as a possible successful company the investment bank will be willing to facilitate the company's process to go public. Additionally, in the case of a possible successful issue the underwriter will make a firm commitment towards the issuing company. A firm commitment includes the underwriter buying up all the shares of the issuing company regardless if all the shares will be sold or not, thereby ensuring that the company will have a successful issue of shares. Nevertheless, if an issuing company's chance of success is questionable, the underwriter may offer a best effort commitment to the company. Aberman (2006:1) points out that a best effort commitment entails the underwriter buying only enough shares to fill the demand that exists. In this manner the underwriter minimises the possibility of damaging its reputation.

Once an agreement has been reached between the company looking to go public and the underwriter pertaining to the pricing, selling, and organizing of the issue, the underwriter will submit an application to the Securities and Exchange Commission.

2.7.4 Securities and Exchange Commission (SEC)

As much as an IPO is a business process, it is just as much a legal process. In order to go public the company needs to register its securities with the Securities and Exchange Commission (SEC). Sherman (2012:211) affirms that going public requires considerable planning and analyzing from both a legal and a business perspective. All the legal advantages and disadvantages need to be understood very clearly by the issuing company. This needs to be weighed up against each other when considering an IPO.

Machmeier, Kraus and Dunbar (2006:14) point out that in the process of going public the Securities Exchange Commission (SEC) makes sure that all information of the issuing company pertaining to registration statements, general comments on the disclosures and comments regarding the financial and accounting matters are authentic. Therefore, the SEC ensures that all information relating to the issuing company is correct and made available to investors in order for them to make informed investment decisions. Viney (2007:447) is also of the opinion that the SEC

acts as a regulator to keep public companies honest and transparent while also making sure that investors interests are protected.

However, the obligation towards the SEC does not end once the company complies with the legal requirements of being a public company. The SEC regularly monitors all the companies quoted on a stock exchange to make sure they still meet the minimum listing requirements. Therefore, even after an IPO, the company will still need to disclose all relevant information in detail concerning the general health of the company and also information regarding operations (Joyce, Grunson and Jungreis, 1991:96)

2.7.5 Investors

Investors also have their own objectives, goals and motivations for investing in a public company. According to Van Heerden and Alagidede (2012:130) one of the reasons why investors want to invest in an IPO has to do with the diversification of their portfolio. By diversifying their portfolio, investors minimize the exposure to risk and maximize the exposure to opportunities. In addition, Ngeek and Smit (2014:244) elucidate that an IPO presents an investor with the perfect opportunity to share in the growth of the company and in the process also be rewarded with substantial returns on their investment. However, over the years the long-term performance of IPOs has proven to be not substantial at all. In most cases IPOs have been found to underperform in the market (Goergen, Kurshed and Mudambi, 2007; Corhay, Teo and Rad, 2002; Govindasamy, 2010; Raputsoane, 2009; Ritter 1991). Geddes (2005:2) is of the opinion that investors would invest in an IPO company to accumulate a position with in the secondary market which would otherwise have been difficult to obtain. Moreover, another benefit of investing in an IPO involves investor who have a substantial amount of shares and who hold these shares for a relatively long period of time. These shareholders will usually gain voting rights in the company and will also be able to partake in the decision making process of the company.

Brav and Gompers (1997:1820) argue that for some investors, investing in an IPO is like buying a lottery ticket. In most cases the investors can't distinguish between losing and winning lottery tickets. Thus, investors can be divided into two main categories, namely: retail investors and institutional investors. Retail investors are

usually small investors who make investment decisions on their own behalf. Retail investors are also known as private investors and are relatively small in terms of the amount of money they invest. Institutional investors, on the other hand, can be found in the form of an investment bank or a broker. Institutional investors make investment decisions on behalf of other parties. As noted by Martinez and Perron (2004:22) institutional investors will usually claim between 70% and 90% of the shares on offered during an IPO, and account for 70% of daily trades on the stock market.

When considering the behavior of investors, they will most likely only invest in a company when they are satisfied that the company is managed by knowledgeable and experienced executives who are devoted to the long-term success of the company. Evans (2006:6) points out that, investors prefer to invest in a company which is managed by relatively young experienced executives. Draho (2004:123) affirms that investors who fear that maximizing the value of their shares are not the top priority of the company's management, will either not supply capital or do so on their own conditions. Consequently, it may also prove to be very beneficial to look at the IPO process from an investor's point of view. When a company fully understands and appreciates the process to go public and what it means to investors, the company will aim to present all potential investors with value. Evans (2006:12) makes it clear that when investors are looking for possible investment opportunities they quickly compare similar companies against one another and make forecasts on what they expect will happen to the company based on historical information.

Additionally, the disparities amongst informed and uninformed investors have proven to be a real issue when making an investment decision. As a result of this disparities information asymmetry exist. Malakhov (2007:7) found that investor base their investment decisions only on available information. Cohen and Dean (2005:688) further adds that if information asymmetry exists it could have a noticeable negative effect on the attractiveness and marketability of the company's shares, which will lead to illiquidity and a decrease in the company's share price.

In summary, it was found that as a result of going public, existing shareholders are able to divest themselves; but they are also subject to a "lock up" period after going public. It was noted that amongst others, one of the biggest changes an issuing

company will experience is a change in company culture. Further it was mentioned that underwriters facilitate the IPO process in exchange for a fee. Underwriters are however very selective about the companies they take public. The investors will invest in an IPO share not only hoping for above average long-term returns but also to diversify their portfolio.

2.8 CONCLUSION

This chapter began by introducing the concept of what an *Initial Public Offering* is and where it can most likely be found during the lifecycle of a company. The importance of the role of a stock exchange was also discussed. It was found that a stock exchange is not only important to facilitate the process of the company going public, but also to regulate already listed companies on the exchange and also to encourage economic stimulation and growth. A clear distinction was also made between primary and secondary markets. It was mentioned that the initial sale of securities takes place in the primary market and the subsequent trading of shares can be found in the secondary market. The history of the JSE was briefly discussed and mention was made of the difference between the Main Board and the AltX and also the listing requirements of each.

The motives for going public found in academic literature were described. The ability to raise new capital in the primary market was found to be a particularly attractive motive for high growth, high leverage companies with large current and future investments. Having the option available to harvest is also a big driver to go public for existing shareholders. A good harvesting strategy is what distinguishes a successful business from other businesses (Spinelli and Adams, 2012:561). Tsutsumi (2010:10) affirms that increased marketability also serves as a driver to issue an IPO by placing emphasis on the fact that an IPO creates an opportunity to increase the public's awareness and knowledge about the company. Finally, talent attraction was also observed to motivate a company to go public, as investors consider the quality of employees and managers as one of the main factors in their decision to invest (Longenecker *et al.*, 2012:231). The team managing a company is therefore of critical importance to the success of the company as a public traded entity.

Further, mention was also made of the advantages and disadvantages of going public. The advantages included the following: companies who have access to sources of external funding such as a stock market are much more likely to expand faster and growth quicker through the accepting of more and bigger projects. Liquidity is also an added advantage of going public. Liquidity was defined as the ability to convert an asset into cash quickly without reducing the price of the asset too much (Mishkin, 2013:97). Geddes (2005:24) also added that because of the increased liquidity of listed company shares, investors are willing to pay a premium for these shares. Hence a company listed on a stock exchange is worth more than similar companies which are privately held. Additionally, unlike public companies, private companies have no information available for public use. Other advantages of going public also included the following; when going from private to public it forces the management of the company to stipulate a clear direction for the company through a detailed business strategy. Going public may also result in an improved management and financial structure (Geddes, 2005:25).

The disadvantages of going public included the following; increased disclosure will be required from a public traded company - affirmed by Ritter (1998:1). He states that as a company goes public it becomes accountable to a much larger group of relatively unknown investors. Accountability from the company's side comes in the form of increased transparency and disclosure pertaining to making financial results and news within the company available to the public. Additionally, the cost of going public was also found to be a significant disadvantage. In order to become quoted on a stock exchange, a company has no other option than to bear all the costs associated with an IPO, in the hope that being a publicly traded company will yield long-term rewards that will outperform the short-term costs (Jargot, 2006:16). Another well documented drawback is the fact that, as opposed to one person making the decisions in a private company (which will most likely be the owner); a collective body is required to take all the decisions in a public company which are in the best interest of all shareholders. The collective body of people is also referred to as the board of directors (commonly consisting of elected or appointed members). Appointing a board of directors may result in a loss of control to the existing top management. Other disadvantages mentioned included the possibility of management becoming short-term orientated and only focusing on semi-annual or

quarterly financial results for relatively quick returns rather than focusing long-term sustainable returns.

Additionally, the process to go public was briefly discussed with the aim being able to understand the process and time horizon when going public and also to be aware of the parties involved in the process. These parties were established to play a significant role in the IPO process and it was also concluded that some parties have conflicting interests when a company goes public. As a subsequent result of going public existing shareholders found to be presented with an exit strategy as a way to divest themselves and also gain a substantial return on their investment. The issuing company, on the other hand, needs to meet all the requirements of being a listed company. When going public the issuing company is also subject to a “lock up” period where the underwriter advises all shareholders within the now public traded company not to sell any shares for a specified period. This measure is put in place in order to build up investors’ confidence.

When considering underwriters previous studies have proved that the reputation of the underwriter is vital for the success of the IPO issue. However, just as an issuing company can choose an underwriter, an investment bank can also choose if it wasn’t to underwrite and IPO issue or not. The underwriter provides the issuing company with services such as: the pricing, selling, and organizing of the issue and can also include other additional services such as a roadshow to create awareness about the company going public. The party in the IPO process who regulates the process and who ensures that the information made available by the issuing company is accurate and valid is the Securities and Exchange Commission (SEC).

The final party to the IPO process is the investor. It was mentioned that investors could use an IPO as the ideal way to diversify their portfolio and also earn substantial above average long-term returns if the correct IPO was initially selected. However, it was clearly stated that the IPO selection process for an investor is particularly difficult mainly because of information asymmetry. Therefore, investors were divided into two categories, namely: informed and uninformed investors.

The next chapter aims to build on the background of IPOs presented in this chapter, by mentioning and documenting the two main anomalies in the IPO market, namely: long-term underperformance and initial underpricing.

CHAPTER 3

PERFORMANCE OF INITIAL PUBLIC OFFERINGS

3.1 INTRODUCTION

The majority of research done on IPOs found to document two main anomalies, which are the long-term underperformance of IPO shares and also the initial underpricing (Chan, Wang and John Wei, 2004; Ritter and Welch, 2002; Alvarez and Gonzalez 2001; Guo, Lev and Shi, 2006; Muller 2011; Kooli and Suret, 2002). Neneh (2013:60) states that an IPO presents investors with an opportunity to earn substantial returns on their investment. Due to the ever present poor long-term performance and initial underpricing, both the investor and the issuing company experience a loss in capital. The initial underpricing will generally hurt the company more, whereas the long-term underperformance will see the investor, more often than not, experiences substantial losses.

Even so, the initial underpricing and long-term underperformance has an impact on the issuing company and the investor as well as the underwriter. Ritter and Welsh (2002:1795) observed that IPO shares traded on average at 18.8% above the initially issued price on the first day of trading. These same shares went on to underperform the market by 23.4% over three years. Guo, Lev and Shi (2006:2) therefore request the illumination of these anomalies and their impact on IPO performance.

On the one hand long-term underperformance have been noted in stock markets such as the US, Canada, Germany, France, Italy, London, Thailand, China, Japan, Australia and South Africa. Long-term underperformance can be defined as follows: "Relative to other companies, investors appear to lose out by continuing to hold the shares of a company that have recently gone public" (Yuhong, 2010:2). On the other hand initial underpricing of IPOs have also been observed in markets such as North- as well as South America, Europe, Asia and South Africa. IPOs are said to be "underpriced" due to substantial evidence found of abnormally large initial returns.

3.2 LONG-TERM PERFORMANCE

The documentation and interpretation of the long-term performance of IPOs are of great interest to all parties involved in the IPO process. The issuing companies would want to know when is the best time to issue an IPO to be able to raise the maximum amount of capital. Investors would want to know whether an IPO is a safe investment which is able to earn above average returns (Gajewski and Gresse, 2006:44).

3.2.1 Determining long-term performance

Generally, the performance of newly listed companies are measured based on their one to five year stock performance (Gajewski and Gresse, 2006:44). Long-term underperformance can be defined as follows, relative to similar companies investors are experiencing losses on their investment by holding the shares of an IPO company (Yuhong, 2010:2). The average negative returns earned relative to the market over an extended period of time can also be defined as long-term underperformance (Liu 2009:76). When considering the measuring of long-term IPO performance, IPO returns can be measured in a variety of ways over a diverse timespan. The most popular time periods to assess IPO performance is three years and five years after issue, respectively. The most popular measuring techniques for long-term IPO performance were found to be the BHAR and CAR measuring techniques (M'kombe and Ward, 2015:8). BHAR measures the Buy-Hold-Abnormal-Return where CAR focuses on the Cumulative-Abnormal-Return. However, in calculating long-term performance of IPOs it has been noted that there are some significant differences when making use of the initial offer price and when using the closing price on the first day of trading. Neneh (2013:116-117) calculated the three year long-term performance of IPOs on the JSE by making use of the BHAR technique as well as the CAR technique. She noted that an investor who was able to buy the IPO share at the initial offer price will have achieved better returns than an investor who bought the share at the end of the first day of trading. The returns found by Neneh (2013:116-117) after a three year holding period is noted in the table below.

Table 3.1: Three year performance of IPOs on the JSE

Measuring technique	Using the Initial offer price	Using the Market price (end of first day)
BHAR	-48.73%	-65.59%
CAR	24.43%	-59.77%

(Source: Neneh, 2013:116)

As seen in the table above the long-term returns experienced are much more favourable when using the initial offer price as opposed to the price of the share at the end of the first day of trading. Thomadakis, Nounis and Gounopoulos (2012:127) also noted that there is a significant difference in the long-term returns depending on the share price used. They calculated the three year BHAR performance of 254 companies listed on the Greek exchange. Their findings are documented in the table below.

Table 3.2: Long-term performance of Greek IPOs

Return of	Mean return (%)	Standard deviation (%)	Number of observations	Median (%)	Minimum return (%)	Maximum return (%)
<i>Panel A: Excess or Adjusted Buy-And-Hold Returns based on the listing price</i>						
1st day	38.94***	61.21	253	14.14	-41.84	397.41
6 months	45.18***	70.34	252	26.75	-74.94	252.47
12 months	40.82***	82.73	247	18.03	-108.60	298.11
18 months	28.51***	83.29	241	8.79	-245.60	298.33
24 months	13.49***	13.49	240	3.66	-266.96	247.14
30 months	-2.00*	88.82	237	-4.29	-246.93	286.93
36 months	-15.35**	101.34	232	-11.49	-395.22	275.82
<i>Panel B: Excess or Adjusted Buy and Hold Returns based on the first day closing price</i>						
6 months	12.16***	47.78	254	-0.58	-73.80	147.98
12 months	15.71***	68.82	247	0.289	-107.47	249.53
18 months	13.54**	82.01	241	-9.36	-241.24	282.61
24 months	8.09**	63.30	240	-3.20	-262.22	208.38
30 months	-16.53***	84.98	237	-17.94	-286.76	294.43
36 months	-31.43**	97.45	232	-20.73	-437.01	249.82
<i>Panel C: Excess or Adjusted Buy and Hold Returns based on the first month closing price</i>						
6 months	5.71**	42.47	254	-4.97	-59.17	186.07
12 months	4.11**	55.39	246	-6.67	-96.62	262.58
18 months	0.63**	71.25	242	-14.75	-203.8	364.81
24 months	-12.42**	66.63	239	-18.08	-223.27	285.75
30 months	-31.24**	73.73	237	-24.15	-230.69	267.70
36 months	-37.56***	83.76	232	-22.69	-256.72	251.72
*Significance level at 10%, ** Significance level at 5%, ***Significance level at 1%, *The IPO price changes that give the adjusted returns include dividends.						

(Source: Nounis and Gounopoulos, 2012:127)

Noted in the table above is the fact that the best long-term performance was again experienced when an investor was able to buy a share at the first day of trading, and the worst long-term performance was experienced when an investor bought the share at the end of the first month of trading. It is also interesting to note that after three years, the first day Offer BHAR, first day close BHAR as well as the first month BHAR, are all negative.

Despite the more favourable long-term performance experienced when making use of the initial offer price the majority of studies done on IPO long-term performance have made use of the closing price at the end of the first day of trading when calculating the long-term performance of IPOs (Govindjee, 2012:44; Loughran and Ritter, 1995:26; Govindasamy, 2010:27; Neneh, 2013:118). Govindjee (2012:44) argues that the closing price at the end of the first day of trading is a much fairer price to use, as the average investor is to a great extent more likely to be able to buy the share at the price quoted at the end of the first day of trading. Loughran and Ritter (1995:26) also advocate the fact that the closing price at the end of the first day of trading is better to use as it will be extremely difficult for investors to attain the IPO share at the initial offer price on the first day of trading.

3.2.2 Long-term IPO underperformance internationally

Regarding the level of long-term performance of IPO performance, the table below document the two-year buy-and-hold returns for IPOs classified from low risk to high risk companies (Demers and Joos, 2005:41). It can clearly be observed that according to the market-adjusted return measurement, the returns fluctuated from -8.83% for low risk companies to -50.17% for high risk companies. On the other hand, when using the four-factor adjusted measurements, the returns varied between 8.17% for low risk companies and -48.81% for high risk companies.

Table 3.3: Two year buy-and-hold returns

Failure Risk Portfolio	<u>Market-Adjusted</u>		<u>Four-Factor Adjusted</u>	
	Average Return	Median Return	Average Return	Median Return
<u>PANEL A: Non-Tech Two Year Buy-and-Hold Abnormal Returns</u>				
1 (Low Risk)	-0.0883	-0.2514	0.1946	0.0817
2	-0.1229	-0.3044	0.1934	-0.0328
3	-0.0990	-0.3207	0.2209	-0.0245
4	-0.3371	-0.5688	-0.0170	-0.2657
5 (High Risk)	-0.5017	-0.7695	-0.1849	-0.4881

(Source: Demers and Joos, 2005:41)

IPO underperformance have been observed and studied in a variety of markets over different time periods. It is important to acknowledge that Ritter (1991) was the first to study the long-term underperformance of IPOs. His study was conducted using 1526 US IPOs which were issued from 1975 to 1984. Ritter (1991:9) documented the three year after market performance of these IPOs and found that the sample as a whole underperformed the market with a CAR of -29.13% whereas the small IPO companies underperformed the market with a CAR of -42.21%. In a more recent study Ritter and Welch (2002:1797) again concluded that US IPOs underperformed the market with a BHAR of -23.4% between 1980 and 2001.

The study done by Ritter (1991) gave rise to further studies on long-term IPO underperformance in different parts of the world. These additional studies found that IPO underperformance is not unique to US stock markets. For instance, in Canada, Kooli and Suret (2004) concluded that IPOs underperformed the market from 1991 to 1998 with a CAR of -11.02%. Additionally, Schuster (2003) examined the long-term performance of European IPOs. The countries he examined included Germany, France, Italy, the Netherlands, Spain, Sweden and Switzerland. All the IPOs issued in these countries between 1988 and 1998 were found to underperform the market at between -11.02% and -41.85% in the three years after they have been issued. In a separate study done on Swedish companies, Ryd and Svensson (2006:23) observed a CAR of -21.35% for 143 IPOs which listed from 1990 to 2002. In Greece, Thomadakis, Nounis and Gounopoulos (2012:127) found a sample of 254 companies to have a CAR of -16.18% from 1994 to 2002. Rindermann (2004) found substantial underperformance of IPOs which went public on the London Stock

Exchange from 1996 to 1999. Goergen, Khurshed and Mudambi (2007:407) also studied the three year after market performance of IPOs on the London Stock Exchange and observed that IPO companies that went public from 1991 to 1995 underperformed the market by -21.98%. Alhadab, Clacher and Keasey (2015:70) found that the three-year BHAR for failed companies to be -49.80% and 2.10% for surviving companies. Additionally, the five-year BHAR for failed companies were found to be -54.80% whereas the surviving companies interestingly also had a negative BHAR at -24.50%.

In Thailand, 43 IPOs were found to underperform the market with a BHAR of -41.68% from 1999 to 2005 (Vithessonthi, 2008:317). The Chinese IPOs were also found to have disappointing returns over the long-term. Cai, Lui and Mase (2008:424) using a sample of 335 Chinese IPO companies and established also a negative long-term performance with a BHAR of -29.60%. Additionally in Japan, Kirkulak (2008:128) observed three year IPO underperformance of 433 companies. These Japanese companies underperformed the market with a CAR of -18.29% and a BHAR of -34.49% respectively.

In contrast to other studies in Asian markets: Corhay, Teo and Rad (2002) observed an outperformance of IPOs compared to the market in Malaysia with a CAR of +41.70% from 1992-1996. In support to the observation of IPOs outperforming the market, Tsangarakis (2004:26) observed 108 Greek IPOs that outperformed the market with a BHAR of +54.90% from 1993 to 1997. However, it is very important to take note that Tsangarakis (2004) only calculated BHAR over a one year period and not a three year period as in the case of Thomadakis, Nounis and Gounopoulos (2012:117) who have also studied Greek IPOs and found substantial long-term underperformance.

The table below summarises the three year underperformance of IPOs across the world.

Table 3.4: International IPO performance

Country	Return	Period of Study	Sample Size	Measuring Instrument	Reference
US	-23.40%	1980-2001	6249	BHAR	Ritter & Welch (2002)
Canada	-11.02%	1991-1998	445	CAR	Kooli & Suret (2004)
Germany	-11.66%	1988-1998	219	CAR	Schuster (2003)
France	-19.01%	1988-1998	323	CAR	Schuster (2003)
Italy	-41.85%	1988-1998	77	CAR	Schuster (2003)
Netherlands	-15.58%	1988-1998	75	CAR	Schuster (2003)
Spain	-30.21%	1988-1998	88	CAR	Schuster (2003)
Sweden	-12.70%	1988-1998	148	CAR	Schuster (2003)
Switzerland	-21.35%	1990-2002	143	CAR	Ryd & Svensson (2006)
Greece	-16.188%	1994-2002	254	CAR	Thomadakis, Nounis & Gounopoulos (2012)
London	-21.98%	1991-1995	240	CAR	Goergen, Khurshed & Mudambi (2007)
Thailand	-41.70%	1999-2005	43	BHAR	Vithessonthi (2008)
China	-29.60%	1997-2001	335	BHAR	Cai, Lui & Mase (2008)
Japan	-34.49%	1998-2001	433	BHAR	Kirkulak (2008)
Australia	-7.80%	1991-1999	333	BHAR	Rosa, Velayuthen & Walter (2003)

According to Table 3.2 it can clearly be observed that IPO underperformance is not limited to a single stock market and also not by a certain time period. Therefore, IPO underperformance can be observed regardless of demographic area or time period. Italy and Thailand serve as a good example. Italy had the worst underperformance with a CAR of -41.85% and Thailand had a BHAR of -41.70%. Additionally, these two stock markets were studied during different periods and also for different lengths of time, with Italy being studied from 1988 to 1998 which is a time period of ten

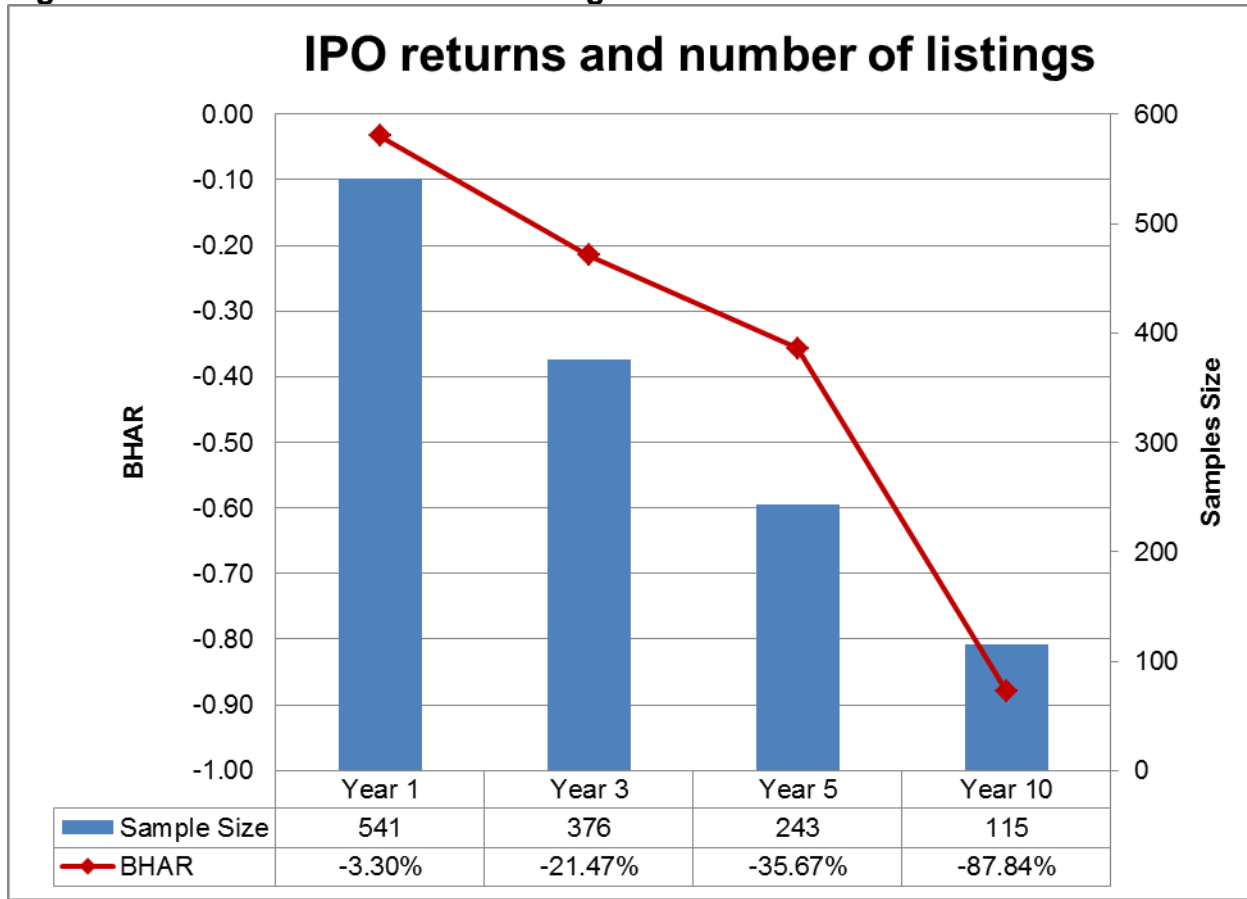
years. Whereas, Thai IPOs were researched from 1999 to 2005 which is a timespan of six years.

The +41.70% CAR observed from 1992 till 1996 in Malaysia and the negative long-term performance after 1996 of IPOs in Thailand, China and Japan could be explained through the 1997 financial crisis in Asia, that had a significant impact on IPO aftermarket performance.

3.2.2 Long-term IPO underperformance on the JSE

When shifting the focus to the performance of IPOs in South Africa, the pattern of underperformance continues. M'kombe and Ward (2002) scrutinised a sample of 541 IPOs listed on the JSE between 1980 and 1998. In their research methodology M'kombe and Ward (2002:11) pointed out that they will analyse the BHARs of IPOs for four different periods, namely: one year, three years, five years and ten years. Interestingly, M'kombe and Ward (2002:12) mentioned that they made use of the CAPM benchmark model to measure and compare BHAR over the different time periods. Additionally, a very strong relationship was found between the level of underperformance and the number of IPO listings in each time period under consideration. As the level of underperformance became more severe the number of companies that delisted or failed increased dramatically. These findings by M'kombe and Ward (2002:12) can be observed in the figure below.

Figure 3.1: BHAR and number of listings on JSE from 1980 to 1998

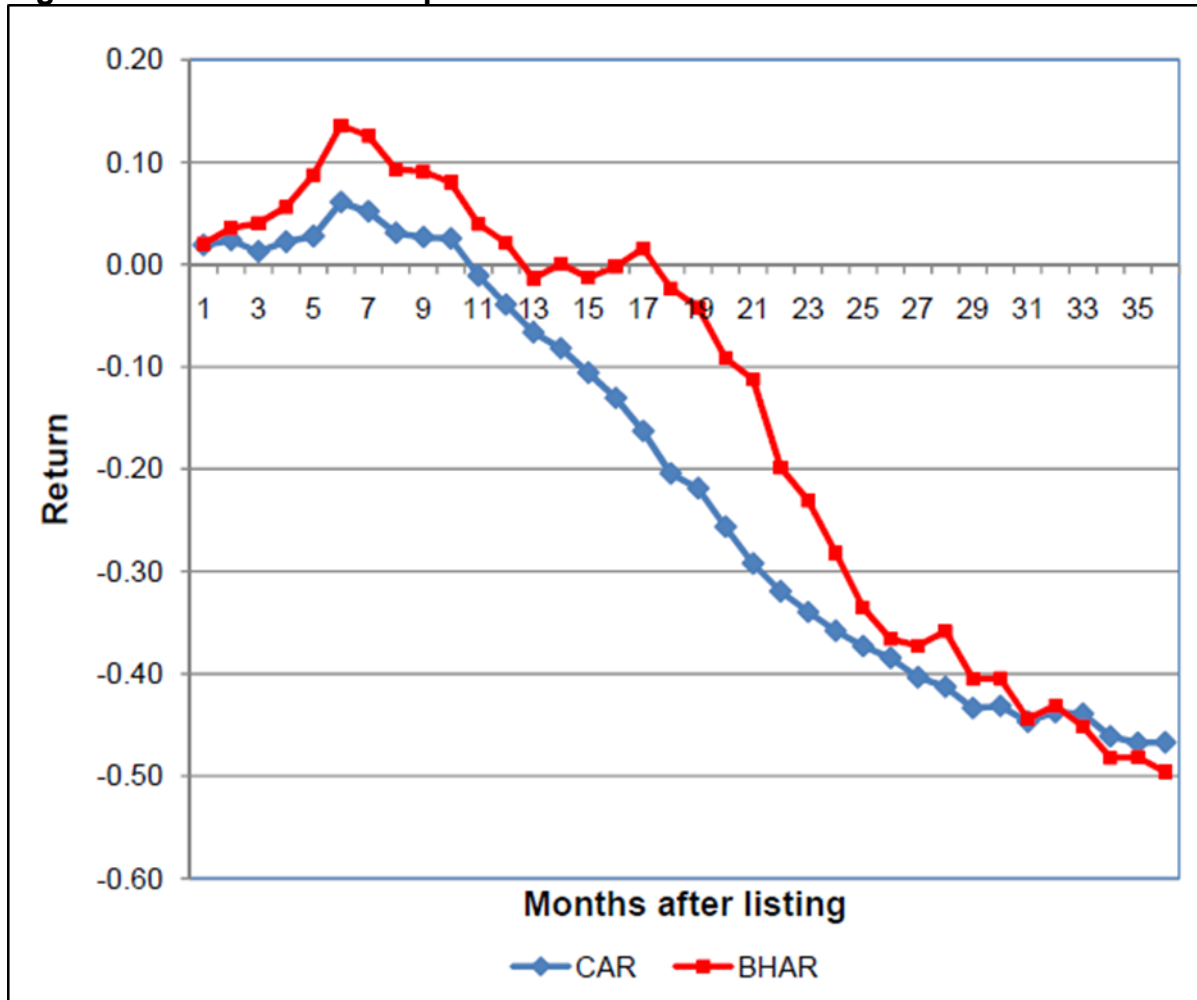


(Source, M'kombe and Ward 2002:12)

The positive relationship between the level of underperformance and the number of delisted or failed companies is clearly noticeable in the figure 3.1 above. For example from year one to year ten the sample size decreased by 78% and the underperformance increased with -84.54% which is extremely significant.

Govindasamy (2010) collected and analysed data of 229 IPO companies on the JSE and established that IPOs underperformed the market with a CAR of -47% and a BHAR of -50% between 1995 and 2006. The figure below illustrates the findings by Govindasamy (2010:53) for a period of three years.

Figure 3.2: CAR and BHAR performance on JSE from 1995 to 2006



(Source: Govindasamy, 2010:53)

From the figure above it is noticeable that CAR and BHAR tend to follow the same pattern in the aftermarket. CAR never looked to recover some losses after the high in month 6 and therefore continued a downward spiral until the end of month 35. Also, it can be observed that BHAR seemed to initially display higher returns and also look to recover some losses in month 17 since a downward trend emerged from month 6. From month 17 till the end of month 36 BHAR kept on declining steeply. Another interesting observation Govindasamy (2010:45) made was the difference of BHAR in each sector, with the most apparent contradiction being the returns calculated in the Financial sector and the returns calculated in the Mining sector. A negative BHAR of -76.46% was observed for the Financial sector and a positive BHAR of +75.67% for the Mining sector.

In addition, Neneh and Smit (2014) studied the three year performance of 269 IPOs on the JSE which listed from 1996 to 2007. The findings by Neneh and Smit (2014:27) can be found in the table below.

Table 3.5: Long-term performance of JSE IPOs listed from 1996 to 2007

Period	BHAR			CAR		
	Average returns	Median returns	T-stats	Average returns	Median returns	T-stats
One year	-5.41%	-30.19%	-0.76227	-8.77%	-29.93%	-1.4492
Two years	-33.20%	-79.45%	-3.34163***	-45.29%	-70.92%	-6.08384***
Three years	-65.59%	-94.59%	-8.11958***	-59.77%	-98.82%	-7.27264***

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

(Source: Neneh and Smit, 2014:27)

Again a clear pattern emerges as the time period under consideration gets longer, the underperformance increases. Neneh and Smit (2014:27) measured the long-term performance by making use of BHAR and CAR, unlike M'kombe and Ward (2002) who only considered BHAR when calculating long-term performance of IPOs on the JSE. These findings are consistent with the findings mentioned above by M'kombe and Ward (2002) and Govindasamy (2010). Neneh and Smit (2014:30) then further analysed a sample of 81 companies for a period of ten years. Interestingly, BHAR was found to be negative for each of the ten years, and year seven proving to be the worst with a BHAR of -85.51%. CAR on the other hand only displayed negative returns for year one, two and three and then only again in year ten. These findings can be found in the table below.

Table 3.6: Ten year performance of 81 IPOs on the JSE

Period	BHAR			CAR		
	Returns	Yearly performance	T-stats	Returns	Yearly performance	T-stats
One year	-5.33%	-5.33%	-0.34005	-7.63%	-7.63%	-0.71529
Two years	-31.43%	-28.68%	-1.71418*	-34.25%	-26.62%	-2.63324**
Three years	-50.66%	-16.44%	-2.43638**	-49.36%	-15.11%	-1.95701*
Four years	-44.02%	18.08%	-1.50714	-35.20%	14.16%	-0.92596
Five years	-26.41%	27.53%	-0.64298	4.25%	39.44%	0.80709
Six years	-35.53%	32.88%	-0.81736	59.32%	55.07%	2.23209**
Seven years	-85.51%	34.70%	-2.38450**	86.51%	27.20%	2.78654***
Eight years	-76.99%	15.63%	-1.11062	100.86%	14.35%	3.13945***
Nine years	-65.16%	29.22%	-0.59231	120.64%	19.78%	3.44515***
Ten years	-25.43%	-0.29%	-0.19004	116.23%	-4.41%	3.29376***

NB: The returns are based on what happens from the first trading day to the end of each year. To further understand the performance of the IPOs over the years, their annual performance was also recorded. From years four to year ten, the yearly trends indicated positive performance for both the BHAR and the CAR.

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

(Source: Neneh and Smit, 2014:30)

3.2.3 Reasons for long-term IPO behaviour

Furthermore, when considering the possible reasons for the outperformance or underperformance of IPOs, a variety of explanations come to the fore. The reason for IPO's outperforming the markets can be contributed to the fact that markets in some parts of the world had become more efficient, information got more accessible and reliable. This led to lower levels of underpricing and less poor long-term performance (Govindasamy, 2010:10). An increase in information disclosure and a noticeable increase in the spending on research and development by a company may also serve as a good measure to insure above average long-term returns (Guo, Lev and Shi, 2006:29). Goergen *et al.* (2007:402) also observed a positive

relationship between the degree of multi-nationality and above average long-term returns. Therefore, the more branches the company has internationally the less likely it is to underperform in the long-term.

The long-term performance of IPOs can also be sensitive to the time period when the issue was made. The economic, political, social and legal state of the country as well as the general health of the business environment and investors perception about the market at the time of issue will have an impact on the companies considered (Govindasamy, 2010:8). Moreover, Shikha and Balwinder (2008:33) established that market conditions also have a significant impact on the IPO returns experienced in the first three years. Thomadakis *et al.* (2012:139) affirms that long-term performance is noticeably affected by the market period. Moreover, Yung, Colak and Wang (2008:199) observed that IPO returns during a hot and a cold period, differ significantly. Another important finding concluded in their study is that IPOs issued during a hot period tend to delist within the first few years after listing. Cook *et al.* (2003) also concluded that IPO performance tends to be significantly worse in hot markets than in cold markets. Schultz (2001:513) offers another reason for the long-term underperformance of IPOs, which is the notion that more IPO issues tend to follow successful IPOs. Therefore, the last sample of IPOs would underperform because it tends to include companies that were not ready to go public. Mixed growth rates in the respective country over the sample period can also be used to explain the long-term performance of IPOs (Govindasamy, 2010:55).

Overoptimistic investors have also been found to have an impact on the long-term performance of IPOs. In the beginning stages of an IPO the optimistic investor will buy the share regardless of having enough information to make a good investment decision. However, over time as the variance of opinion decreases, the optimistic investor's valuation will gravitate more towards the mean valuation. Hence, over the long-term the share price of the respective IPO will decrease (Ritter and Welch, 2002:1821). According to Heaton (2002:42), it is not only overoptimistic investors who affect long-term IPO performance but also overoptimistic managers who will, if the funds are available, overinvest in the issue. In addition, overoptimistic accounting reports in the early stages of an IPO issue and the concealment of possible warning signals, has also been found to contribute significantly to the long-term underperformance of IPOs. Ritter and Welch (2002:1821) therefore suggest that

poor long-term IPO performance can at least partly be explained by a market which is unduly optimistic and a market which is unable to forecast IPO performance for the time ahead. Moreover, Kooli and Suret (2004:64), argue that their “investors’ overreaction hypothesis” may explain the long-term underperformance of IPOs. The long-term underperformance was also found to wipe out any initial gains achieved.

A further drop in IPO share prices over the long-term has also been observed by Bradley *et al.* (2001:467) and Field and Hanka (2002:495) at the end of the lockup period. Bradley *et al.* (2001:490) observed that mainly venture-capital backed IPOs tend to experience a decline in their share price. The main reason for the drop in the share price at the end of the lockup period can be explained by the venture-capitalists selling more public shares to their limited partners and these partners internally immediately resell these shares. Consequently, a noticeable drop in the share price and significant high trading volumes are experienced.

Another possible explanation for better long-run performance by venture-backed IPOs is venture capitalists' reputational concerns (Brav and Gompers, 1997:1793). Purnanandam and Swaminathan (2001:19) found a significant positive relationship between higher first-day returns and long-term underperformance. Additionally, Gao, Mao and Zhong (2006:128) concluded that IPOs with higher initial returns tend to have noticeable lower long-term returns. However, in contrast, Ritter and Welch (2002:1822) found no clear relationship between the initial underpricing of IPOs and long-term underperformance. Further, they also concluded that the companies in their sample, which were listed before 1990, were more often than not subject to stock price manipulation. As a result, these stocks displayed abnormal high returns on the first day and went on to substantially underperform the market over the long-term. Finally, Ritter and Welch (2002:1822) attributed the poor long-term performance of technological IPOs to the occurrence of the internet bubble during their period of study.

Goergen, Khurshed and Mudambi (2007:408) tested seven hypotheses to find explanations for the long-term underperformance of UK IPOs. Four of these hypotheses were found to be complementary in providing reasons for long-term IPO underperformance (Goergen *et al.*, 2007:408). These four hypotheses are the following:

- That the greater the size of the firm at the time of going public, the better the long-term performance will be.
- The higher the premium asked by an underwriter to take a company public, the greater the chance of long-term underperformance.
- That there is a positive relationship between being a multinational company and the chances of good long-term IPO returns.
- The greater the dilution of shareholding, the chances of disappointing IPO returns over the long-term increases.

Therefore the finding by Goergen *et al.* (2007:414) suggests that good long-term IPO performance is thus experienced when the listed company is a large company, one who has a low premium asked by the underwriter, is a multinational company and has a fairly low percentage of diluted shareholding.

Affirming the first hypothesis tested by Goergen *et al.* (2007:408), Govindasamy (2010:41) who studied South African IPOs also found a significant relationship between the size of the IPO offering and the long-term performance. These findings are tabulated below.

Table 3.7: Size of IPO offering and long-term performance

Gross Proceeds	BHAR	t-stat	n
< R100 M	-0.57	2.895	104
R100 M - R1 Bln	-0.57	3.250	86
> 1 Bln	-0.13	0.528	34

(Source: Govindasamy, 2010:41)

Jenkinson and Ljungqvist (2001:56) argue that the non-existence of a simple estimate to determine the systemic risk also contributes to the long-term underperformance. Jenkinson and Ljungqvist (2001:57) further attribute poor long-term performance to companies who build their books before going public. This causes investors to become over optimistic about the company and also, more often than not, result in companies missing their forecast operating performance. As a result investors become disinterested in these shares and long-term underperformance is experienced.

However, Neneh and Smit (2014:32), advise investors to stay out of the IPO market for the first three years of trading and to only enter the market in the fourth year of trading and then again possibly selling at the end of the fifth year. This will assist them to generate a return on their investment. Neneh and Smit (2014:32), argue that these observations of positive returns that are only generated after three years, are a result of the companies needing time to adjust to the market and also the fact that information asymmetry is essentially non-existent and the true behaviour of IPOs are experienced in the long-term. After understanding the level and possible reasons for long-term IPO underperformance, the second most common phenomenon associated with *Initial Public Offerings*, which is the initial underpricing, will be discussed next.

3.3 INITIAL UNDERPRICING

Initial underpricing is also a phenomenon that is synonymous with the short-term under performance of IPOs. The worldwide common occurrence of initial underpricing has sparked a variety of investigations on this phenomenon in different stock markets (Boulton, Smart and Zutter, 2010; Chen, Firth and Kim 2004; Gounopoulos, Nounis and Stylianides. 2008; Habib, and Ljungqvist. 2001; Hanley, 1993; Hau and Lai, 2012). Stock markets where initial underpricing have been found include:

- International;
- North and South American;
- European;
- Asian;
- South Africa.

IPOs are said to be underpriced due to substantial evidence found of abnormally large initial returns. However, it is important to keep in mind that the initial offer price of the IPO is not determined by the market. The initial offer price is jointly determined by the issuing company, the underwriters and the level of demand that is generated via book building. Initial underpricing can be identified when the closing price at the end of the first day of trading is higher than the initial offer price. This implies that the price the issuers determined the shares to be worth, are less than what the market

was prepared to pay for the shares (Heeley, Matusik and Neelam 2006:2). Initial underpricing can also be defined as the abnormal gain or loss experienced during the first day of trading (Adams, Thornton and Baker, 2009:55). Gajewski and Gresse (2006:27) define the initial return of an IPO as: “The difference between the equilibrium price following the issue and the IPO price”. Loughran and Ritter (2003:41) define first-day returns as the change from the offer price to the closing price.

However, it is not only initial underpricing that exists but also initial overpricing. Initial overpricing can be seen when the closing price at the end of the first day of trading is lower than the original offer price (Christiansen, 2011:15). The most common measuring technique used in measuring the short-term IPO performance is the market adjusted abnormal (MAAR) technique. The MAAR technique will be discussed in detail in the methodology chapter.

3.3.1 Initial underpricing worldwide

When considering the findings made by a wide variety of authors, (Adjasi, Osei and Faiwoyife, 2011; Bakar, 2014; Bansal and Khanna, 2012; Chen, Firth and Kim, 2004; Filatotchev and Bishop, 2002; Habib and Ljungqvist, 2001, Jelic, Saadouni and Briston, 2001; Kaneko and Pettway, 2003; Moshirian and Wu, 2010 and Saito and Maciel, 2006) it becomes apparent that initial underpricing of IPOs are present in almost every stock market at any given time. In a study done by Loughran, Ritter and Rydqvist (2010) concerning the average initial return of IPOs internationally which included 47 countries, the average initial return in each country was observed to be positive. The average initial returns varied from as low as 4.20% in Russia to as high as 164.50% in China. In addition, Zhu (2011) also documented the initial returns on IPOs in 44 countries. The average initial returns documented in each country were also found to be positive, with Chile concluded to have the highest average initial return at 99.79% whereas the lowest average initial return was found to be Mexico with 0.94%. The table below captures some of the findings observed by Zhu (2011:47) in stock markets worldwide.

Table 3.8: Average initial returns of IPOs worldwide

Country	Performance	Sample Size
Argentina	46.67%	17
Australia	22.44%	1329
Belgium	22.93%	92
Finland	34.19%	62
Hungary	99.76%	18
New Zealand	14.17%	80
Pakistan	75.93%	39
Singapore	29.40%	468
Taiwan	18.14%	801

(Source: Zhu, 2011:47)

Conclusively, from the table above it can be noted that abnormal initial returns are present in stock markets worldwide. However, the levels of initial abnormal returns vary across different markets as well as different periods of time.

3.3.2 Initial underpricing in North and South America

Kooli and Suret (2004:64) noted that a sample of 971 Canadian IPOs which were listed between 1991 and 1998 were underpriced on average by 20.57%. A study conducted by Loughran and Ritter (2003), an average initial return of 18.90% for 6169 US IPOs which listed between 1980 and 2000. The average initial return was calculated as the percentage difference between the initial offer price and the closing price on the first day of trading. This essentially means that the companies in the sample were on average underpriced by 18.90%. However, when analysing the data further Loughran and Ritter (2003:41) found that initial underpricing became much more severe as the years progressed. Their findings are captured in the table below:

Table 3.9: Change in US IPO underpricing from 1980 to 2000

Year	Number of IPOs	Average first-day returns	Offer Price	Market Price
1980-1989	1982	7.40%	\$159	\$170
1990-1998	3384	14.80%	\$260	\$301
1999-2000	803	65.0%	\$858	\$1461
Total	6169	18.9%	\$305	\$410

(Source, Loughran and Ritter, 2003:41)

In the table above it can be observed that during two periods of ten years (1980 to 1989 and 1990 to 1998 respectively) the initial underpricing was not nearly as severe as in the finale two years (1999 to 2000) of the study which showed an average first-day return of 65.00%. Therefore, these findings by Loughran and Ritter (2003:41) serve as a clear indication that at least in the US stock markets the level of underpricing is worsening dramatically. Initial underpricing was also observed in Brazilian stock markets by Loughran, Ritter and Rydqvist (2010:2). They noted that a sample of 180 Brazilian IPOs which listed between 1979 and 2006 were underpriced, on average, by 48.70%.

3.3.3 Initial underpricing in Europe

In European markets a substantial body of research have been conducted (Chahine, 2004; Thomadakis *et al.*, 2012; Arosio, Giudici and Paleari, 2000; Goergen, Khurshed, McCahery and Renneboog, 2003; Jelic and Briston, 2003; Levis, 2011 and Gajewski and Gresse, 2006) on the initial performance of IPOs. Although underpricing was found to be present in every market analysed, the average level of underpricing varied. Austria, Belgium, France, Italy, Spain, Sweden and Turkey were found to have relatively low levels of initial underpricing. Whereas, Germany, Greece, and the UK on the other hand displayed substantial initial underpricing ranging from 43.32% to 86.07%. The table below documents the average first day underpricing in European markets.

Table 3.10: Level of Initial Underpricing in Europe

Country	Performance (Underpricing)	Period of Study	Sample Size	Reference
France	4.19%	1996-2000	144	Goergen, Khurshed, McCahery & Renneboog (2003)
Germany	43.32%	1996-2000	319	Goergen, Khurshed, McCahery & Renneboog (2003)
Greece	46.13%	1990-2001	225	Thomadakis <i>et al.</i> , 2012
Italy	23.94%	1985-2000	164	Arosio, Giudici & Paleari (2000)
Netherlands	11.03%	1984-2001	118	Roosenboom and Van der Groot (2005)
Poland	28.83%	1991-1999	92	Jelic & Briston (2003)
Sweden	14.20%	1994-2001	124	Bodnaruk, Kandel, Massa & Simonov (2004)
Turkey	13.10%	1990-1996	163	Kiyamaz (2000)
UK	60.10%	2000	240	Ljungqvist & Wilhelm (2002)

From the table above the different degrees of initial underpricing in Europe is clearly noticeable. However, in contradiction to the conclusion of 11.03% initial underpricing found by Roosenboom and Van der Groot (2005) in the Netherlands, when using the same measuring technique Goergen *et al.* (2003) found initial underpricing of 86.07% in the Netherlands between 1996 and 2001. Therefore, the initial underpricing of IPOs can not only differ across countries in the same geographical area but can also differ significantly within the same country across different periods. These findings in Europe and more specifically in the Netherlands are consistent with the findings concluded in the US stock market by Loughran and Ritter (2003).

3.3.4 Initial underpricing in Asia

Initial underpricing was also found to be substantial in Asian markets. Amongst others, India displayed average initial underpricing of 96.56% for a sample of 500 IPOs from 1992 to 1996 (Balwilder, Singh and Mittal, 2003:29). Islam, Ali and Ahmad, (2010:46) concluded that 191 Bangladeshi IPOs issued during 1995 to 2005 were on average underpriced at a level of 480.71%. Although, 8.38% of their sample was overpriced, the largest majority of the sample was substantially underpriced. Further, in China, according to Chen, Firth and Kim (2004:292) the mean

underpricing was noted to be 145% for a sample of 734 Chinese IPOs. In Japan, 433 IPOs which were investigated from 1998 to 2001 were found to have on average initial returns of 50% (Kirkulank, 2008:120). Also interesting to note is that for the sample period the Metal Product industry gave an initial return of 8.52% whereas the Communication industry generated a substantial initial return with 243.19%. Kirkulank (2008:120) asserts that the boom in the IT industry can assist in explaining the high levels of underpricing of communication shares. Malaysian initial underpricing was found to be significantly lower at 38.16% for a sample of 420 IPOs issued from 2000 to 2011 (Uzaki, 2013:819).

3.3.5 Initial underpricing in South Africa

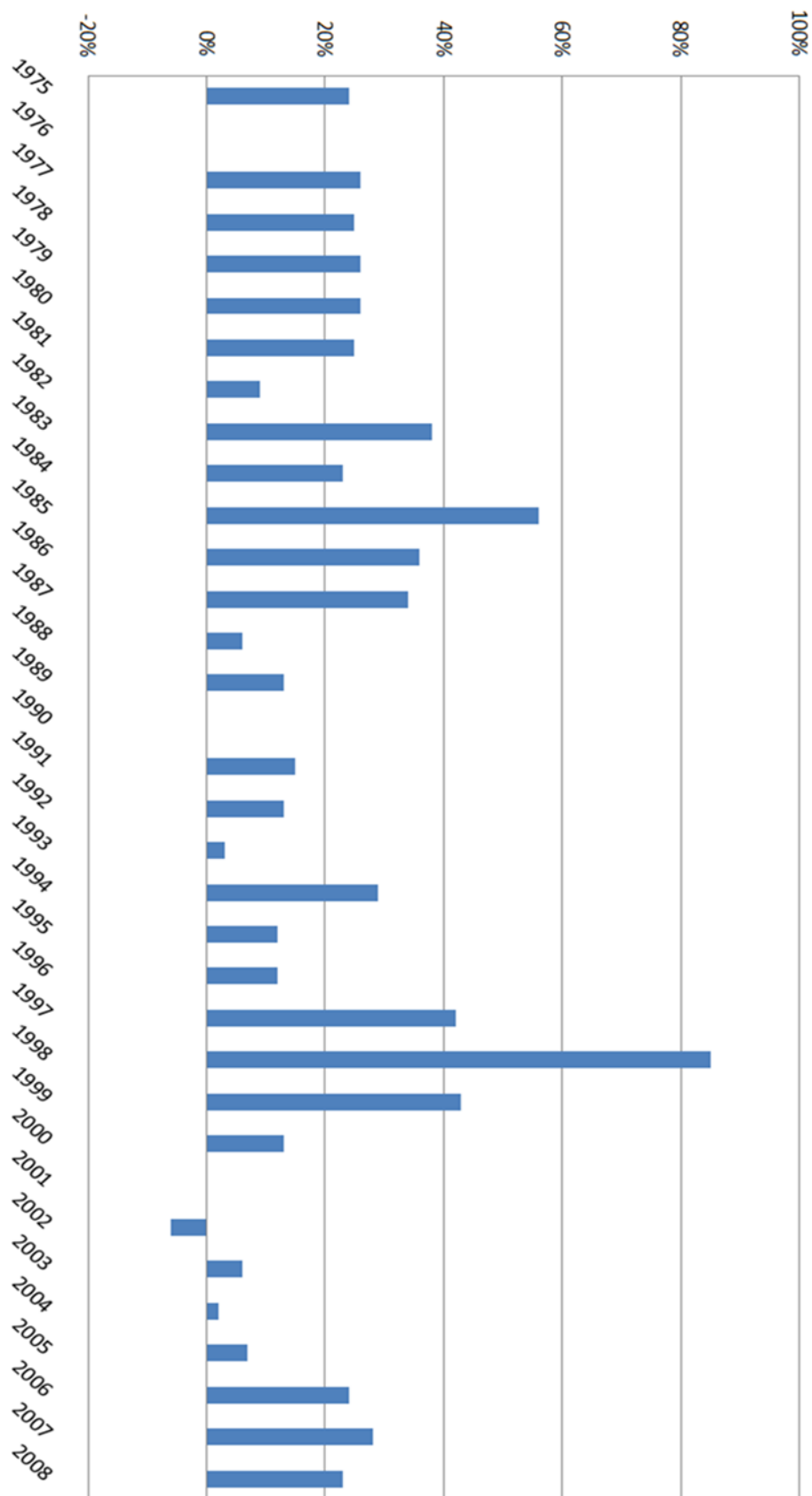
Initial underpricing on the JSE has been observed from as early as 1972. Barlow and Sparks (1986) analysed a sample of 105 unseasoned IPO offerings issued from 1972 till 1986 and concluded an average initial return of 32.10%. Interestingly, their sample displayed a maximum initial return of 166.70% and a minimum initial return of -27.70%. Additionally, Brafield and Hampton (1989) affirmed that the average initial return for a sample of 77 unseasoned IPO companies listed from 1975 to 1986 were 48.00% during a hot market period and an initial return of only 25.00% during a cold. A much larger sample was analysed by Lawson and Ward (1998:30), which also included a hot period. Their sample consisted of 535 new ordinary share listings issued between 1975 and 1995. However, Lawson and Ward (1998) noted that the returns observed could not be adjusted for listing-event risk as no such methodology existed at the time of their study. Nevertheless, they still observed average initial returns of 34.80%. A total sample population comprising of 321 new IPO listings which listed between 1995 and 1999 were considered by Lattimer (2006). However, the final research sample consisted of only 161 new IPO listings. The reason for the decrease in the sample is mainly due to inefficient or non-existent information such as the relevant prospectus and pre-listing statements. Interestingly, the level of initial returns fluctuated significantly from as low as -49.24% in 1995 to as high as 85.11% in 1998 (Lattimer, 2006:171). Still, the average level of initial returns was noted to be 55.04%.

In more recent studies conducted on the JSE, Muller (2011) investigated a sample of 34 IPO listings over a nine year period (from 2000 to 2008). The average first day

returns were calculated as the difference between the original offer price and the closing price at the end of the first day of trading (Muller, 2011:49). Muller (2011:51) noted that the average level of initial underpricing was 17.10%. However, when property funds were excluded the average level of initial underpricing increased slightly to 20.40%. The reason for the exclusion of property funds in some cases, according to Muller (2011:48), is because property funds behave differently from normal operating companies. Further, the maximum and minimum levels of initial underpricing were observed to be 89.00% and -20.00% respectively. During the period of study the level of initial underpricing also increased, as the average level of initial underpricing was higher than the median in the years 2006 till 2008.

Additionally, by collecting data from studies conducted on the JSE by Lawson and Wand (2008), Lattimer (2006) and Muller (2011) concerning the average initial returns, the figure below could be drawn. The figure illustrates the year by year average initial underpricing from 1975 till 2008. The average level of initial underpricing for the total sample of 717 companies analysed during the period is 22%.

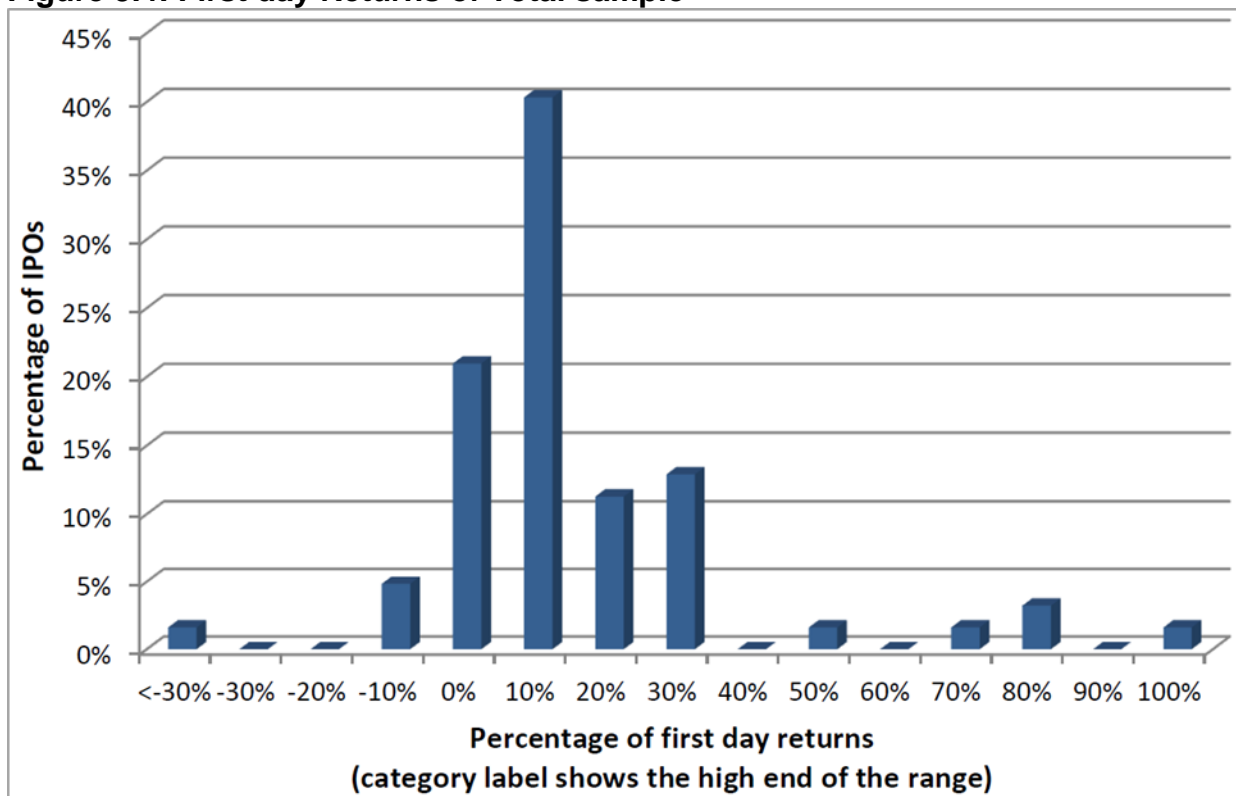
Figure 3.3: Average Initial Returns on the JSE from 1975 to 2008



(Source: Lawson and Wand, 2008, Lattimer, 2006 and Muller, 2011)

In another study done on IPO listings on the JSE, Govindjee (2012:26) considered a sample of 60 newly listed companies over a 12 year period, from 2000 to 2011. The results revealed that IPOs outperformed the All Share Index with 10.10% on the first day of trading (Govindjee, 2012:36). The mean level of underpricing observed by Govindjee (2012) is substantially lower than the first day underpricing concluded by Correia and Holman (2008) on the JSE. Govindjee (2012:38) further illustrated the first day abnormal returns in the histogram below:

Figure 3.4: First day Returns of Total sample



(Source: Govindjee, 2012:38)

The figure above illustrates that 40% of the total sample had initial returns of between 0% and 10%, and just more than 20% of all IPO considered found to have initial returns of between 10% and 30%. Although more than 20% of the sample also displayed negative returns of between 0% and -10%, these negative returns were outweighed by the larger portion of positive returns. Govindjee (2012:38) adds that the histograms show very little evidence of the presence of any anomalies in his study sample as close to 90% if the whole sample's first day abnormal returns can be observed between -20% and 30%.

Govindjee (2012:40) also grouped and compared the initial returns of IPOs to the Financial and Industrial index and the Resource-20 index. These findings indicate that financial and industrial companies tend to have greater first day abnormal returns whereas resource companies display negative abnormal returns on the first day of trading. Further, it was also noted that all the average abnormal returns in the first week and first month of trading, are negative. This essentially means that it is highly unlikely to experience positive abnormal returns during the first week or month when purchasing shares at the closing price on the offer date (Govindjee, 2012:42).

The initial abnormal returns experienced on specifically the AltX were documented by Mashaba (2014:47). The mean of the first day initial returns for 60 companies listed between 2006 and 2012 on the AltX, were 21.42%. The maximum return observed was 406.25% and the minimum was -91.98%. The returns were positively skewed which serves as an indication that the larger percentage of the sample's returns were more than the average. Additionally, the returns observed in the first three subsequent years of trading were negative. Therefore, to a large extent this confirms the conclusion made by Govindjee (2012:42), where Mashaba (2014:47) proved that it will also be extremely difficult to generate positive returns for at least the first three years. Also as a result of the high initial returns of IPOs, especially on the first day, Neneh (2013:11) argues that investors have little incentive to hold on to IPOs and not to sell at the end of the first day of trading.

3.3.3 Reasons for Underpricing

By making use of the services of an underwriter, the company can to a large extent determine the fair book value and the possible market value of its shares. Therefore, it would be expected that the initial offer price will be close to the value of the shares perceived by the market (Muller, 2011:34). Nevertheless, large amounts of capital that could have been raised are missed out on, due to high levels of underpricing. This phenomenon is referred to as *left money on the table*. Loughran and Ritter (2002:413) noted that from 1990 to 1998 US IPO firms left \$27 billion on the table. On his turn Derrien (2005:487) found that 803 US IPO companies left \$62 billion on the table through public issues between 1999 and 2000. Further on the JSE, Neneh (2013:114) documented the average first day underpricing to be 78.10%, which

essentially means that companies listed on the JSE between 1996 and 2007 could have raised 78.10% more capital.

Over the years, a variety of possible reasons and theories have been presented to assist in the explanation of initial underpricing worldwide. It is worth noting that these theories and possible reasons are generally mutually exclusive and it is also assumed that initial underpricing occurs due to a number of contributing factors and not as a result of one factor alone.

3.3.3.1 Information asymmetry

One of the most common theories asserted in literature on initial underpricing of IPOs, is the disparity of information amongst investors which is referred to as information asymmetry. Davidoff (2011: online) stated that the information asymmetry theory is evident when there is too little information available for only one group of investors, causing disparities amongst investors.

Lowry and Murphy (2007:47) stated that high information asymmetry in a company tends to lead to higher levels of underpricing. They further found, because of information asymmetry, companies could experience higher levels of volatile initial returns. Habib and Ljungqvist (2000:15), also add that the absence of information and increasing uncertainty will lead to higher initial underpricing which subsequently results in the loss of wealth. According to Álvarez and González (2005:35) the hype created by an IPO may cause an overreaction by the market, which can lead to a speculative decision by investors to invest a substantial amount in an IPO without sufficient information and thus resulting in disappointing returns on their investment. Gajewski and Gresse (2006:39) assert the initial underpricing observed in 15 European countries mainly as a cause of information asymmetry. Consequently, if some investors are at an information advantage compared to others, some investors will experience disappointing returns (Lattimer, 2006:83).

3.3.3.2 Deliberate underpricing

One solution companies and underwriters follow to reduce the information asymmetry between informed and uninformed investors and to compensate for the issue of The Winner's Curse, companies deliberately underprice their IPO's (Firer *et al.*, 2012:480). Brau and Fawcett (2006:414) state that the asymmetric information

gap between the investor and the issuing company could lead to underpricing as the issuer needs to underprice the share to make them attractive to potential investors. The goal of this strategy by companies is to increase the level of trading of their own shares and to increase the profit potential for the average investor (Deeds and Decarolis 1999:960). Brau and Facett (2006:414) added that underpricing can be seen as a marketing scheme to attract potential investors, increasing their market range.

3.3.3.3 The Winner's Curse hypothesis

A significant study undertaken by Rock (1986) gave rise to information asymmetry resulting in a hypothesis now known as The Winner's Curse. The Winner's Curse hypothesise that informed as well as uninformed investors participate in the stock market. Whereas, informed investors subsequently have superior knowledge over uninformed investors. Therefore, informed investors will only subscribe for shares which they believe to be underpriced. On the other hand, uninformed investors have limited information and will thus subscribe for all shares in an indiscriminating manner (Rock, 1986:189). The Winner's Curse can thus be defined as uninformed investors receiving only a small portion of the underpriced shares as well as the full portion of overpriced shares.

In support of Rock's (1986) study, Koh and Walter (1989) made use of The Winner's Curse hypothesis when testing equity issues on the Singapore market. They asserted that investors are three times more likely to receive an overpriced issue than an underpriced issue.

3.3.3.4 Signalling Hypothesis

An additional information asymmetry model is the Signalling Hypothesis. Muller (2011:37) asserts that according to the Signalling Hypothesis the information disparity is not between investors but rather between the issuing company and the market. Consequently, good quality companies tend to underprice their issue deliberately to compensate for the information disparity between the investor and the issuing company and also so signal company quality (Demers and Joos, 2007:345).

Initial underpricing can further be seen as a sign of firm quality and positive growth and sales prospects (Zheng and Stangeland, 2007:61). Neneh (2013:52) states that

high quality companies tend to deliberately underprice their offering in an effort to distinguish themselves from low quality companies. Low quality companies however will refrain from following the same pricing strategy as they will not be able to recoup the benefits from issuing at a large discount, whereas good quality companies know they will be able to raise the needed proceeds in a follow-on offering (Demers and Joos, 2007:345).

Ritter (1998:9) mentioned that deliberate underpriced new issues tend to “leave a good taste” with investors and in so doing also allow inside shareholders to sell future offerings at a higher price than would have been originally possible. Jegadeesh, Weinstein and Welch (1993) first proposed the “leaving a good taste” hypothesis. Dai (2012:132) pronounces that the “leaving a good taste” hypothesis assumes that the issuer has an information advantage and also takes the possibility of returning to the market for a secondary offering into account. Additionally, Lattimer (2006:107) goes on to assert that issuers follow dynamic pricing strategies and by deliberately underpricing an offering they create favourable circumstances in which additional funds could be raised in the future.

The Signalling Hypothesis have been tested and accepted in past studies done by Allen and Faulhaber (1989), Welch (1989) and Grinblatt and Hwang (1989). However, other studies conducted by Ibbotson and Ritter (1995), Ritter (1998) and Michaely and Shaw (1994) found no relation between the initial underpricing of the offering and the ability to raise additional equity in the market at a later stage.

3.3.3.5 Bandwagon hypothesis

Welch (1992) presented a hypothesis which suggests that the IPO market “cascades”. In essence, if an investor finds out that none of the other investors in the market are willing to purchase the respective shares, he or she might also decide not to invest, even though the IPO offering displays favourable information. Therefore, in an effort to generate investors’ interest in the offering, the issuer may underprice the IPO to induce the first few trades with the end goal being to instigate a bandwagon or cascading effect which will result in all subsequent investors wanting to buy in (Muller, 2011:44). Habib and Ljungqvist (2001:434) note that underwriters may be inclined to price the offering very low to take advantage of the hype created by The Bandwagon Effect in an effort to reduce their time spent on marketing the offering.

However, Lattimer (2006:109) also makes mention of the potential inverse relationship that exists. Investors might deduce that the decrease in the original offer price might be as a result of weak demand and thus possibly result in scaring away any potential investors. Additionally, if the original offering price is decreased too much, investors may assume that the issuing company has cash flow problems. In such a case Ritter (1998:9) presents advice to companies to withdraw or postpone the offering and wait until market conditions improve.

Amihud, Hauser and Krish (2003:152) found the bandwagon hypothesis to be true as they concluded in their study that offers are either severely oversubscribed or have extreme low demand with very few cases in between.

3.3.3.6 Ownership dispersion hypothesis

It is known that the owners of an issuing company can influence the level of underpricing purely by the choice of the underwriter and what exchange to list on (Habib and Ljungqvist, 2000:1). Brennan and Franks (1997:391) stated that managers would want to underprice their shares to substantially widen the shareholder base. Managers only start to care about the level of underpricing when they stand to lose from it (Habib and Ljungqvist, 2000:30). Therefore, managers are encouraged to intentionally underprice the offer in an effort to break up the ownership base and reduce the level of monitoring by large ownership groups (Brennan and Franks, 1997:412). Moreover, by having a dispersed ownership base it also allows the issuing company's management to be less vulnerable to challenges from outsiders and individual shareholders (Bouzouita, Gajewski and Gresse, 2012:4). Additionally, a wider shareholder base also improves the liquidity of the issued shares and in so doing improves the chances of attracting subsequent investors for future additional capital.

3.3.3.7 Other explanations

In conclusion to the theories and hypotheses presented above, Loughran and Ritter (2004:32) suggest that the possible explanations of initial underpricing changes over time. They initially accepted that The Winners Curse could explain the initial underpricing in the 1980's and information disclosure models explain initial underpricing in the 1990's. However, it was found that other factors such as analyst

coverage, compensation of CEO's and venture capitalists offered better explanations of initial underpricing (Loughran and Ritter, 2004:32). Zhu (2011:34) for example concluded that a significant relationship exists between the cultural values of investors and the level of underpricing. Howton (2006:420) asserts that companies will also deliberately underprice their offering in a bid to increase the shareholder spread, to ultimately avoid monitoring by major shareholders in the future.

3.3.3.8 Limiting underpricing

In a bid to limit the level of initial underpricing, book building has been found to be a possible solution. Book building essentially entails an underwriter offering shares of the company which they intend to take public exclusively to institutional investors at a fixed price (Gajewski and Gresse, 2006:18).

Bansal and Khanna (2012) found a significant difference in the level and magnitude of IPO underpricing and overpricing when book building was considered as a determining factor. The average level of underpricing found for issues which made use of book building was 34.29% whereas issues that did not make use of book building displayed an average level of underpricing of approximately 60% (Bansal and Khanna, 2012:212). Therefore, through book building and investors who regularly provide information about their demand, underwriters can reduce the average level of underpricing and in doing so increase the expected proceeds of the issuing firm. According to Loughran and Ritter (2003:5), The Winners Curse can be eliminated completely by underwriters who allocate shares in hot market periods only to investors who are willing to buy other IPOs. Additionally, Ritter and Welch (2002:1807) note that if underwriters are willing to bundle IPOs issued together, the problems caused by asymmetric information could be mitigated almost completely. Islam, Ali and Ahmad (2010:42) concluded their study by recommending that book building pricing strategies should be implemented to reduce the high levels of initial underpricing. Kumar *et al.* (2007:25) also found that long-term underperformance can be minimized through book building.

3.4 CONCLUSION

The aim of this chapter was to present a picture of the impact of the two most well-known anomalies found to be present in IPO markets, which are long-term

underperformance and initial underpricing. Firstly long-term underperformance was discussed. It was noted that long-term underperformance of IPOs can be defined as the average negative returns earned over an extended period of time when compared to the market (Liu 2009:76). It was noted that the two most popular measuring techniques of long-term performance is the buy hold abnormal return (BHAR) technique and the cumulative abnormal return (CAR) technique. Moreover, mention was also made of the fact that the long-term performance can be measured by using either the initial offer price or the closing price at the end of the first day of trading. Amongst others, Thomadakis *et al.* (2012:127) noted that by making use of the initial offer price to measure IPO performance, the long-term performance tends to be better and more favourable than using the closing price at the end of the first day of trading. However, most studies done on IPOs more often than not make use of the share price at the end of the first day of trading. Govindjee (2012:44) argues that the closing price at the end of the first day of trading is a much fairer price to use, as the average investor is much more likely to be able to buy the shares at the price quoted at the end of the first day of trading.

When considering the long-term performance of IPOs internationally it was noted that long-term underperformance have been noted the US, Canada, Europe and Asia. Amongst others Demers and Joos (2005) found under performance of between -8.83% and -50.17% for US IPO companies. Kooli and Suret (2004) concluded that Canadian IPOs underperformed the market from 1991 to 1998 with a CAR of -11.02%. Schuster (2003) noted long-term underperformance of between -11.02% and -41.85% over a three year period for European IPOs. In Thailand, 43 IPOs where found to underperform in the market with a BHAR of -41.70% from 1999 to 2005 (Vithessonthi, 2008). The underperformance of IPOs were also found to be present in South Africa. It was noted that the long-term underperformance of IPO on the JSE are on the increase. M'kombe and Ward (2002:12) concluded the BHAR on the JSE between 1980 and 1998 to be -21.47%, Govindasamy (2010:53) observed a BHAR of -50% from 1995 to 2006 and Neneh and Smit (2014:27) found IPOs on the JSE to underperform the market with a BHAR of -65.59% from 1996 to 2007.

The possible reasons for long-term underperformance mentioned above include the notion that long-term performance of IPOs tend to be sensitive to the time period when the issue was made. The economic, political, social and legal state of the

country as well as the general health of the business environment and investors perception about the market at the time of issue will have an impact on the companies considered (Govindasamy, 2010:8). Overoptimistic investors have also been found to have an impact on the long-term performance of IPOs.

Initial underpricing which is also a very common phenomenon associated with IPO performance, was discussed next. Initial underpricing can be identified when the closing price at the end of the first day of trading is higher than the initial offer price. This implies that the price that the issuers determined the shares to be worth, are less than what the market was prepared to pay for the shares (Heeley, Matusik and Neelam 2006:2). It was also noted that the most common measuring technique used in measuring the short-term IPO performance is the market adjusted abnormal (MAAR) technique. Underpricing was found to be present in international markets, especially in the US, Canada, Europe and Asia. Amongst others Loughran and Ritter (2003), found an average initial return of 18.90% for 6169 US IPOs which listed between 1980 and 2000. Kooli and Suret (2004) noted that a sample of 971 Canadian IPOs which listed between 1991 and 1998 were underpriced on average by 20.57%. In Europe it was found that Austria, Belgium, France, Italy, Spain, Sweden and Turkey found to have relatively low levels of initial underpricing. Germany, Greece, and the UK on the other hand, displayed substantial initial underpricing ranging from 43.32% to 86.07%. Further looking at Asia, Islam, Ali and Ahmad, (2010:46) it can be concluded that 191 Bangladeshi IPOs issued during 1995 to 2005 were on average underpriced at a level of 480.71%. The same goes for China. According to Chen, Firth and Kim (2004) the mean underpricing was noted to be 145% for a sample of 734 Chinese IPOs. Initial underpricing was also noted in South Africa. Amongst others Muller (2011:51) noted that the average level of initial underpricing on the JSE to be 17.10%.

When considering the possible reasons for initial underpricing concepts, theories and hypotheses such as information asymmetry, The Winner's Curse, the Signalling Hypothesis, The Bandwagon Effect and Ownership Hypothesis were discussed and affirmed by previous studies. Ritter (1998:9) added that deliberate underpriced new issues tend to "leave a good taste" with investors and in so doing also allow inside shareholders to sell future offerings at a higher price than would have been originally possible.

The aim of the next chapter is to sketch a picture of the IPO landscape, internationally as well as locally when the considering the failure and success of IPOs This chapter will also discuss and make mention of the company specific characteristics (age of the company, initial offer price, size of the offering, management of the company, underwriters prestige, venture capital backing, etc.), market specific characteristics (cyclical market periods, board of listing, sector of listing), as well as accounting based variables (market to book value and price to earnings ratio, return on assets, return of equity, debt to equity ratio, operating profit margin, total asset turn over, current ratio, quick ratio) associated with IPO failure and long-term underperformance.

CHAPTER 4

FAILURE AND SUCCESS OF INITIAL PUBLIC OFFERINGS

4.1 INTRODUCTION

The aim of this chapter is to provide informative evidence and observations from previous studies to better understand the behaviour of IPOs. This chapter will sketch a picture of the IPO landscape, internationally as well as locally, when considering the failure and success of IPOs. Also, to better understand the behaviour of IPOs it is important to consider the performance over different time spans as well as different geographical areas. This chapter will discuss and make mention of the company specific characteristics (age of the company, initial offer price, size of the offering, management of the company, underwriters prestige, venture capital backing, etc.), market specific characteristics (cyclical market periods, board of listing, sector of listing), as well as accounting based variables (market to book value and price to earnings ratio, return on assets, return on equity, debt to equity ratio, operating profit margin, total asset turnover, current ratio, quick ratio) associated with IPO failure.

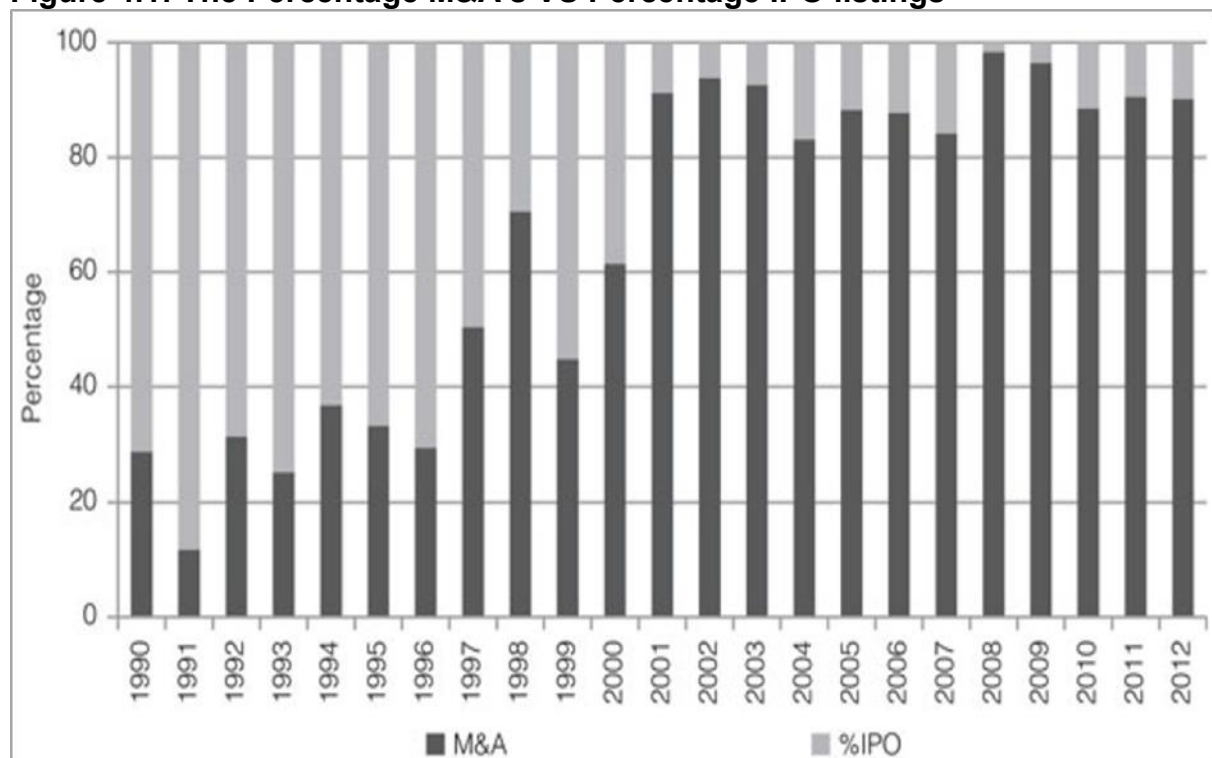
Research pertaining to IPO failure on the JSE is quite limited, thus the greater body of research conducted on failure relates to international markets (Foster-Johnson, Lewis, Seward, 2000; Amini and Keasey, 2001; Fischer and Pollock, 2004; Li, Zhang, Zhou, 2005; Botman, Goot and Giersbergen, 2009; Espenlaub, Khurshed and Mohamed, 2012; Preller, 2013). Some secondary findings deduced in a variety of these studies have proven the decrease in the success rate of IPOs despite some improving characteristics such as age, an increase in the average size of the offerings and favourable accounting ratios. The decline in the success rates of IPOs have in most cases resulted in failure of the companies rather than survival. Additionally, as a possible result of the increased failure observed, a steep decline in the number of IPO listings has also been documented.

Gao, Ritter and Zhu (2012:1664), describes the decline of IPO listings as a problem in the IPO “ecosystem” and deem the IPO market as “broken”. Gao, Ritter and Zhu (2012:1666) do not accept the tech bubble collapse as a valid reason for the decline in at least small US IPO issues. They rather suggest that mergers and the ability of

companies to bring their products to the market at a quicker pace as better arguments for the decline in the number of IPOs. The merger or acquisition will then be able to put the company in a position to achieve greater economies of scale and scope than would have been possible with an IPO.

Gao, Ritter and Zhu (2012:1663) reported that between 1980 and 2000 the average number of new equity issues in the US were 310 companies per year. However from 2001 till 2012 the average number of IPO listings decreased to only 99 per year. Thus affirming the findings of previous studies (Bhabra and Pettway, 2003; Espenlaub, Khurshid and Mohamed, 2012; Hensler, Rutherford and Springer, 1997; Howton, 2006; Jain and Martin, 2005; Jain, Jayaraman and Kini, 2008; van der Goot, Giersbergen and Botman, 2009) which not only indicate frequency of IPO failure increasing but also fewer and fewer companies that are attempting to go public. The graph below illustrates the magnitude of the preference of US companies choosing to rather be involved in a M&A (merger or acquisition) than to go public. The number of IPO companies compared to M&A's significantly decreases from the year 2001 onwards till 2012.

Figure 4.1: The Percentage M&A's VS Percentage IPO listings

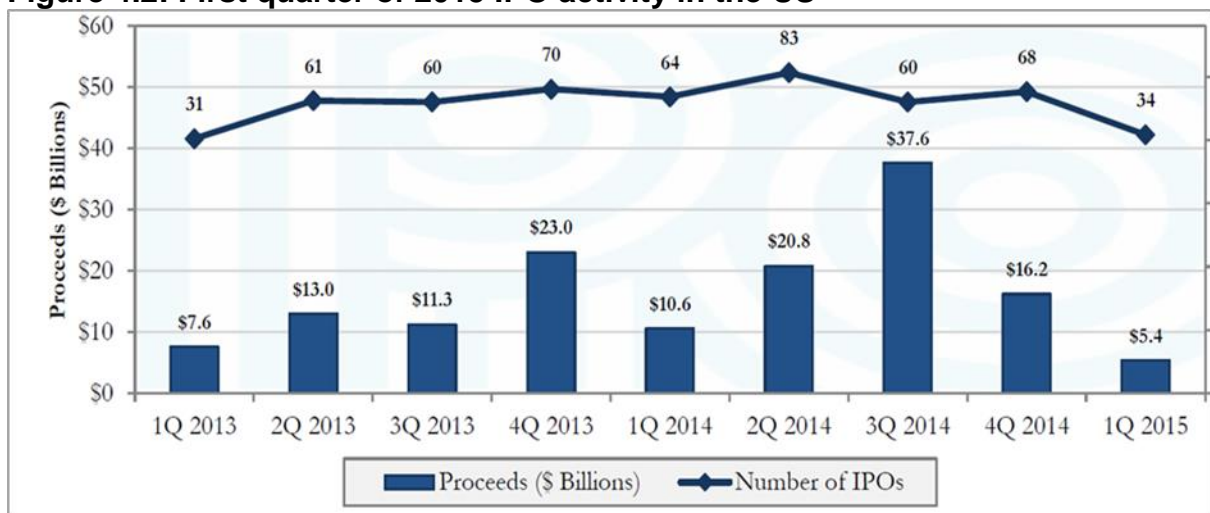


(Source: Gao, Ritter and Zhu, 2012:1672)

The decline in the number of IPO listings over the years are consistent with the conclusion made by Poulsen and Stegemoller (2008:97), who also found that using an IPO as an exit strategy for shareholders is becoming ever more unpopular. In addition, Fama and French (2004:265) argue that the number of US listed companies involved in mergers and acquisitions are on the increase. Pour and Lasfer (2013:4851) agree by pointing out that 61% of all the companies listed on the London Stock Exchange analysed in their sample, were involved in a M&A one year after listing.

The most recent data available on IPO activity in the US is provided by Renaissance Capital (2015: online). They illustrated the activity of new equity offerings for the first quarter of 2015.

Figure 4.2: First quarter of 2015 IPO activity in the US



(Source: Renaissance Capital, 2015: online)

The number of IPO listings in the first quarter in 2015 decreased with 46.88% when compared to the number of listings a year before (first quarter of 2014). Additionally, the amount raised by companies going public declined from \$10.6 billion in the first quarter of 2014 to almost half at \$5.4 billion for first quarter in 2015. Larrabee (online) goes on to add that in the current US market there is no shortage of private equity suppliers (such as venture capitalists), which contributes to companies staying private longer.

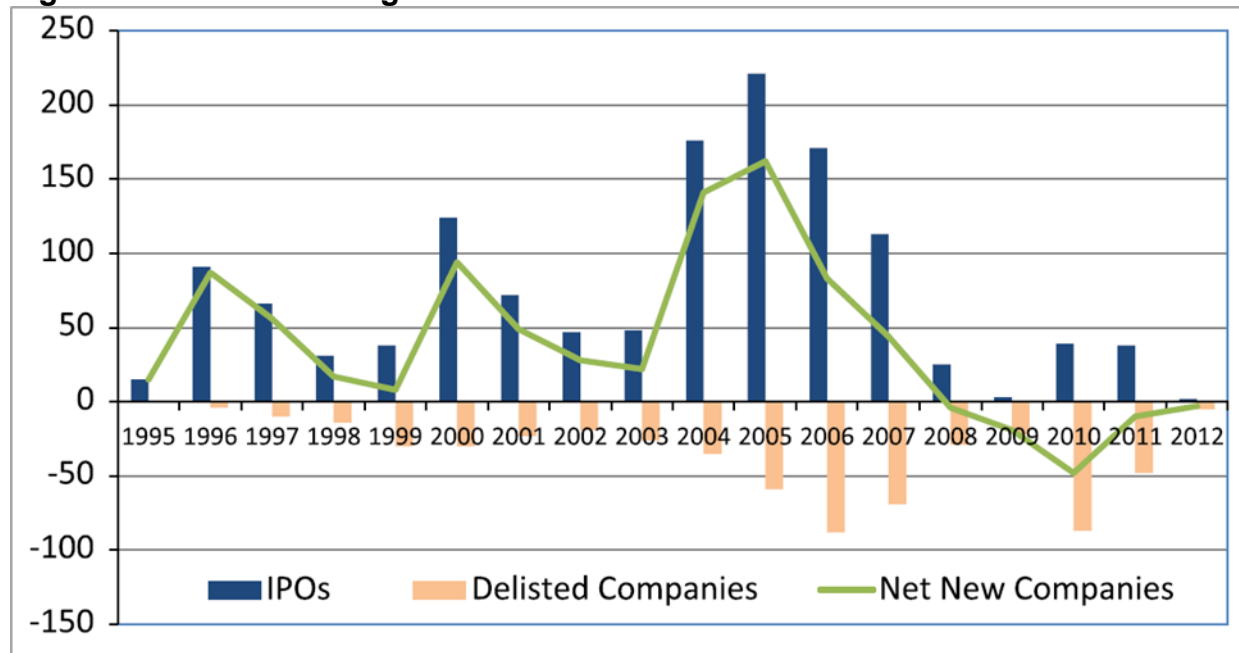
4.2 EVIDANCE OF IPO FAILURE

The steep decline in the popularity of issuing an IPO could to a large extent be explained through the equally as worrying significant increase in the failure rate of newly listed companies. Between 1980 and 1991 it was observed that more than two out of five small US IPO companies have delisted within the first ten years of trading due to poor performance (Fama and French, 2004:230). In their study Demers and Joos (2005:37) specifically analysed the difference between high technology companies and non-technology companies. They divided their 3990 US IPO sample into three main categories, namely: non-tech, high-tech and high-tech & Internet. Each of these categories displayed failure rates of 19.7%, 16.4% and 20.8% respectively. As it is, the high tech companies displayed the highest failure rates and the reasons for this can be the misevaluation of high tech companies and the Internet bubble. Ljungqvist and Wilhelm (2003:32) pointed out that it is extremely difficult to initially value a company correctly and especially a high-tech company. Still concerning US IPO markets, Bradley, Cooney, Dolvin and Jordan (2006:21) noted a three-year failure rate of 31.5% and a five-year failure rate of 51.4% for their sample of US penny stocks. Kooli and Meknassi (2007:39) also found that after five years, 44.82% of their original sample failed or were involved in mergers or acquisitions.

Failure is not limited to just the US IPO market. Substantially high failure rates of new equity issues were also observed in Canada. Carpentier and Suret (2011:109) documented an average failure rate of 48.52% for a sample of 2,373 IPO companies. Only 13.81% of all the companies were deemed to be either surviving, or successful. Additionally, they also point out that in the long-term only 50% of Canadian IPOs survive and that only 10% of all IPOs are successful. When analysing the failure of small British IPOs, with the main focus being on companies who listed on the Alternative Investment Market, Amini and Keasey (2013:725) noted that the overall failure rate of all IPO listings was 66.85%. Further, 27.05% of the IPOs remained listed and only 6.10% of the whole sample graduated to become listed on the London Stock Exchange. Further, in the year 2000, Ahmad (2012:13) reported a 50% survival rate over five years for UK IPOs. The graph below by Pour and Lasfer (2013:4851) clearly illustrates that the net IPO listings (IPO listings versus

IPO delistings) on London's Alternative Investment Market (AIM) were positive, meaning there were more listings than delistings. However, from 2008 until the end of their study the net new company listings became negative, implying more delistings than new listings from 2008 till at least 2012.

Figure 4.3: Net IPO listings on the AIM



(Source: Pour and Lasfer, 2013:4851)

In South Africa, Neneh (2013:177) found that out of a sample of 310 IPOs which listed on the JSE between 1996 and 2007, 65 companies were deemed to have failed and only 32 were classified as a success; the rest of the companies were either acquired or just merely survived.

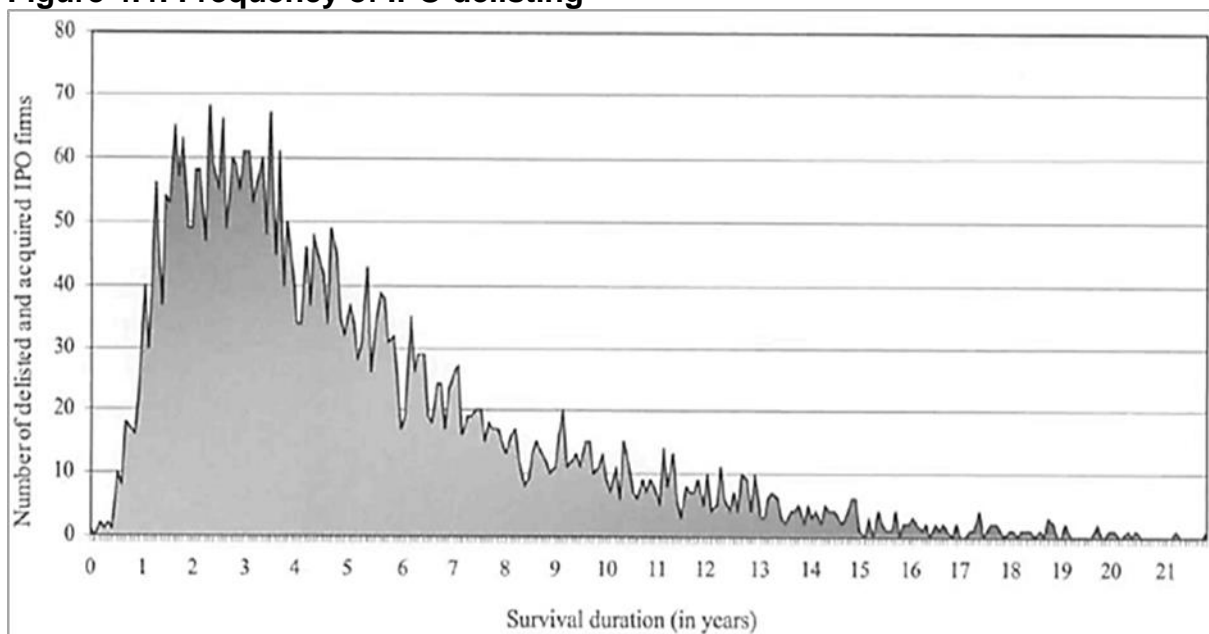
4.2.1 The mean time to failure

More specifically, a variety of studies have also documented the average time it takes IPO companies to fail. Weber and Willenborg (2003) assert that after four years 25.3% of the companies in their sample delisted. Even more troubling, Bradley, Cooney, Dolvin and Jordan (2006) reported a failure rate of 31.5% and a failure rate of 44% was reported by Dalbor and Sullivan (2005) after only three years of public trading. Demers and Joos (2005:9) documented failure rates after five years for high technology companies and non-technology companies to be 21% and 20% respectively. Ahmad (2012:19) concluded a survival rate of 69% after five years for IPO companies listed in the UK and a mean survival time of 92 months. Fama and

French (2004:261) assert that only 38.2% of their whole study sample of US IPOs survived more than 10 years. They also elucidate the increase in the failure of IPOs; only 15.6% of all IPO companies listed in 1973 failed after 10 years, whereas 23.2% companies which listed in 1991 failed after 10 years.

Kooli and Meknassi (2007:107) analysed the performance of 6235 US IPOs which listed between 1985 and 2005. They found that the failure rate of IPOs increased each year by between 4% and 6%, ultimately reaching a failure rate of 20.23% after five years. Also, after five years only 55.18% of the original IPO sample is still listed. The figure below documents the frequency of IPO failure rates found by Kooli and Meknassi (2007:107). The figure is organised according to the years after listing as a public company.

Figure 4.4: Frequency of IPO delisting



(Source: Kooli and Meknassi, 2007:107)

From the figure above it can clearly be observed that IPO failure increase dramatically from year one till year four, and declines from year five onwards. Nevertheless, the dramatic failures of IPO companies are of interest to all parties involved in an IPO.

4.2.2 The definition of failure

In the process of studying, analysing, documenting and measuring of IPO failure over the years, a variety of definitions of failure itself have been developed. Foster-

Johnson, Lewis and Seward (2000:7) deemed an offering to be a failure if the offering displayed bankruptcy issues, if the minimum listing requirements could not be maintained and if the stock price dipped below a certain level. Fischer and Pollock (2004:470) affirmed this by categorised failure in the same manner. Demers and Joos (2005:10) noted in their study that companies will be deemed failures if they were liquidated, “dropped” from the exchange, stopped trading on the current exchange to move to a smaller exchange, delisted on request of the company and also if the shares traded below \$1.00. Amini and Keasey (2013:723) also added that failure is also experienced when delisting occurs due to non-compliance with rules, the company requests to be delisted, the company being under administration and any company that is used as a shell for a reverse takeover. Demers and Joos (2005:11) go even further by classifying a company to be a failure if the share does not have an “active” status.

From an investor’s point of view, Raputdosne (2009:1) argues that failure is also experienced when the investor does not gain enough returns relative to the risk taken. In addition, failure according to economic criteria can be defined as follows: “The realized rate of return on invested capital, with allowances for risk consideration, is significantly and continually lower than prevailing rates on similar investments” (Altman and Hotckiss, 2005). Carpentier and Suret (2011:11) consider companies as failed when the company’s stock is delisted by the exchange or on request of the company. They further consider an IPO stock as “dead” if the stock has traded below CAN \$0.1 for seven months (Carpentier and Suret 2011:12). Alhadab, Clacher and Keasey (2015:73), define IPO failure as companies who delisted involuntary from the exchange as a result of negative reasons.

For the purpose of this study an IPO was considered as a failure if the IPO delisted from the JSE with reasons such as ‘failure’, ‘no longer quality for listing’, ‘failure to comply with JSE requirements’ and ‘Section 17 of the Stock Exchanges Control Act 1985’ it was also considered a failure if the shares of the company traded below 20 cents and showed no share price movement for five consecutive months. Thus, for the purposes of this study, a very conservative approach was followed for failure.

4.3 EVIDANCE OF IPO SUCCESS VERSUS SURVIVAL

Failure cannot be considered in isolation, thus on the other end of the spectrum the occurrence and definition of surviving and successful IPOs also need to be considered. If companies are able to meet the listing requirements to become a public traded company, they should stand a fair chance to be successful or at least survive (Carpentier and Suret, 2011:104). Chancharat, Krishnamurti and Tian (2012:145) argue that survival is the primary aim of any listed company and also serves as a clear measurement for company performance. Van der Goot, van Giersbergen and Botman (2011:548) view IPO survival as the ability of a company to remain listed for their period of study. Fama and French (2004:234) classifies an IPO as surviving if the IPO keeps on trading on the alternative exchange but does not do well enough to graduate to the primary exchange of a stock market. Ahmad (2012) documented the survival rates of 580 IPOs listed on the London Stock Exchange between 1990 and 2006. They define IPO survival as the ability of a company to remain listed or if the company transfers to another market during the period of study (Ahmad, 2012:10). The survival rates of IPOs on the London Stock Exchange found by Ahmad (2012) are documented in the table below.

Table 4.1: The survival of IPO companies on the London Stock Exchange

Panel A: Issue Year	Full Sample						Median ST
	Obs	Cumulative Survival Rates					
		1 Yr	2Yrs	3 Yrs	4Yrs	5 Yrs	
1990	9	100	100	89	89	78	109
1991	9	100	100	89	89	89	136
1992	23	100	96	96	87	78	92
1993	61	100	95	92	82	75	88
1994	105	98	93	90	81	68	85
1995	48	100	90	81	69	63	75
1996	66	100	92	82	73	68	105
1997	57	100	88	79	74	67	106
1998	34	100	88	68	65	55	71
1999	24	96	92	87	83	83	99
2000	65	98	92	75	69	63	75
2001	6	100	100	83	83	50	51
2002	14	100	100	93	93	93	(111)
2003	6	100	100	100	100	67	(98)
2004	17	100	94	88	76	76	(87)
2005	16	100	88	75	56	56	71
2006	20	100	100	95	95	85	(61)

(Source: Ahmad, 2012:27)

From the table above it can be deduced that the survival rates of companies listed on the London Stock Exchange after five years never dipped below 50% and is the highest at 93% in the year 2002. For the 17 years of data analysed the mean survival rate of newly listed companies were found to be 71.41%, which is an indication of a healthy IPO market.

Brau and Osteryoung (2001:210) conducted a study on the determinants of successful small US IPOs in which they define a successful IPO as an offering in which the company was able to raise the funding needed and also an offering which breaks escrow. Amini and Keasey (2013:723) as well as Carpentier and Suret (2011:108) consider an IPO to be successful if it graduates from the alternative exchange on which it initially listed to the primary exchange of the respective stock market. In the previous chapter mention was made of the long-term performance of IPOs both locally and internationally. The highest success rates over the long-term were observed by Corhay, Teo and Rad (2002) who noted the outperformance of IPOs compared to the market in Malaysia with a CAR of +41.70% from 1992-1996. In support to the observation of IPOs outperforming the market, Tsangarakis (2004:26) observed 108 Greek IPOs that outperformed the market with a BHAR of +54.90% from 1993 to 1997.

For the purposes of this study an IPO was classified as a success if there was an increase in the share price in absolute terms (BHR) from the original offer price over the period of study.

4.4 POSSIBLE EXPLANATIONS OF IPO PERFORMANCE

Carpentier and Suret (2011:109) sketch a very sobering picture of the IPO market by placing emphasis on the fact that in the long-term, five out of ten IPOs fail, four out of ten survive and only one out of ten is successful. Understanding the performance of IPO companies has become of critical importance to all parties involved in the IPO process, especially when considering the increased failure rate of IPOs documented in IPO literature (Demers and Joos, 2007:334). In view of the possible reasons for IPO failure, the following explanations could be considered. High supply of equity funding in a demographic area which is easily accessible will most likely result in more low quality companies going public, thus resulting in a higher frequency of failure. Amini and Keasey (2013:727) established that because of the easy access to

equity funding on the London Stock Exchange (LSE), lower quality companies in and around London tend to go public whereas companies who are distant from the LSE find it more difficult to raise external capital due to a shortage of supply of equity funding in their immediate area. Therefore, when these distant companies come to the LSE, they tend to be high quality companies as they are confident in attracting investors and are willing and able to pay the higher listing fees of the LSE. Additionally, Wójcik (2009:196) adds that IPO companies in and around London also have lower transaction costs, lower liquidation costs and information asymmetry which contributes to the notion of low quality companies going public in and around London. Fama and French (2004:229) also argue that the changes in the characteristics of new issues are as a result of equity becoming more accessible and also because of a decline in the cost of equity, which allows weaker companies and companies with more distant expected payoffs to issue public equity.

In the table below, presents a breakdown of the reasons why companies in the UK delisted within five years after their IPO.

Table 4.2: Reasons for IPO failure in the UK

Delisted reasons	Since the IPO date and up to 5 years after the IPO date	
	Number	Percentage (%)
Negative reasons	60	36.58
Takeover	72	43.90
Company request	51	31.09
Other reasons	11	6.71
Total delisted IPOs	164	100.00

(Source: Alhadab, Clacher and Keasy, 2015:66)

Deduced from the table above, it becomes apparent that takeovers are the most common reason why IPO companies disappear from an exchange. However, with 36.58% companies delisting for negative reasons, this make it the second most common reason for IPO delistings. These negative reasons include: administration, receivership, liquidation, winding up, and bankruptcy within five years of the IPO year. Companies are also able to delist voluntarily, 31.09% of the companies in the table above delisted on request of the company. Pour and Lasfer (2013:4859) as

well as Ritter and Welch (2002:14) argue that some companies delist voluntarily because they are unable to raise the needed equity.

Ahamd (2012:14) found that out of a sample of 580 UK IPO companies which listed from 1990 till 2006, 56% of the companies delisted as a result of mergers and acquisitions. Further, only 32% of the total sample were classified as survived. However, an encouraging finding is the observation that only 8% of the companies delisted as a result of administration/liquidation. The table below categorises the reasons for delisting of the whole sample by industry.

Table 4.3: Reasons for delisting by industry

Industry	Survivors	%	M & A	%	Administration/ Liquidation	%	Other Delisting	%	Total
Basic Industries	15	34%	28	64%	1	2%	0	0%	44
Cyclical Consumer Goods	8	22%	21	58%	6	17%	1	3%	36
Cyclical Services	56	30%	106	57%	15	8%	8	4%	185
Financials	18	30%	38	63%	2	3%	2	3%	60
General Industrials	15	37%	24	59%	2	5%	0	0%	41
Information Technology	29	33%	44	49%	9	10%	7	8%	89
Non-Cyclical Consumer Goods	21	27%	46	59%	8	10%	3	4%	78
Non-Cyclical Services	8	38%	9	43%	4	19%	0	0%	21
Resources	15	58%	8	31%	1	4%	2	8%	26
Total	185	32%	324	56%	48	8%	23	4%	580

(Source: Ahamd, 2012:29)

It has also been documented that companies will occasionally delist voluntarily from an exchange. Pour and Lasfer (2013:4850) found in their sample that almost half of all the companies who delisted did so “at the request of the company”. It has also been found that IPO companies will delist voluntarily if they were not able to raise the external funding needed (Pour and Lasfer, 2013:4850). Furthermore, when considering the change in listing requirements as possible reasons for IPO failure, Gao, Ritter and Zhu (2012:1665) do not attribute increased IPO failure to the change

in legislation and listing requirements as unfavourable profit margins in US companies have been documented even before these companies went public.

4.5 CHARACTERISTICS OF IPOs

In their study, Carpentier and Suret (2011:114) concluded that company characteristics of the issuing company at the point of listing have a significant impact on the aftermarket performance of the IPO. However, Fama and French (2004:229) argue that there has been a change in the characteristics of IPOs over the years. Mentioning must also be made of the fact that IPO companies are fundamentally and characteristically different from companies who have experience trading as a public company, and IPO companies therefore are much harder to value correctly (Weber and Willenborg, 2003:682). Several studies (M'kombe and Ward, 2002:10; Hughes and Lee, 2006:5, Sohail and Raheman, 2009:63; Sahoo and Rajib, 2010:27; Durukan, 2002; Demers and Joos, 2005:17; Carpentier and Suret, 2011; Amini and Keasey, 2013:729) have identified characteristics of IPO companies such as the company's age, timing of issue, issue size, profitability, gross proceeds, leverage, price to book value (P/B), market to book value (M/B), financial ratios, pre-IPO performance, and technical riskiness, to be significant determinants of aftermarket IPO performance.

During his study, Lussier (1995:8) asserts that "financial control, industry experience, management experience, staffing, product/service timing, economic timing and marketing skills" can assist in determining IPO performance. Further, non-financial variables such as "age of company, number of directors, any changes over the past three years, number of non-directors shareholders, has there been any change in auditors over the past three years and has the company received a going concern qualification", have also been found to be significant determinants of IPO performance (Keasey and Watson, 1987:338). It has also been documented that stock with a relatively low issue price and small issue size have limited disclosure and reporting requirements, are in most cases underwritten by low quality underwriters and are most likely not backed by venture capitalists. These small issues are also more liable to market manipulation and more information asymmetry (Bradley, Cooney, Dolvin and Jordan, 2006:5). Demers and Joos (2007:350) found that variables such as: underwriters reputation, venture capital backing, initial offer

price, age of the company, leverage, expenditures, sector of listing and hot and cold market periods, significantly impact the chances of an IPO company failing. Demers and Joos (2007:336) also grouped their study sample into high-tech and non-tech industries. They found that different variables have different levels of significance on these two main groups, for example: the level of spending on research and development has no significance on non-tech industries but has a very strong negative correlation with the chances of failure of a high-tech company. A default prediction model developed by Xu and Zhang (2009:540) employed accounting based variables as well as company specific variables such as the corporate structure to assist in the forecasting of company bankruptcy. Fischer and Pollock (2004:465) affirm that corporate structure at the point of IPO is very important and adds that the presence of a founder-CEO improves the chances of issuing a successful IPO. However, when investigating German IPOs, Audretsch and Lehmann (2005:31) found no significant relationship between the CEO ownership of the company and its chances of survival.

Neneh (2013:68) adds that market variables are less likely to be influenced by accounting regulations and policies and that market related prices are able to reflect possible future cash flow, which ultimately assists in the future cash flow prediction process. A variety of studies (Brockman and Turtle 2003; Hillegeist, Keating, Cram, and Lundstedt 2004; Vassalou and Xing, 2004; Reisz and Perlich, 2007) have also made use of different market based variables to predict or explain IPO bankruptcy. The variables which will now be discussed consist of company specific characteristics and market specific factors. The company specific characteristics include:

- Age of the company at the time of listing;
- Initial offer price per share;
- Company financials;
- Size (market capitalization) of the offering;
- Management and shareholding of the company;
- Underwriter prestige;
- Venture Capital backing.

The market specific characteristics include:

- Cyclical market period (hot and cold);
- Board of listing;
- Sector of listing.

4.5.1 Company Specific Characteristics

4.5.1.1 Age of the company at the time of listing

A variety of studies have proven that the age of the company to be a significant determinant at the time of issue when considering initial and long-term IPO performance (Ritter 1991:20; Younesi, Ardekani and Hashemijoo, 2012:152; Merikas, Gounopoulos and Nounis, 2009:14). The most common notion under companies and investors alike are that companies with a higher age (longer time of existence prior to listing) at the time of IPO have a better chance of survival than younger companies going public. Moreover, it has been affirmed that younger, less established companies have a considerably higher probability of failure than older and more experienced companies (Weber and Willenborg 2003; Demers and Joos 2007:350; Gounopoulos and Nounis, 2009:14). Companies with a longer pre-IPO operating history tend to have less information asymmetry and are therefore less likely to experience post-IPO failure (Ahmad, 2012:6).

Goergen, Khurshed and Mudambi (2007:404) found in a study of 252 British IPO's that the average age of a private company going public to be 8.97 years between 1991 and 1995. This serves as an indication of the mature state of the UK companies choosing to go public. Further, Amini and Keasey (2011:11) studied a sample of 721 British companies that went public from 1995 till 2004. They remarked that the median age of a company going public is 6 months; additionally it was also observed that companies younger than 6 months had a significant lower mean survival time, with 43.88 months before failure. Whereas, companies that were older than 6 months before listing had a mean survival time of 54.90 months (Amini and Keasey 2011:18). Amini and Keasey (2011:31) concluded their study of British IPOs by stating that older, large and more profitable companies have a lower probability of failure, which is also in line with the study done by Carpentier and Suret (2011) on Canadian IPOs.

From the table below by Carpentier and Suret (2011:24), it can be observed that there is a significant negative relationship between the age of a company at the point of issue and the probability of failure. Consequently, younger IPO companies display higher IPO failure risk. Carpentier and Suret (2011:110) also found that the hazard risk ratio indicated that older IPO issues displayed a failure risk of 78% relative to younger IPO companies.

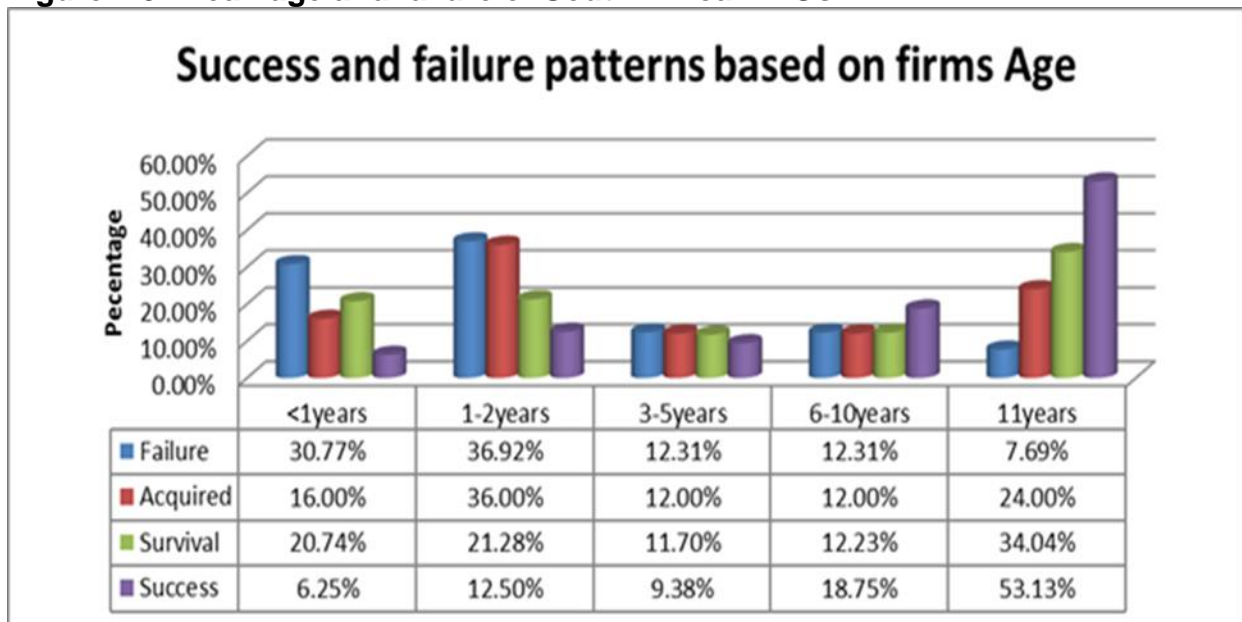
Table 4.4: Mean age (in years) and failure of Canadian IPOs

	Non-surviving	Surviving unsuccessfully	Surviving Successfully	Total
Mean age at IPO (in years)	4.88	9.90	7.25	7.11
Number of IPOs	984	764	280	2028

(Source: Carpentier and Suret, 2011:110)

Neneh (2013) researched 310 IPO companies on the JSE for the period of 1996 to 2007. She found that companies with an age of less than one year had a failure rate of 30.77% and companies aged between one and two years had a failure rate of 36.92%. The majority of successful companies were older than 10 years before they listed on the JSE, again confirming the notion that older and more experienced companies have a better chance on success. The figure below illustrates the findings documented by Neneh (2013:182).

Figure 4.5: Mean age and failure of South African IPOs



(Source: Neneh, 2013:182)

In contradiction to age being an important proxy for company performance, in India Bansal and Khanna (2012:72) and in the UK, Zuo (2006:50) and Goergen, Khurshed and Mudambi (2007:402) came to the conclusion that there is no significant relationship between the age of the company and the long-term performance. In analysing Chinese IPOs, Yang and Ding (2012:16) also came to the conclusion that there is no significant relationship between the age of the company and the long-term performance. Ahmad (2012:19) also asserts in the conclusion of his study that the age of a company prior to listing has no significant effect on its aftermarket performance.

4.5.1.2 Initial offer price per share

An additional determinant of aftermarket IPO performance is the initial offer price of the issue (Fernando, Krishnamurthy and Spindt, 2004:377). Studies done by Seguin and Smoller (1997) and Demers and Joos (2007) concluded that a high offer price decreases the chances of company failure. Carpentier and Suret (2011:15) found affirming evidence indicating that the mean offer price of failed Canadian IPO companies to be CAN \$0.55 whereas the mean offer price of the whole sample was CAN \$0.85. Therefore, suggesting that a higher offer price will most likely result in long-term IPO success and vice versa. However, in the US Brau and Osteryoung (2001:219) documented contradicting findings. The mean initial offer price of failed IPO companies were documented to be US \$296.88 with successful companies on the other hand concluded to have a mean initial offer price of only US \$11.44. Thus suggesting that companies with a high (low) offer price are most likely to fail (succeed) over the long-term, contradicting most other research findings.

In an attempt to reduce information asymmetry between the investors and the company, the company sends out a signal to the market to indicate company quality, which is known as the Signalling Hypothesis (Muller, 2011:37). Under the Signalling Hypothesis companies deliberately and significantly underpriced their offering with the hope of attracting investors (Zheng and Stangeland, 2007:61). However, Espenlaub, Kurshed and Mohamed (2012:449) prove the opposite by concluding that IPOs with low initial returns are more likely to survive than IPOs with high initial returns. Kooli and Meknassi (2007:113) also found that failed companies are, on average, noticeably more underpriced at 25.29% than surviving companies at

16.45%. Alhadab, Clacher and Keasey (2015:70) point out that in their sample of 570 UK IPO companies, failed companies were significantly underpriced at 67.10% whereas surviving companies displayed underpricing of only 15.10%. Also at a 1% level of significance, it was found that surviving companies had a higher initial offer price than failed companies. The table below documents the level and the significance of the initial offer price as well as the level of underpricing found by Alhadab *et al.* (2015) in the UK.

Table 4.5: Initial offer price and level of underpricing

Variables	Pooled sample	Delisted for negative reasons within 5 years post-IPO	Survivors	Delisted – survivors differences
	Mean (median)	Mean (median)	Mean (median)	t-Statistics (z-statistics)
Offer Price	1.163 (0.980)	0.765 (0.615)	1.145 (1.000)	-2.629*** (-2.729)***
Under Pricing	0.209 (0.063)	0.671 (0.094)	0.150 (0.058)	1.981** (1.836)*

(Source: Alhadab, Clacher and Keasey, 2015:70)

Additionally, low levels of underpricing could serve as an indication of lower indirect costs and higher proceeds which intern decreases the likelihood of company failure (Kooli and Meknassi, 2007:113). Moreover, Ahmad (2012:19) failed to find any level of significance between the initial underpricing of an IPO and the likelihood of company failure.

4.5.1.3. Company financial performance

Further, Jain, Jayaaman and Kini (2008:166) place emphasis on the financial situation of the company and its ability to survive. Amini and Keasey (2013:729) assert that the risk of company failure decreases significantly when the company displays positive earnings at the time of the issue. Alhadab *et al.* (2015:55) found evidence that companies tend to manipulate earnings upward during the IPO year. In Canada, Carpentier and Suret (2011:114) found that failure is 1.77 times more likely to occur in the case of a non-profitable IPO company than a profitable IPO company. They further captured the relationship between the revenue of IPO companies and their performance in the table below.

Table 4.6: Revenue of IPOs and their performance

Classification	Non-surviving	Surviving Unsuccessful	Surviving Successful	Surviving Total	Total
Companies with no revenue	61.37%	27.86%	10.77%	38.63%	100%
Companies with Revenue	37.87%	45.81%	16.32%	62.13%	100%
Companies with a positive EPS	12.50%	70.54%	16.96%	87.50%	100%

(Source: Carpentier and Suret, 2011:112)

From the table above it can be noticed that 61.37% of companies with no revenue at the point of IPO failed, where as 62.13% of companies who did indeed show revenue where able to survive. Additionally, when considering companies with positive earnings per share and shareholder equity greater than CAN \$25 million, it becomes apparent that these type of IPOs displayed the lowest failure rate and also the highest surviving successfully rate.

Amongst others, higher levels of leverage also have a significant relationship with the probability of failure (Demers and Joos, 2007:350). Pour and Lasfer (2013:4853), also found that the delisted companies in their sample were over-levered, which serves as an indication that these delisted companies were most likely unable to raise external funding during their IPO. Fama and French (2004:265) postulate that failure is also associated with growth (investment in assets and projects) which is unrewarded by earnings. Using data from 1995 till 2009 for companies listed on the Alternative Investment Market in London, Kashefi-Pour and Lasfer (2011) found that failure risk is higher for companies with high leverage and low growth opportunities. Later in this chapter, the use of financial information in failure prediction models will be discussed.

4.5.1.4 Size (market capitalization) of the offering

As found in previous literature, the most frequently used market based variable has found to be the size (market capitalization) of the listing company (Christidis and Gregory, 2010:11). Therefore, it can be argued that very strong relationships exist between the size of a company (which is measured in market capitalization) and the aftermarket performance of the offering (Shumway, 2001:115). A significant negative

relationship between size and the probability of failure has been established by numerous studies (Brau and Osteryoung, 2001:219; Boubakri, Kooli and L'Her, 2005; Jain and Kini, 2000; Schultz, 1993; Alhadab, Clacher and Keasey, 2015:70). Small size issues have a considerably higher chance of failure, whereas large issues have less uncertainty and a lower likelihood of failure (Kooli and Meknassi, 2007:117). Fama and French (2004:259) considered the 10 year post-issue performance of IPOs in the US and found a delisting rate of 40.50% for company issues smaller than the median issue size, and a delisting rate of only 12.20% for company issues larger than the issue size.

Kooli and Meknassi (2007:108) also found a strong correlation between non-surviving IPO companies and the size of their offerings. They documented the relationship in the table below.

Table 4.7: Size and IPO

Size (million \$US)	Survivors	%	Acquired	%	Non-Survivors	%	Total	%
[0 – 10]	247	16,53%	377	25,23%	870	58,23%	1494	23,96%
[10 – 20]	247	26,82%	394	42,78%	280	30,40%	921	14,77%
[20 – 50]	648	34,69%	845	45,24%	375	20,07%	1868	29,96%
[50 – 100]	484	46,54%	382	36,73%	174	16,73%	1040	16,68%
More than 100	519	56,91%	296	32,46%	97	10,64%	912	14,63%
Total	2145	34,40%	2294	36,79%	1796	28,81%	6235	100%

(Source: Kooli and Meknassi, 2007:108)

It is evident from the table above that there is a clear and negative correlation between the size of the IPO offering and the likelihood of failure, 48.44% companies with an offer size of between US \$0 and \$10 million were found to be non-survivors and only 5.4% companies with an offer size of US \$100 million and greater did not survive. Kooli and Meknassi (2007:111) go on to assert that larger IPO issues will be able to better withstand tough market periods.

Contrary to most findings, Ahmad (2012:17) points out that a one percent increase in the size of the IPO offering will only increase the survival time by 0.08%. Thus at least in the UK, there is no significant relationship between the offer size and the ability of the company to survive.

4.5.1.5 Management and shareholding of the company

The aftermarket performance of IPOs have also been found to a large extent be determined by the ownership structure of a company. Howton, Howton, and Olson (2001:111) found a significant and positive relationship between the management of an IPO company and the aftermarket performance. Howton (2006:428), and Crutchley, Garner, and Marshall (2002:84) also found that the stability of the management team of an IPO company increases the likelihood of long-term positive IPO performance. Insiders (like founder-CEOs) can signal the quality of the company to investors by retaining a significant ownership stake and by not offloading shares after the IPO. As a result of the reduced agency cost this will most likely improve the probability of company success (Jensen and Meckling, 1976:305).

Fischer and Pollock (2004:465) as well as Howton (2006:428) affirm that corporate structure at the point of IPO is very important and that the presence of a founder-CEO improves the chances of issuing a successful IPO.

However, when investigating German IPOs, Audretsch and Lehmann (2005:31) found no significant relationship between the CEO ownership of the company and its chances of survival. Alhadab, Clacher and Keasey (2015:70) more specifically found that companies who survived were most likely to not have a founder-CEO. Ahmad (2012:9), Goergen and Renneboog (2007:368) and Yang and Sheu (2006:73) affirmed this finding, and also found no significance between the ownership structure of the IPO company and its ability to survive in the aftermarket.

4.5.1.6 Underwriters prestige

Weber and Willemborg (2003:686) point out that prestigious underwriters often render more informative options. An underwriter's reputation is built up over the course of a considerable amount of years, measured in the success of previous issues that have been underwritten (Kooli and Meknassi, 2007:112). As explained in Chapter 2 the underwriter plays a pivotal role in the process to go public. Appointing a prestigious underwriter has been found to significantly decrease the risk of IPO failure (Carpentier and Suret, 2011:20). In accordance with the majority of research Demers and Joos (2007:350) and Howton (2006:429) go on to assert that IPOs

underwritten by a prestigious underwriter are less likely to fail after five years of going public.

Kooli and Meknassi (2007:113) add that by appointing a prestigious underwriter other negative factors such as initial underpricing and long-term underperformance can be reduced. Dong, Michel and Pandes (2011:219) also affirm that long-term performance can be enhanced by a prestigious underwriter when the underwriter makes use of its marketing skills, screening skill, etc. However, Ahmad (2012:19) reports no relationship of significance between the prestige of an underwriter and the aftermarket performance of an IPO.

4.5.1.7 Venture Capital backing

Venture capitalists are investors who sit on the board of a company and are actively involved in managing the business (Kooli and Meknassi, 2007:112). Venture capitalists also have the ability to reduce information asymmetry by, for example, employing a prestigious underwriters and auditors (Ahmad, 2012:5). Jain and Kini (2000:1173) found that the involvement of a venture capitalist in the IPO improves the survival profile of the company. Kooli and Meknassi (2007:115) add that VC's involvement will also attract high reputable institutional investors and prestigious underwriters. Carpentier and Suret (2011:16) concluded that only 22.07% of companies who were VC-backed failed, where 50.56% of non-VC-backed companies failed. Additionally, the same pattern was observed when considering success, with 28.97% of VC-backed companies succeeding while only 12.64% of non-VC-backed companies succeeding, confirming that VC-backing could have a real impact on IPO performance.

By contrast though a variety of other studies (Demers and Joos, 2007:350; Demers and Joos, 2005:19; Espenlaub, Kurshed and Mohamed, 2012:450) found VC-backing to be no significant determinant in predicting post IPO performance.

4.5.2 Market Specific factors

4.5.2.1 Cyclical market period (hot and cold)

The hot market phenomenon has found to have a significant determinant relationship with IPO performance (Ljungvist, Nanda and Singh, 2006; Coakley, Hadass and

Wood, 2009; Ritter, 1991; How, 2000; Jaskiewicz, Gonzalez, Menendez and Schiereck 2005). A hot IPO market can be defined as a period of unusually high volumes of IPO listings. In their study, Kooli and Meknassi (2007:112) distinguished between a hot and a cold market period based on the number of quarterly IPO listings. Ahmad (2012:7) further asserts that a hot market period is characterised by abnormally high initial returns and a great number of new listings whereas a cold period is characterized as a period with few private companies going public and fewer IPO listings in respective industries (Ljungqvist *et al.*, 2006:1689). Helwege and Laing (2004:541) make a clear distinction between hot and cold IPO market periods with a hot period being distinguished by great numbers of IPO listings, significant underpricing and oversubscribed offerings. In contrast, a cold market period has a much lower number of listings, less underpricing and fewer cases of oversubscribed offerings.

It is also important to be aware that hot and cold markets are cyclical of nature. In research done by Guo, Brooks and Shami (2009:12) over the period of 1994 to 2004, their data showed five hot periods, and five cold periods. Further, information gathered by Ernst and Young (2012:3) documented IPO activity across the world from 1996 to 2011, and found nine hot market periods and seven cold market periods thus confirming the cyclical nature of IPO market, and also pointed out that it is not limited to one specific stock market but occurs worldwide.

Nevertheless, hot market cycles have found to have a significant impact on IPO performance. Ritter (1991:22) initially found that a hot market period has a significant negative relationship with the three year returns of IPOs. Loughran and Ritter (2004:17) add that one of the phenomena present in a hot market is the high demand for IPOs in a particular sector resulting in many companies going public in that specific sector, as was the case with the tech boom from 1997 to 2000. Moreover, as a result of the high demand for public equity, private companies see this as an opportunity to take advantage of investor's sentiment and to issue an IPO (Kooli and Mekassi, 2007:115), subsequently resulting in immature and inexperienced companies to go public which severely increases the probability of failure (Demers and Joos, 2007:350). This phenomenon is known as the window of opportunity (Kooli and Suret, 2004:50). Chang, Kim and Shim (2012:98) additionally affirm that small and more risky companies take advantage of the window of

opportunity to exploit the irrational investors' sentiment in a hot IPO market, and companies going public during a hot period have a bigger chance of failure than companies issuing an IPO in a cold market. Additionally, in a hot market, companies seize the opportunity to raise capital at a lower cost, by increasing the original offer price of their stock which results in long-term underperformance and ultimately failure (Lowry and Schwert, 2002:1178; Kooli and Suret, 2004:65). Kooli and Mekkassi (2007:115) affirm that the issue period is significantly linked to the likelihood of company failure. Carpentier and Suret (2011:111) found that the chances of company failure increase to 54.45% when an issue takes place during a hot market period. One of the main purposes of this study is not only to compare hot and cold market IPOs, but also to compare two consecutive hot periods (1997 to 1999 and 2006 to 2007) on the JSE in South Africa to determine whether the characteristics of failed IPO companies has changed significantly over time.

4.5.2.2 Board of Listing

Another important determinant of IPO performance is the board of listing. Alhadab, Clacher and Keasey (2015:82) suggest that companies listing on an alternative exchange of a stock market are companies that are smaller, less experienced, often with high growth prospects.

Additionally in South Africa, Manikai (2011:31) analysed the performance IPOs on the JSE, specifically focusing on the difference between the Main Board and the AltX. It can be observed in the table below that for all three different time periods the short-term returns experienced on the Main Board is substantially higher than the short-term returns experienced on the AltX, which again confirms the significance of the board of listing when considering the aftermarket performance of IPOs.

Table 4.8: Returns and the Board of listing

JSE AltX & MAIN BOARD COMPARATIVE IPO PERFORMANCE SUMMARY						
	30-Day	Short-term				
	30-Day Mean Return	Standard Deviation	30-Day Mean Risk-Free Rate	Sharpe Ratio	Coefficient of Variation (CV)	CV Inverse
<i>AltX</i>	3.2%	24.9%	0.2%	0.12	7.86	0.13
<i>Main Board</i>	6.5%	27.0%	0.2%	0.23	4.13	0.24
	1 Year	Medium-term				
	1-Year Mean Return	Standard Deviation	1-Year Mean Risk-Free Rate	Sharpe Ratio	Coefficient of Variation (CV)	CV Inverse
<i>AltX</i>	18.6%	54.3%	8.2%	0.19	2.93	0.34
<i>Main Board</i>	31.1%	44.4%	8.2%	0.52	1.42	0.70
	2-Year	Long-term				
	2-Year Mean Return	Standard Deviation	2-Year Mean Risk-Free Rate	Sharpe Ratio	Coefficient of Variation (CV)	CV Inverse
<i>AltX</i>	20.6%	73.8%	8.4%	0.17	3.58	0.28
<i>Main Board</i>	40.4%	66.6%	8.3%	0.48	1.65	0.61

(Source: Manikai, 2011:31)

4.5.2.3 Sector of listing

The survival rate of IPOs could also be influenced by the sector of listing (Hamza and Kooli, 2010). The best example of companies benefiting from a boom in a specific sector could arguably be the tech boom in the US stock market from 1997 to 2000. Companies that went public during this time experience abnormally favourable IPO performance. Ljungqvist and Wilhelm (2003:723) studied IPO issues worldwide and found an average first-day return of 65.5% between 1999 and 2000 and an astonishing 89% first-day average return for internet and technological IPO during the same period. Demers and Joos (2007:350) go on to assert that the levels of spending on research and development by a company within the technological sector could serve as a clear indication of possible positive long-term IPO performance. In addition, Kooli and Meknassi (2007:115) found a significant and strong probability of US survival for companies listed in the Mining, Financial and Technological sectors. Carpentier and Suret (2011:16) also found the Energy sector in their study to be one particular sector to perform significantly better than the others. They attribute the good performance in the Energy sector to the upward progressing oil price during the period of the study. Affirming the differences between sectors, Ahmad (2012:13) also found a significant difference between the resource

sector and the non-cyclical services sector, where the survival rates were found to be 76% and 62% respectively.

Govindjee (2012:56) documented the first day as well as the three year returns of IPOs listed on the JSE between 2000 and 2011. Further, the returns per sector where also documented in the table below.

Table 4.9: Performance of IPOs on the JSE by Industry

	Number of IPOs in short run	First day abnormal returns	Number of IPOs in long run	Three year abnormal returns
Industrial and business goods and services	4	-2.2%	3	-43.8%
Consumer goods and services	14	10.4%	9	7.7%
Financials	6	-0.1%	4	-119.9%
Natural resources	10	-4.5%	3	-140.9%
Construction	9	46.0%	9	-51.0%
Real estate	17	6.4%	9	-20.0%
Total	60	10.1%	37	-43.4%
P-value		0.0002		0.0346

(Source: Govindjee, 2012:56)

From the table above the initial underpricing and long-term underperformance phenomena associated with IPOs become very apparent. Severe initial underpricing can be observed in the Construction sector, with an average first day return of 46%. The Construction sector went on to underperform the market by 51%, but more interestingly experience no delistings after three years. Furthermore, over a three year period only the Consumer Good Services sector showed an average positive return of 7.7% with an approximate delisting rate of 36%. The Natural Resources sector by far showed the worst performance after three year, with the level of underperformance being at -140.9% as well as having a 70% delisting rate which is the highest delisting rate of all the sectors after three years. In conclusion, it seems the sector of listing impacts both the short and long-term performance of IPOs.

4.6 ACCOUNTING BASED FAILURE PREDICTION MODELS

Wysocki (2007) argues that the question as to why IPO really fail is of great interest. In an attempt to find out, Wysocki (2007:376) states that the following questions must also be asked when analysing failed IPO companies:

- Do these companies run out of cash?
- Are these companies faced with a precipitous decline in sales?
- Are credit constraints responsible for the failure?
- Does increased competition adversely impact or “squeeze” the companies’ gross margins?
- Is a negative shock likely to affect all companies in the same industry?

The same type of questions have been put forward by various other authors as well (Chava and Jarrow, 2004; Campbell, Hilscher, and Szilagyi, 2004; Da and Gao, 2005; Beaver, McNichols, and Rhie, 2006). The answering of the preceding questions could also assist in determining other critical indicators of IPO company failure such as an IPO company’s cash burn rate, growth rate, debt maturity, intensity of product market competition, and overall industry risk (Wysocki, 2007:376).

Therefore, in an attempt to provide answers to these questions or to merely assist in explaining failure, or at least to become aware of the relationship between failure of IPOs and some important accounting variables in the IPO market, failure prediction models and a number of theories have developed. Amongst others, failure prediction models and theories including accounting based models such as Beaver (1966), Altman (1968) and De la Rey (1981) have been developed.

4.6.1 The use of accounting based prediction models

The accounting based models make use of financial ratios to help determine the financial health of a company. Xu and Zhang (2009:535) assert that traditional accounting variables act as an early warning system to alert the company of financial distress and possible bankruptcy. Wu (2004:194) adds that audited financial variables commonly make use of quantitative data analysing techniques which includes multivariate discriminant analysis, logistical regression analysis, profit analysis, as well as other alternative analysing methods.

Aziz and Dar (2006:19) continued to create three main categories into which all accounting based models on bankruptcy prediction can be divided.

Table 4.10: Three main categories of bankruptcy prediction

<i>Model category</i>	<i>Main features</i>
Statistical models	Focus on symptoms of failure Drawn mainly from company accounts Could be univariate or multivariate (more common) in nature Follow classical standard modelling procedures
Artificially intelligent expert system models (AIES)	Focus on symptoms of failure Drawn mainly from company accounts Usually, multivariate in nature Result of technological advancement and informational development Heavily depend on computer technology
Theoretical models	Focus on qualitative causes of failure Drawn mainly from information that could satisfy the theoretical argument of firm failure proposed by the theory Multivariate in nature Usually employ a statistical technique to provide a quantitative support to the theoretical argument

(Source: Aziz and Dar, 2006:19)

Aziz and Dar (2006:29) assert that statistical models are more popular and also more regularly used than artificial intelligent expert system models and theoretical models. They also conclude that multiple discriminant analysis and logit models, which both form part of the statistical models category, are the two most used models when predicting company failure. Hanson (2002:30) confirms that multiple discriminant analysis and logit models are preferred when predicting company failure or financial health.

Accounting based models rose to popularity through a study conducted by Beaver (1966), where he made use of financial ratio analysis to predict company failure (Van der Cloff, 2012:16). In his study, Beaver (1966) selected 30 financial ratios which best explains the financial performance of a company. The ratios were grouped into six main categories, namely: cash flow ratios, debt to total assets ratio, liquid assets to total assets ratios, liquid assets to current debt ratios, turnover ratios and net income ratios. Based on the Beaver's (1966) model, everything else held equal, Hanson (2002:43) made four assumptions. Firstly, that there exists a negative relationship between the level of liquidity of a company's assets and the chances of company failure. Secondly, that as the net cash flow from operations increases the probability of company failure decreases. Thirdly, the chances of company failure increases as the amount of debt increases. Lastly, the probability of company failure increases if a large amount of liquid assets are needed to fund company growth.

Beaver's (1966) model was able to classify failing companies with 78% level of accuracy. Subsequently, most statistical failure prediction models were inspired by Beaver's (1966) study (Thevnin, 2003:7).

In a bid to improve on Beaver's (1966) failure prediction model, Altman (1968) used multivariate accounting based principals to analyse a sample of 66 US manufacturing companies. Altman (1968) still made use of Beaver's (1966) model, but only as a foundation from which to develop his model (Thevnin 2003:38). The use of a multivariate approach eliminates uncertainty ever further and quantifies weights associated with specific variables. Altman (1968) made use of 22 financial ratios to assist in the formulation of his multivariate five-factor forecasting model. The five factor model's formula is documented below.

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

Where: X_1 = working capital/total assets

X_2 = retained earnings/total assets

X_3 = earnings before interest and taxes/total assets

X_4 = market value of equity/book value of total liabilities

X_5 = sales/total assets

(Source: Correia et al., 2013:5-23)

The end answer of Altman's (1968) model is captured as a "Z-value". If the end "Z-value" is 2.99 and higher, the chances of bankruptcy is very small and if the "Z-value" is 1.81 and lower, the probability of bankruptcy is very high. However, a "Z-value" of between 1.81 and 2.99 is considered to be an area of uncertainty (Correia et al., 2013:5-23). Altman (1968) conclusively states that if the multivariate model is correctly implemented, it has the ability to warn the management of a company early enough to avoid potential financial distress or company failure. The forecasting accuracy of Altman's (1968) model one year before failure was noted to be 95%. However, the level of accuracy drops to 72%, 48% and 29% two, three and four years before bankruptcy, respectively (Bellovary, Giacomino and Akers, 2007:4). Nevertheless, a variety of studies (Shumway, 2001; Reisz and Perlich, 2004; Agarwal and Taffeler, 2006; Wysocki, 2007) have specifically made use of Altman's (1968) failure prediction model. Thevnin (2003:7) accredits the accounting based

failure prediction models developed by Beaver (1966) and Altman (1968) as the foundation of other statistical models later developed.

In South Africa, De la Rey (1981) also developed a failure prediction model based on a multiple discriminant analysis approach. The model was specifically developed for industrial companies. In the development of this model De la Rey (1981) tested 194 combinations of financial ratios. De la Rey (1981:12) applied the following approach in determining the combinations of ratios that can best assist in predicting company failure. Different combinations of ratios were tested and selected by making use of discriminant analysis. Further, to be able to identify ratios that have an impact on successful and failed companies, standard deviations were used. Finally, factor analyses were used to group ratios which have a high correlation with failing companies together.

De la Rey's (1981) model was formulated in such a manner that the higher the "K-value" is above zero; the better the chances are for financial soundness. However, the further the "K-value" is below zero (meaning negative) the higher chances are of company bankruptcy. De la Rey's (1981) formula was recorded as follows:

$$k = -0.01662a + 0.0111b + 0.0529c + 0.086d + 0.0174e + 0.01071f - 0.068811$$

where: a = total outside financing/total assets \times 100%
 b = profit before interest and tax/average total assets \times 100%
 c = total current assets + listed investments/total current liabilities
 d = profit after tax/average total assets at book value \times 100%
 e = cash flow profit after tax/average total assets \times 100%
 f = total stocks/inflation-adjusted total assets \times 100%

(Source: Correia et al., 2013:5-24)

More specifically, if a company has a "K-value" of -0.20 and less, the company is almost certain to fail if a turnaround strategy is not implemented. While a "K-value" of +0.2 is an indication of financial soundness. However, the area between -0.2 and +0.2 is considered to be an indifferent area. The level of accuracy of De la Rey's (1966) "K-value" method for financially health and financially bankrupt companies was 94.5% and 98.6% respectively, with an average level of accuracy of 96.6% (Van der Cloff, 2012:22)

The methods used from the 1960's until the date to predict company failure has varied significantly. However, Bellovary, Giacomino and Akers (2007:1) cite that although the type of factors considered has varied over time, the number of factors considered in each model has on average remained at ten. Bellovary, Giacomino and Akers (2007:42) conducted a study to determine which financial ratios are the most popular in predicting company bankruptcy. During their research they considered 752 different financial ratios found in their study sample. In the table below the top ten most used financial ratios are captured.

Table 4.11: Use of accounting based variables

Factor/Consideration	Number of Studies that Include
Net income / Total assets	54
Current ratio	51
Working capital / Total assets	45
Retained earnings / Total assets	42
Earnings before interest and taxes / Total assets	35
Sales / Total assets	32
Quick ratio	30
Total debt / Total assets	27
Current assets / Total assets	26
Net income / Net worth	23

(Source: Bellovary, Giacomino and Akers, 2007:42)

Clearly observable in the table above, the Return on Assets ratio and the Current ratio have each been use more than 50 times in previous studies to assist in predicting company failure. Bellovary, Giacomino and Akers (2007:1) conclude that considering more variables will not necessarily improve the accuracy of prediction models. Some models which only consider two variables could potentially be just as accurate as models which make use of 21 variables when predicting company bankruptcy. Deakin (1972:175) concluded that some financial ratios assist better than others in the forecasting of company failure. Wysocki (2007:375) pose the very important question by asking which accounting based variables are the most significant in predicting company bankruptcy. Beaver (1996:91) points out that the cash flow to debt ratio is particularly useful in predicting company failure as was the net income ratio. Further, Fama and French (2004:239) argue that the most important accounting and financial information to consider is profitability, average

percent profitability (E/A) and the earnings before interest but after tax to assets ratio.

4.6.2 Shortcomings of accounting based prediction models

It has been found (Agarwal and Taffler, 2006:2; Beaver, McNichols and Rhie, 2005:115) that managers tend to overstate and manipulate accounting variables and financial ratios in the periods surrounding the IPO, which results in faulty and inaccurate forecasts when making use of accounting based bankruptcy models. Alhadab, Clacher and Keasey (2015:55) accordingly point out one major shortcoming of making use of accounting based information to predict IPO performance; they assert that earnings of companies around the point of IPO is manipulated to be able to look as attractive as possible for the investors market. Carpentier and Suret (2011:12) also point out that financial variables are of no use if the initial values are zero. They also added that profitability as a measurement will only be of use if the company displayed negative earnings at the time of IPO.

Some additional short comings of accounting based bankruptcy prediction models, as indicated by Beaver (1966); Altman (1968); De la Rey (1981) are that they are based on an “old economy” perspective and they tend to include only measurements for profitability, interest cover ratio, liquidity and leverage (Demers and Joos, 2007:335). Van der Cloff (2012:4) further questions the superiority of accounting based models by asserting that it is unlikely that financial variables will be able to predict company failure. Instead, he argues that non-financial based variables also need to be considered. Van der Cloff (2012:20) ads that financial ratios as a prediction method is only good for a limited period of time. Thevnin (2003:37) also confirms that accounting variable models accuracy level decreases significantly when predicting beyond five years.

Although accounting based models have proven to be very accurate and that the abundance of financial information is an added advantage, accounting based models tend to be backward looking and also empirically determined whereas market related factors and variables, such as the stock price of a company, tends to be forward looking and have better prediction power (Xu and Zhang, 2009:538). Demers and Joos (2007:336) conclude that IPO performance can be predicted with relative

accuracy by making use of accounting based variables as well as market based variables such as the closing price of an IPO on the first day of trading.

4.7 COMBINING FAILURE PREDICTION MODELS

Shumway (2001:102) points out that the accounting based model developed by Altman (1968) is statistically unrelated to the bankruptcy prediction of companies. Instead, he puts forward that market based variables and accounting based variables need to be analysed in conjunction with each other to be able to more accurately forecast company bankruptcy. Subsequently, Shumway (2001:123) developed a failure prediction model which includes three market based variables (such as issue size, previous stock returns and idiosyncratic standard deviation) and two accounting based variables (Net income to Total assets and Total liabilities to Total assets), and found relatively high levels of success in predicting company bankruptcy when compared to previous prediction models (in the short-term at least).

Table 4.12: Altman and Shumway prediction accuracy

Years in existence	Altman model prediction accuracy	Shumway model prediction accuracy	
		Market	Accounting and Market
1	42.3	69.0	75.0
2	12.6	10.6	12.5
3	12.6	7.8	6.3
4	9.0	5.0	1.8
5	8.1	2.8	0.9
6-10	15.4	4.8	3.5

(Source: Shumway, 2001:118-122)

Evident in the table above is the fact that Shumway (2001) is more accurate in the short-term (one and two years) than Altman (1968) in company failure prediction. However, when forecasting company bankruptcy three years and more, Altman (1968) is more accurate. Further, when considering only Shumway's (2001) model, it can be seen that it is more beneficial to combine accounting based as well as market based variables than using only market based variables when predicting short-term company bankruptcy. However, when predicting company bankruptcy three years and further, the consideration of only market based variables become more accurate than the combination of accounting and market based variables. Additionally, Chava

and Jarrow (2004:567) affirm the findings made by Sumway (2001) by also stating that accounting based variables have little use in predicting bankruptcy when market based variables are already included in a failure prediction model.

Another model used to determine IPO performance, which makes use of financial information, company characteristics and market factors, is a proportional hazard model developed by Cox (1972). The Cox Proportional Hazard (CPH) model have been used in a variety of studies (Jain and Kini, 2000; Jain and Martin, 2005; van der Goot *et al.*, 2009; Carpentier and Suret, 2011; Amini and Keasy, 2013) to assist in finding variables that are significant determinants of IPO performance. Carpentier and Suret (2011:113) point out that one major advantage of the CPH model is that no pre-established assumptions concerning the distribution of the baseline hazard function are made. Thus, the CPH model is semi-parametric of nature, implying no need for any assumptions concerning the underlying distribution of the data. The table below documents the findings which are significant at a 1% level by implementing the CHP by Carpentier and Suret (2011).

Table 4.13: Variables significant at a 1% level

Type of Variable	Failure	Success
Financial	Positive earnings but negative EPS Positive EPS and shareholders' equity of less than \$25 million	
Company characteristic	LOGSIZE (Size of the offering)	PAUDIT (Underwriters reputation) VBIPO (Venture capital involvement) LOGSIZE (Size of the offering)
Market factor	DEN (Sector of listing)	DEN (Sector of listing) DHOT (Listed during a hot market)

(Source: Carpentier and Suret, 2011:119)

Thus by making use of the CHP model, Carpentier and Suret (2011) were able to assert that not only financial variables, but also company characteristics and market factors are significant at a 1% level in determining IPO performance in the aftermarket.

4.8 CONCLUSION

This chapter began by placing emphasis on the declining number of IPO listings and the increase of mergers and acquisitions. Further, it was also noted that the failure rate of IPOs have also increased significantly over the years and a variety of reason such as mergers and acquisitions, voluntary delisting, delisting as a result of negative reasons, etc. have been put forward as possible explanations. The increasing occurrence of failure as well as the definition of failure was also documented. Success of IPO listings and the definition of IPO success were also discussed briefly. It was also noted that despite high failure rates of IPOs worldwide that the potential to identifying possible successful IPOs still exist.

The impact and type of company and market variable on the aftermarket performance of IPOs was also discussed with the main focus remaining on failure. Company specific factors such age of the company prior to listing, initial offer price, size of the offering, management of the company, underwriters' prestige and venture capital backing were discussed. The market specific factors that were considered included cyclical market conditions, board of listing and sector of listing. Accounting based failure prediction models were also discussed which included financial ratios and the profitability of the company. Furthermore, studies such as Shumway (2001) and the CHP model which was used by Carpentier and Suret (2011) that combine of the company specific, market specific and accounting based variables, were also considered. Xu and Zhang (2009:535) assert that there is an ongoing debate in literature as to which bankruptcy model will be the best to follow in predicting company failure. Chava and Jarrow (2004:538) add that the bankruptcy prediction literature is moving away from cross-sectional analysis and more towards documenting the differences across industries.

CHAPTER 5

RESEARCH METHODOLOGY

5.1 INTRODUCTION

The research methodology chapter forms the link between the theoretical and empirical evidence. For the purpose of this study, the research methodology was defined as the scientific method of investigating the truth about a particular problems, phenomena and anomalies (Kothari, 2004:8).

The research methodology in this study followed the six stages of research assertion by Zikmund, Babin, Carr and Griffin (2012:61). Stage one included defining the problems and research objectives. Stage two entailed the planning and research design. The sampling of the data was done in stage three. The gathering of the data was done in stage four. Stage five included the data processing and analysis. Finally, stage six included the selection of the measuring techniques and benchmarks and also the definition of IPO performance.

Understanding the performance of IPO companies has become of critical importance to all parties involved in the IPO process, especially when considering the increased failure rate documented in IPO literature (Demers and Joos, 2007:334). Understanding the performance of IPOs over the long-term have especially become significant for investors as it is assumed that when they invest in an IPO, it can be compared to buying a lottery ticket (Brav and Gompers, 1997:1820). The need thus exists to investigate the reasons for the underperformance and failure of IPOs on the JSE. Additionally, the vagueness of the selection process (to distinguish which IPOs are most likely to be successful and which are most likely to fail), The Winners Curse and information asymmetry also need to be investigated to understand how they contribute to IPO failure over the long-term on the JSE. The disappointing long-term performance of IPOs have led to the misperception that the IPO market is an unattractive and a very risky market where it is extremely difficult for companies to survive and for investors to earn above average returns.

5.2 STAGE 1: PROBLEM STATEMENT AND RESEARCH OBJECTIVES

To better understand the method of data analysis, the research problems and research objectives will again be emphasised. A clear and easily understandable problem statement is vital as it will intrigue the sponsor to continue reading the study (Cooper and Schindler, 2006:101). In a problem statement, it is essential to identify a specific problem and also the reasons as to why the problem needs to be addressed (Creswell, Vicki and Clark, 2011:149)

5.2.1 Problem Statement

The failure, disappointing long-term performance and difficult selection process of IPOs combined with a host of other contributing factors, have led to the misperception that the IPO market is an unattractive and a very risky market where it is extremely difficult for companies to survive and for investors to earn above average returns. A need thus exists to study the long-term performance of failed IPOs, specifically on the JSE. Market factors, firm characteristics and accounting ratios (which have a significant impact on the performance of these failed IPOs over the long-term) need to be considered. Their impact also need to be made known to assert whether they are able to serve as explanations of poor long-term IPO performance on the JSE. Additionally, the vagueness of the selection process (to distinguish which IPOs are most likely to be successful and which are most likely to fail), The Winners Curse and information asymmetry which also contribute to poor long-term IPO performance and failure needs to be addressed.

5.2.1 Research Objectives

The primary objective of this study is to assess the long-term performance of 347 IPO companies that were listed on the Johannesburg Stock Exchange (JSE) from 1996 to 2007. The main purpose of this study is to be able to assist long-term investors in their IPO selection process by presenting them with factors and characteristics which can assist them in differentiating between potentially failed and successful IPO companies.

It is of critical importance for investors with a long-term buy-hold strategy to be able to improve their selection of potentially successful IPOs to maximize returns. The secondary objectives of this study are thus:

Thus the secondary objectives of this study are:

- To study the performance of IPOs listed on the JSE from 1996 to 2007.
- To compare the failure of IPOs on the JSE to failure of IPOs in other markets internationally and to determine if the IPO environment on the JSE is better or worse compared to the rest of the world.
- To assert whether the yearly long-term returns of IPOs change significantly over a seven year period on the JSE.
- To determine if the IPOs underperformed the JSE in total absolute and total relative terms over a seven year period.
- To report on the day one performance of IPOs on the JSE from 1996 till 2007; and to find out whether initial share price returns had a determining impact on long-term IPO returns and failure.
- To determine whether company characteristics can be used to explain the long-term returns and failure of IPOs listed on the JSE.
- To examine if IPO failure and long-term returns can be explained through market factors.

5.3 STAGE 2: RESEARCH DESIGN

Polit and Beck (2004:49) state that a research design can be defined as the blueprint or layout to the sequence of techniques which have been used to analyse and interpret the data, as well as methods to overcome difficulties encountered to ultimately be able to answer the research questions posed. Maxwell (2008:214) affirms the research design as the process of collecting and analysing data, developing conclusions, answering the research questions, and identifying and dealing with validity threats, and all these activities are usually performed simultaneously, each influencing all of the others.

Kothari (2004) identified the different types of research, which is noted in the table below along with the approaches chosen in this study.

Table 5.1: Research Approach

Type of Approach	Approach chosen in this study
Descriptive vs. Analytical	This study followed an analytical research approach as opposed to a descriptive approach. Kothari (2004:3) defines analytical research as the analysis of already existing information or facts to make a critical evaluation of the material.
Applied vs. Fundamental	Zikmund <i>et al.</i> (2012:646) asserts that applied research aims to fund a solution to an immediate business problem. Thus, an applied research approach was followed.
Quantitative vs. Qualitative	A quantitative research approach was adopted for the purposes of this study. Quantitative research is a study in which the findings are mainly the product of statistical summary and analysis (Foster, 1998). Creswell (2003:18) argues that a quantitative approach is built on “the cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories”.
Conceptual vs. Empirical	For the purposes of this study an empirical research approach was followed. Kothari (2004:4) asserts that an empirical approach is data-based research where the conclusion can be confirmed by observation or experiment.

(Source: Kothari, 2004:3)

5.4 STAGE 3: DATA SAMPLING

According to the JSE database, 426 IPOs were listed on the JSE from 1996 till 2007. Excluding some companies from the population resulted in a final population size of 81.46% which is a substantial sample size of 347 IPO companies. The high retention rate of the original sample makes the results reliable and will be a true reflection of long-term IPO returns and failure on the JSE. The reasons for excluding some of the IPOs are a) detailed data (such as offer prices and number of shares issued) for some of the IPOs were not available on the McGregor-BFA database, b) inconsistency in the specific IPO data amongst the various sources, and c) unexplainable outliers that jeopardized the reliability of the data. It was crucial to exclude an IPO if discrepancies in the various data sources could not be resolved. The data for all the companies listed on the JSE from 1996 to 2007 was collected

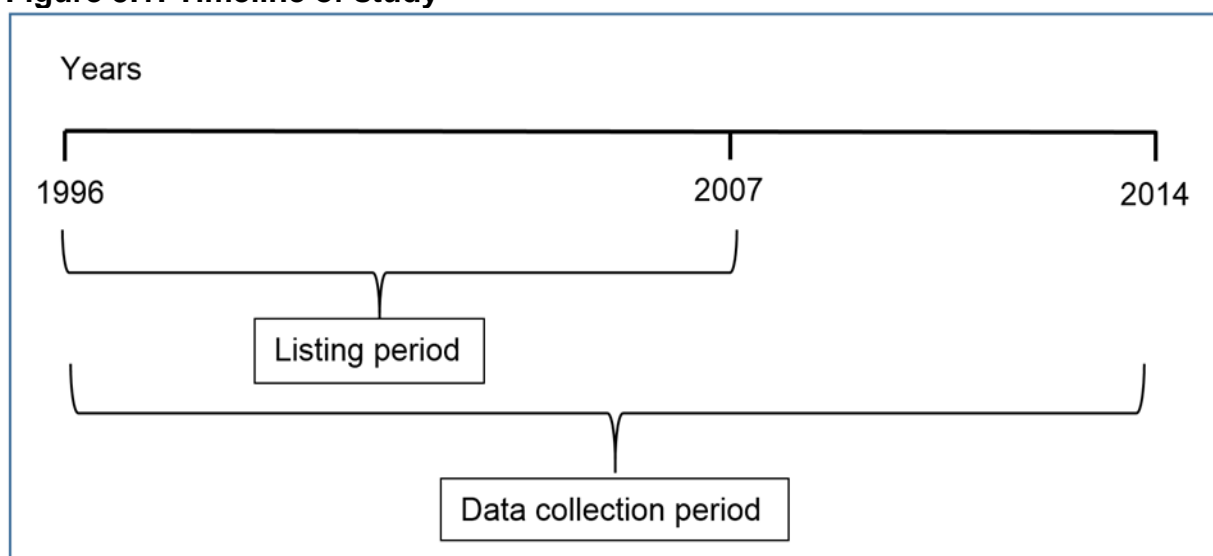
from McGregor-BFA database, the Stock Exchange Handbook, the companies' initial prospectus, as well as data provided by the JSE.

Previous studies by Neneh, Ngek and Smit relied predominantly on the McGregor-BFA database (Neneh and Smit, 2013; Smit and Ngek, 2014). Verifying the individual IPO data using four sources led to adding many more IPOs to the sample, but more importantly, it also created the opportunity to exclude any inconsistent data and unexplained outliers, thus increasing the reliability of the data. Therefore, the final sample size consists of 347 IPOs listed on the JSE from 1996 to 2007. Thus, the sample is characterised by substantially more detail of the companies under consideration. The exclusion of certain IPOs from the study, have influenced the empirical results from previous papers and articles, specifically regarding MAAR, BHAR and the characteristics impacting both initial underpricing and long-term performance.

5.5 STAGE 4: DATA COLLECTION

This section will discuss the sources and databases which were consulted to gather the information on the companies which listed on the JSE from 1996 till 2007 as well as a timeline of this study. The figure below illustrates that only companies that listed from 1996 till 2007 were considered for this study, however the data relating to these companies were collected from 1996 up to the end of 2014, to be able to assess amongst others, the seven year performance of an IPO post listing on the JSE.

Figure 5.1: Timeline of study



The data was collected by using a secondary method. The information was sourced from:

- McGregor-BFA database and JSE database where the annual financial reports, financial statements, daily share price movements for the first two months (closing, average and volume) offering price, closing day prices of IPO companies was collected.
- The IPO prospectus.
- The Johannesburg Stock Exchange Handbook.
- Data received directly from the JSE.
- International magazines, Academic Search Premier, Business Source Premier, Ebscohost and Emerald.
- Stock Exchange News Service (SENS) news and Fin 24 Expert.
- NEXUS: Current and completed South-African research.
- Sacat: Catalogue of books available in South-Africa.
- SA e-publications: South African magazines.

5.6 STAGE 5: DATA PROCESSING AND ANALYSIS

Bless, Higson-Smith and Kagee (2006:163) noted that data analysis is the process of determining any patterns and consistencies in the relevant sample. Data processing forms a major part of the research process, therefore the data should be interpreted correctly and edited accordingly to provide the reader with the essence of the research (Thomas, 2004:204). The editing performed in order to make the data more reliable include: natural logarithmic transformations, inflation adjustments, event time analysis and calendar time analysis. Additionally, the companies listed on the JSE during the period of study were grouped into six main categories. Various computer programmes and statistical techniques were also used in the data analysis.

5.6.1 Skewed Data

During the initial stages of data analysis it was noted that the relevant data was significantly skewed. The skewness was mainly a result of unexplainable outliers. The occurrence of skewed data has been noted in a number of studies done on IPOs over the years. Making use of skewed data during the data analysis will lead to incorrect findings and conclusions. Ghasemi and Zahediasl (2012:489) elucidate that a Z-value exceeding +/- 2.58 is an indication of skewed data at a significance level of 1%. Thus, one solution to the skewed data problem is to do a natural logarithmic transformation on the skewed variables (Field, 2009:154). Ott and Longnecker (2001:738) assert that logarithms convert a multiplicative relation to an additive one. Studies done on IPOs which made use of natural logarithmic transformations because of skewed data include the following: Batta and Wongsunwai (2010:5), Demers and Joos (2007:339-352), Shumway (2001:115), Chava and Jarrow (2004:563), Campbell, Hilscher and Szilagyi (2008:2905-2909), Auret and Britten (2008:25), Beaver, Correia and McNichols (2012:1007) and Maffett, Owens and Srinivasan (2013:30). On the JSE, Chipeta and Jardine (2014:1168) also needed to perform natural logarithmic transformations because their data was skewed. Middleton (2004:187) states that a natural logarithmic transformation creates a trend line by which the observations in the data series are standardised. Field (2009:155) notes the formula to be the following:

$$y = \text{LN}(x)$$

However, a natural logarithmic transformation cannot be performed on a data series with negative variables, thus Middleton (2004:187) and Field (2009:155) suggests adding a constant to the whole data series which would make all the observations in the sample positive. The formula can then be rewritten as:

$$y = \text{LN}(x+b)$$

Where x is the value of the observation in the data series and b represents the constant which is being added to all observation to ensure all values with in the data series are positive.

5.6.2 Inflation Adjustments

As the period of the study stretches over twelve years (1996-2007), all the relevant figures have been adjusted for inflation by making use of the consumer price index (CPI) available on Statistics South Africa's website. By adjusting the relevant figure with the inflation rate of each relevant year during the period of the study, the performance and characteristics of IPOs are much more standardised. Inflation adjusted values was advantageous in the comparison of different time periods with each other and all the findings and conclusions were much more credible (Norby 1983:33). Standardised values will also present a better reflection of how IPOs performed over the period of the study.

5.6.3 Event Time Analysis and Calendar Time Analysis

Neneh (2013:100) defines an event time analysis as the impact that a specific event has on the value of the company. According to an event time analysis a trading month consists for 21 days, a trading year consists of 252 days and returns are usually calculated for 1–12, 1–24, 1–36, 1–48, and 1–60 months respectively. The same approach has been used by other authors such as Kothari and Warner (1997), as well as Ritter and Welsh (2002). An attractive advantage of the event time analysis is that it makes provision for returns to fluctuate across different IPOs and also makes the testing of joint hypotheses easier when abnormal returns are considered (Binder, 1998:125). However, Brav, Geczy and Gompers (2000:237) argue that because the event time analysis weight each period equally, this method tends to understate the severity of underperformance.

Nevertheless, Ritter and Welsh (2002:1818) advocate an alternative approach to steer clear from the overlap problem when calculating the BHAR is to make use of a calendar time analysis approach. A calendar time analysis can be described as a two-step process. Hoechle, Schmid and Zimmermann (2009) assert that the first step is to calculate the mean return of the cross section of the IPO firm. The mean returns can be calculated by creating a monthly (calendar time) portfolio of companies that have completed an IPO in the period considered (Mitchell and Stafford, 2000:308). Neneh (2013:101) adds that when making use of a monthly calendar time portfolio all cross-correlation of event-companies are automatically taken into account for the portfolio variance. However, a significant shortcoming of

the calendar time analysis is that it fails to account for significant abnormal returns during periods of high IPO listings. Thus, for the purposes of this study an event time analysis method have been followed when calculating the long-term (BHAR) performance of IPO companies. The analysis will predominantly focus on returns generated in 1-36, 1-60 and 1-84 months respectively.

5.6.4 Sectors of Listing

For the purpose of this study all the industries on the JSE were grouped into six categories. These categories are:

- Basic Material;
- Consumer Goods;
- Industrial;
- Financial and Real Estate;
- Electronic (Information Technology);
- AltX (Venture Capital).

It should be emphasised that the Venture Capital sector and the AltX are the same. The reason for this is that the current AltX was known as the Venture Capital sector up to 2003 when it was replaced by the AltX. Thus, although the AltX is one of the six sectors it still stands alone and have been analysed on its own. For the remainder of this study there will only be referred to the AltX although it will include companies that listed in the Venture Capital sector prior to 2003.

The inclusion of the different industries in each can be found in appendix 1.

5.6.5 Computer programmes and Statistical Measurements

The data analysis was done by utilising a variety of computer programmes and various statistical methods. The programmes that were used include: Microsoft Excel and Statistical Package of Sciences (SPSS).

The interpretation of the findings in the data were displayed as percentages, histograms, charts and frequency distribution tables. T-tests were also performed in order to determine the equality of variances for single variables. Use was also made

of Pearson’s correlation coefficient and chi-square in order to interpret the findings and reaffirm findings in previous studies.

One-way analysis of variance as well as ANOVA tables were also used in the analysis of the data. ANOVA partitions the variability amongst all the values into two components, firstly due to variability amongst group means and secondly due to variability within the groups (Pallant, 2007:97). These two components are quantified as the sum of squares of the difference between each of the values in the group and the group mean. Each sum of squares is related to a specific number of degrees of freedom (df), which can be seen as variances.

Cross tabulations will also be used to compare the joint frequency distribution of two variables by arranging the gathered data into categories. Pearson’s chi-square test has been used in cross tabulations to determine the probability that the two variables influence each other.

The level of significance have been used to prove the relationship between two variables. The strongest relationship is a relationship at a 1% level. The second strongest relationship is a relationship at a 5% level. The last and weakest relationship scale is a relationship at a level of 10%.

5.6.6 Definition of IPO Company Characteristics and Factors

Table 5.2: Variable Definitions

Variable	Definition
Company characteristic	
Offer/Issue price	The price per share at the beginning of the first day of trading
Offer/Issue size	The amount of shares multiplied by die number of shares issued. It is also in referred to as Gross Proceeds.
Age of the company	The age of the company refers to the number of years in existence before listing as a public company.
Market factors	
Cyclical markets	The market can either be hot or cold. A hot market period is characterised by a high number of listings. A cold market period is characterised by a low number of listings.

5.7 STAGE 6: MEASURING TECHNIQUES

It is important to choose the appropriate measuring technique as well as the appropriate benchmark in determining, interpreting and comparing the performance of IPOs (Govindasamy, 2010:28). The techniques which were used in measuring the initial underpricing and long-term underperformance of IPOs are noted below along with the time period of consideration.

5.7.1 Measuring Short-term Performance

A wide variety of studies (Aggarwal, Leal and Hernandez, 1993; Hansen, Bartholdy and Jørgensen, 2010:26) have used the market-adjusted abnormal return (MAAR) technique to calculate the initial performance of IPOs. According to Van Heerden and Alagidede (2012:132) the MAAR technique has been the most widely used method in calculating underpricing of IPOs. Van Heerden and Alagidede (2012:132) also used the MAAR technique when analysing IPOs on the JSE. The market-adjusted abnormal return ($MAAR_{x,i}$) for stock 'x' after i^{th} trading period is calculated as follows:

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

The market-adjusted model measures the initial returns (offer price versus closing price after first day of trading) in excess of the market return. The JSE All Share Index (ALSI) was used to calculate the market return.

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

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

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

To test the significance of $\overline{MAAR}_{x,i}$, the following t-statistic is calculated:

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

Where 's' is the standard deviation of MAAR_{x,i} for a 'n' number of companies.

For comparative purposes, this study will adopt the mean market-adjusted abnormal return ($\overline{\text{MAAR}}_{x,i}$), which is the standard method for calculating underpricing of new issues and t-stats to measure the significance of the level of underpricing. The MAAR has been calculated for only for the first day of trading.

5.7.2 Measuring Long-term Performance

When considering the measurement of long-term performance, the buy-and-hold abnormal return (BHAR) technique will be used. Although the author is thoroughly aware of other long-term measuring techniques such as Fama and French, CAPM and CAR, the BHAR was intentionally chosen. Eckbo (2010:163) advocates that one of the most attractive features of the BHAR technique for an investor is that it simulates the actual investment experience and the rebalancing required adjusting for risk. Kooli, L'her and Suret (2006:50) affirm the superiority of the use of BHAR by stating that is the most accurate simulation of the investor's experience. Barber and Lyon (1997:346) further confirms the superiority of the buy-and-hold abnormal return (BHAR) technique over the cumulative abnormal return (CAR) technique mainly because it is a technique designed to detect long-term abnormal stock returns and also because it accounts for the underlying parameter of interest. Barber and Lyon (1997:370) further add that CAR is a biased predictor of BHAR which can lead to incorrect inferences and that CAR is not able to document the magnitude of returns experienced when investing in the average or median sample firm. Gregoriou (2006:202) is of the opinion that CAR is not based on a realistic ex-ante trading strategy and that it tends to overstate long-term IPO performance. M'kombe and Ward (2015:9) also add that the main weakness of CAR is that it ignores the effect of compounding. Consequently, the BHAR technique has been adopted for the purposes of this study.

The long-term performance of IPOs listed on the JSE from 1996 till 2007 have been measured over a three-year, five-year and seven-year holding period. The beginning date of the study which is 2007 was chosen to allow the seven year observation period (which will end in 2014) to track the long-term performance of IPOs. Loughran, Ritter and Rydqvist (1994) predominantly point out that a five year holding

period is preferable because it documents the behaviour of IPOs over an extended period. In the South African context the three-year, five-year, seven-year and ten-year performance of IPOs on the JSE have been documented by M'kombe and Ward (2015); Auret and Britten (2008); Govindjee (2012); Neneh (2013) as well as Chipeta and Jardine (2014).

Neneh and Smit (2014:26) assert that BHAR is the return on a buy-and-hold investment in the sample company, less the return on a buy-and-hold investment in the market index (JSE ALSI). Mitchell and Stafford (2000:296) argue that BHAR is “the average multiyear return from a strategy of investing in all firms that complete an event and selling at the end of a pre-specified holding period versus a comparable strategy using otherwise similar non-event firms.” Additionally, for comparing the long-term returns in periods with each other the same standardising principal that researchers such as Barber and Lyon (1997:345) as well as Akhigbe, Johnston and Madura (2006:645) used, was followed which is to use the compounded long-term returns (BHAR for the seven-year period).

Additionally, the main aim of any investor is to be able to generate the maximum amount of returns both in relative as well as absolute terms (Asma, 2010:8). The gains or losses experienced over a certain period of time for an asset or investment portfolio which is not measured against a benchmark is known as the absolute returns. Whereas, the gains or losses experienced over a certain period of time for an asset or investment portfolio which has indeed been measured against a benchmark is referred to as relative returns. Thus, the relative return (gain or loss) is the difference between the return the investment portfolio has generated minus the performance of the benchmark. As a result of the volatility in relative IPO returns, it becomes of critical importance from an investors point of view (Eckbo, 2010:163), to be aware of characteristics and factors which affect IPO returns in both relative and absolute terms.

5.7.2.1 Buy-and-Hold Return

The absolute return of an IPO was calculated as each firm i stock, the long-term returns in the aftermarket are calculated from the first trading month to the month where the stock celebrates its third, fifth and seventh anniversary (if it was able to

remain listed throughout). The returns of the bench mark were calculated in the same way.

The holding period return (BHR) for a firm i stock is calculated for the period T as

$$BHR_{i,T} = [(1 + R_{i,1})(1 + R_{i,2}) \dots \dots \dots (1 + R_{i,t})] - 1$$

This formula can be rewritten as;

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

Where $R_{i,t}$ is the raw return of firm i stock at time t and T is the time period for which the BHR is calculated. (Suherman and Buchdadi, 2010:12).

5.7.2.2 Buy-and-Hold Abnormal Return

The relative returns of IPOs were calculated as the BHAR on firm i over T period, the return of the market (market BHR) was subtracted from the return of the share (share BHR). The formula can be expressed as follows:

$$BHAR_i = \frac{1}{N} \sum_{t=1}^N \left[\left(\prod_{t=1}^T (1 + R_{i,t}) \right) - \left(\prod_{t=1}^T (1 + R_{m,t}) \right) \right]$$

Where $BHAR_i$, is the buy-and-hold return of firm i in event month t . While $R_{i,t}$ is the return for firm i in period t and $R_{m,t}$ is the return on a benchmark (JSE ALSI) for the same period. A positive BHAR serves as an indication that the IPO share outperformed the benchmark, whereas a negative BHAR serves as an indication that the IPO share underperformed the benchmark (Gregoriou, 2006:201).

5.7.2.3 Wealth Relative

Ritter (1991), Gregoriou (2006) and Neneh (2013) made use of the wealth relative (WR) to express IPO returns in relative terms. The formula can be expressed as follows:

$$WR_T = \frac{1 + BHR_{i,T}}{1 + BHR_{ALSI,T}}$$

Where BHR_i is the average absolute return generated by the share over T period, while BHR_{ALSI} is the average absolute return generated by the benchmark over T period. A wealth relative greater than one serves as an indication that the share

outperformed the benchmark, whereas a wealth relative smaller than one serves as an indication that the share underperformed the benchmark.

5.7.3 Selection of Benchmark

In calculating the initial as well as the long-term performance of IPOs on the JSE, the findings will need to be compared against a benchmark in order to put the findings into perspective. The JSE All Share Index (ALSI) was used as the benchmark in this study. The ALSI can be defined as the mean performance of all the shares listed on the JSE. The findings made when using MAAR and BHAR was compared against the performance of the ALSI over the same period. Other studies on the JSE also used the ALSI as the benchmark against which IPO performance was measured (Govindjee, 2012:55; Neneh, 2013:100)

5.7.4 Defining IPO Performance

In the process of studying, analysing and documenting IPOs over the years a variety of definitions on IPO performance and specifically of IPO failure have come to the forth. This study began by consulting the various data sources mentioned earlier to ascertain the delisting codes of companies on the JSE. The delisting codes will provide the reasons for the company delisting from the exchange.

By analysing and editing (natural logarithmic transformations) the daily, weekly and monthly share price movements as well as the name changes of all the IPOs in the study sample, it was possible to deduce the most likely outcome of the respective company's performance. Thus, companies were grouped into one of three categories of performance. A company could either be classified as failed, other (surviving, merged, delisted) or successful.

5.7.4.1 Definition of Failure

Johnson, Lewis and Seward (2000:7) deemed an offering to be a failure if the offering displayed bankruptcy issues, if the minimum listing requirements could not be maintained and if the stock price dipped below a certain level. Further, Demers and Joos (2005:10) noted in their study, companies have been deemed failures if they were liquidated, "dropped" from the exchange, stopped trading on the current exchange to move to a smaller exchange, delisted on request of the company and also if the shares traded below \$1.00. According to Amini and Keasey (2013:723)

failure is also experienced when delisting occurs due to non-compliance with rules, the company requests to be delisted, the company being under administration and any company that is used as a shell for a reverse takeover. From an investors' point of view, Raputdosne (2009:1) argues that failure is also experienced when the investor does not gain enough returns relative to the risk undertaken. Moreover, failure, according to economic criteria can be define as the rate of return on an investment that is considerably lower than prevailing rates on similar investments (Altman and Hotckiss, 2005).

For the purpose of this study an IPO was considered as a failure if the IPO delisted from the JSE with reasons such as 'failure', 'no longer quality for listing', 'failure to comply with JSE requirements' and 'Section 17 of the Stock Exchanges Control Act 1985' it was also considered a failure if the shares of the company traded below 20 cents and showed no share price movement for five consecutive months. Thus, for the purposes of this study, a very conservative approach was followed for failure.

5.7.4.2 Definition of Other (survival, merge or delist)

In the same manner that Fama and French (2004:234) defined survival, this study also classified an IPO as survived if the IPO was able to remain listed for the period of study, but did not perform well enough to be promoted to the Main Board (if it initially listed on the AltX). For the purpose of this study a company was deemed as a 'survival' if it had a market price less than the original offer price over the period of study, which is a negative absolute return over seven years ($BHR < 0\%$) but was however able to maintain a share price of above 20 cents and if the company was able to maintain the minimum listing requirements of the JSE it was also deemed as a surviving company.

An IPO was classified as a delisting when it delisted for no apparent reason with a final share price of more than 20 cents. Delisting classifications were also made if it was possible to deduce with certainty by consulting the JSE delisting codes, McGregor-BFA database, Sens news and other sources that the company did not delist from the exchange as a result of administration, liquidation or poor financial performance. Also, by consulting these resources it was possible to ascertain whether the company experienced a name change or if it was involved in a merger, acquisition or takeover.

5.7.4.3 Definition of Success

Audretsch and Lehmann (2005:2) assert that the ability of a company to remain listed over the long-term is a clear indication of the company's financial strength and post-IPO performance. Additionally, Burhop, Chambers and Cheffins (2011:4) views an IPO as a success when it is able to survive over the long-term in the aftermarket. For the purposes of this study an IPO was classified as a success if there was an increase in the share price in absolute terms (BHR) from the original offer price over the period of the study.

5.8 CONCLUSION

The aim of this chapter was to explain the methodology that was used in analysing companies in the sample of IPO companies which listed between 1996 and 2007 on the JSE. The research methodology consisted of six main stages. Stage one included defining the problems and research objectives. Stage two entailed the planning and research design. The sampling of the data was done in stage three. The gathering of the data was done in stage four. Stage five included the data processing and analysis. Finally, stage six included the selection of the measuring techniques and benchmarks and also the definition of IPO performance.

The research objectives were discussed first. This included the primary research objective which is to investigate the failure and long-term performance of IPOs. Some secondary research objectives included studying the impact of market factors and firm characteristics on the performance of IPOs on the JSE. Further, as the final sample size included 347 companies and it was noted that a quantitative research approach was adopted. Quantitative research is a study in which the findings are mainly the product of statistical summary and analysis (Foster, 1998). It was also noted that the data was sourced from McGregor-BFA, IPO prospectus, Johannesburg Stock Exchange Handbook, Data received directly from the JSE, etc. It was also mentioned that natural logarithmic transformations was performed on data with a Z-value exceeding +/- 2.58. Also, all relevant values were adjusted for inflation which will make comparing the output of the data over different time periods more reliable. With regards to the data analyses it was also mentioned that the programmes which were used include, Microsoft Excel and Statistical Package of

Sciences (SPSS). The interpretation of the findings of the data has been displayed as percentages, histograms, charts and frequency distribution tables. T-tests will also be done to determine the equality of variances for single variables. It was also noted that all the industries on the JSE were divided into six main sectors, namely: basic material, consumer goods, industrial, financial and real estate, electronic and lastly venture capital.

The short-term, measuring technique which was used to measure short-term IPO performance is the market adjusted abnormal return (MAAR) technique. It was also noted that the short-term performance will only be measured for the first day of trading. The long-term performance of IPOs has been measured by making use of the buy hold abnormal return (BHAR) technique. The BHAR was calculated for each year for a seven year period however, the main focus will predominantly be on the BHARs of year three, year five and year seven. Also noted is the fact that the seven year BHAR was annualised and be used in the main analysis when comparing long-term performance of IPOs to other variables. The output of the performance of IPOs was measured against a benchmark which is the all share index (ALSI). In their respective studies regarding IPO performance on the JSE Govindjee (2012:55) and Neneh (2013:100) also indicated that they used the ALSI as their benchmark.

In defining IPO performance it was noted that there are three main categories for the purpose of this study. For the purpose of this study an IPO was considered as a failure if the IPO delisted from the JSE with reasons such as 'failure', 'no longer quality for listing', 'failure to comply with JSE requirements' and 'Section 17 of the Stock Exchanges Control Act 1985' a company was also considered a failure if the shares of the company traded below 20 cents and showed no share price movement for five consecutive months. An IPO was classified as "other" if it displayed signs of delisting, survival or merging. Finally, IPO success was defined as the increase in the share price in absolute terms (BHR) from the original offer price over the period of study.

The aim of the next chapter is to analyse and briefly discuss the output generated from the data. Reference will also be made to the findings of other studies on the relevant IPO research areas.

CHAPTER 6

RESEARCH RESULTS

6.1 INTRODUCTION

The aim of this chapter is to document, display and discuss the research results found during the process of data analysis. A comprehensive picture of the IPO landscape in South Africa will be sketched, with the main focus being on the long-term performance and failure of IPOs on the JSE. The data will be analysed as mentioned in the research methodology (Chapter 5) and the results concluded will be interpreted in line with the findings from previous studies as mentioned in the literature review.

This chapter will begin by presenting the characteristics of the sample data in order to present a brief overview of the performance of 347 IPO companies listed on the JSE from 1996 till 2007. The company characteristics and market factors that will be discussed and described include: cyclical markets, the board of listing, the sector of listing, the average age before listing, the initial offer price and the offer size. Another aspect which will be given attention to, is the short-term performance of IPOs, which will be measured by making use of the market adjusted abnormal return (MAAR) technique.

The second section will consider the long-term performance of IPOs in combination with the characteristics of the sample in order to report the impact of market factors, firm characteristics and short-term performance on the long-term returns of IPOs on the JSE. The buy-and-hold abnormal return (BHAR) technique was used in reporting long-term performance. The BHAR was calculated by using the closing share price on the first day of trading. It will be used for the comparative analysis.

The third and final section will exclusively examine the performance of IPOs together with characteristics and factors mentioned in the descriptive statistics in the pursuit of describing the relationship between failed IPO companies and the variables considered. Only three categories of IPO performance will be considered: these categories are failed, other and success. The other category includes survived,

delisted and merged companies. These three categories of IPO performance include all 347 companies which were 81.46% of the original IPO population that were listed from 1996 to 2007 on the JSE. This chapter will end with a conclusion based on the overall analysis and findings.

6.2 CHARACTERISTICS OF SAMPLE

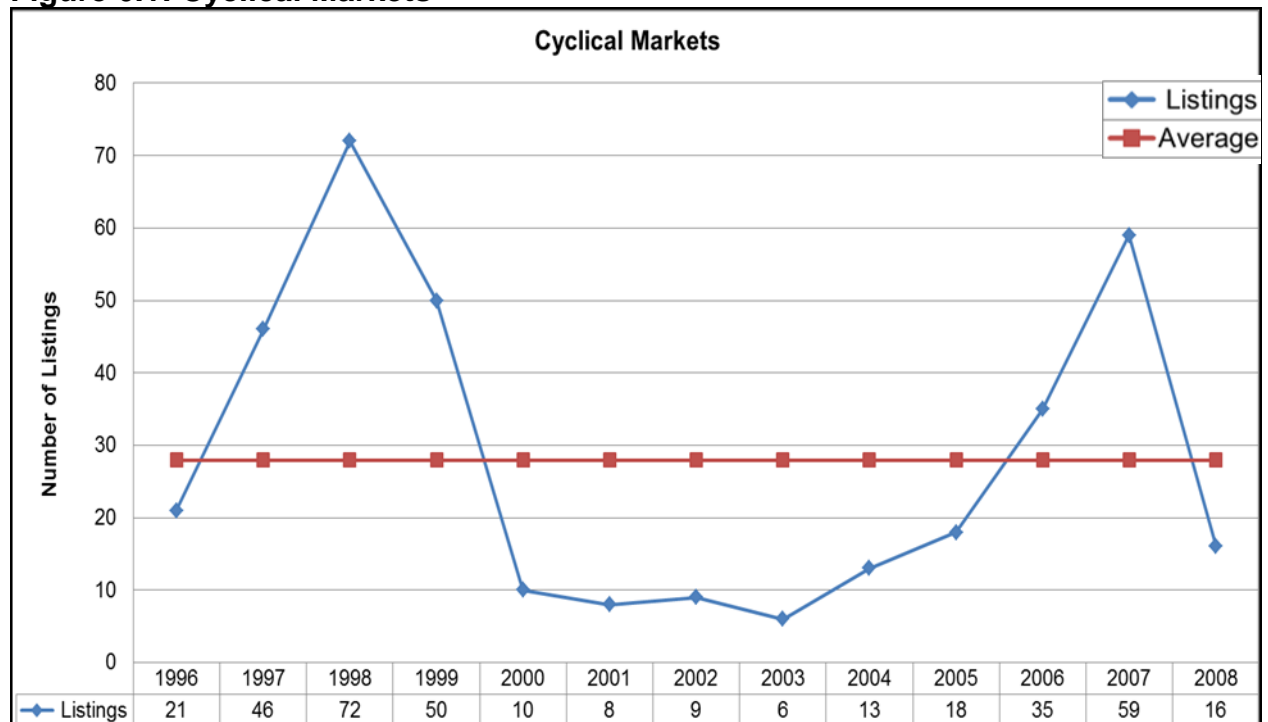
It is important to discuss the characteristics of the sample, with the purpose to present a picture of the IPO landscape in South Africa from 1996 till 2007. The market factors and company characteristics which will be discussed include the following:

- Cyclical markets.
- Board of listing.
- Sector of listing.
- Age before listing (Years).
- Offer price.
- Issue Size (Market capitalisation).
- Day one MAAR.

6.2.1 Cyclical Markets

In view of market factors, the occurrence of cyclical markets during the period of study will be discussed first. The figure below displays the number of IPO listings for each year from 1996 till 2008.

Figure 6.1: Cyclical Markets



Observed in the figure above is the average number of listings (indicated with the red line) which is 28 listings per year. Thus, a hot period was observed when the number of listings exceeded 28 listings per year and a cold period was observed when the number of listings per year was less than 28 listings per year. Subsequently, the first hot market period stretched from 1997 till 1999 with a total number of 168 IPO listings. The first and only cold market period stretched from 2000 until 2005 and includes 64 IPO listings (1996 was also regarded as a cold market period and for purposes of analyses, included in the 2000 to 2005 cold market period). The second hot period includes 104 IPO companies which were listed from 2006 till 2007, an additional cold period began in 2008 (the number of listings in 2008 is only included to mark the end of the second hot period). Conclusively, the figure above displays two hot periods and at least one cold period, which serves as a confirmation of the statement made by Helwege and Liang (2004:543), that IPO markets are cyclical of nature with companies attempting to time their listing. Muller (2011:47) also remarked that periods with high listing volumes are often followed by periods with low listing volumes.

Considering a more in-depth description of cyclical markets, the table below presents the yearly number of listings as well as the percentage of the whole sample listed

each year. It must be noted that the table below only considers the number of listings up until the end of 2007 (which is the original end date of the period considered).

Table 6.1: Hot Markets versus Cold Markets

Market	Year	No. of IPOs	% of Total Sample
Cold	1996	22	6.34%
Hot	1997	45	12.97%
	1998	72	20.75%
	1999	50	14.41%
Cold	2000	10	2.88%
	2001	8	2.31%
	2002	9	2.59%
	2003	6	1.73%
	2004	13	3.75%
	2005	18	5.19%
Hot	2006	37	10.66%
	2007	57	16.43%
Total	12	347	100%

It can be deduced from the table above that the five hot market years (1997 till 1999, 2006 and 2007) out of the twelve years under consideration, are responsible for 75.22% of all the listings. Seven (1996 and 2000 till 2005) out of the twelve years are cold market periods and account for only 24.78% of all the listings under consideration. Therefore, this observation served as a very strong argument that the influence of cyclical markets on IPO performance cannot be discarded, especially when considering the impact of hot markets.

6.2.2 Board of Listing

The second market factor to be considered is the board of listing. As mentioned in chapter two, a company has a choice between two boards when listing, namely: the Main board and the AltX (including Venture Capital sector for periods prior to 2003). It was also noted that the Main Board requires companies to be bigger in size and disclose much more information, whereas the AltX as described by Manikai (2011:8), was founded mainly as a nursing ground for small, high growth companies. Firer *et al.* (2012:469) also mentioned that the AltX was specifically designed with the following business types in mind: fast growing start-up businesses, family-owned businesses, black economic empowerment companies and also junior mining companies. Some of the listing criteria mentioned in Chapter 2 requires companies

which list on the Main Board to have more than R25 million in equity capital and to issue more than 25 million shares, whereas companies listed on the AltX are required to have only R2 million in capital. The table below records the number of listings on each board for the period of study.

Table 6.2: Board of listing

Board	No. of IPOs	% of Total Sample
Main Board	226	65.13%
AltX	121	34.87%
Total	347	100%

Noticeable from the table above is that the majority of the listings during the period of study took place on the Main board of the JSE with 65.13% of all the listings.

6.2.3 Sector of Listing

Concerning the number of listings per sector, Hamza and Kooli (2010) proved that the sector of listing plays a determining role in the long-term performance of IPOs. The table below records the spread of listings over the different sectors on the JSE for the period of study.

Table 6.3: Number of Listings per Sector

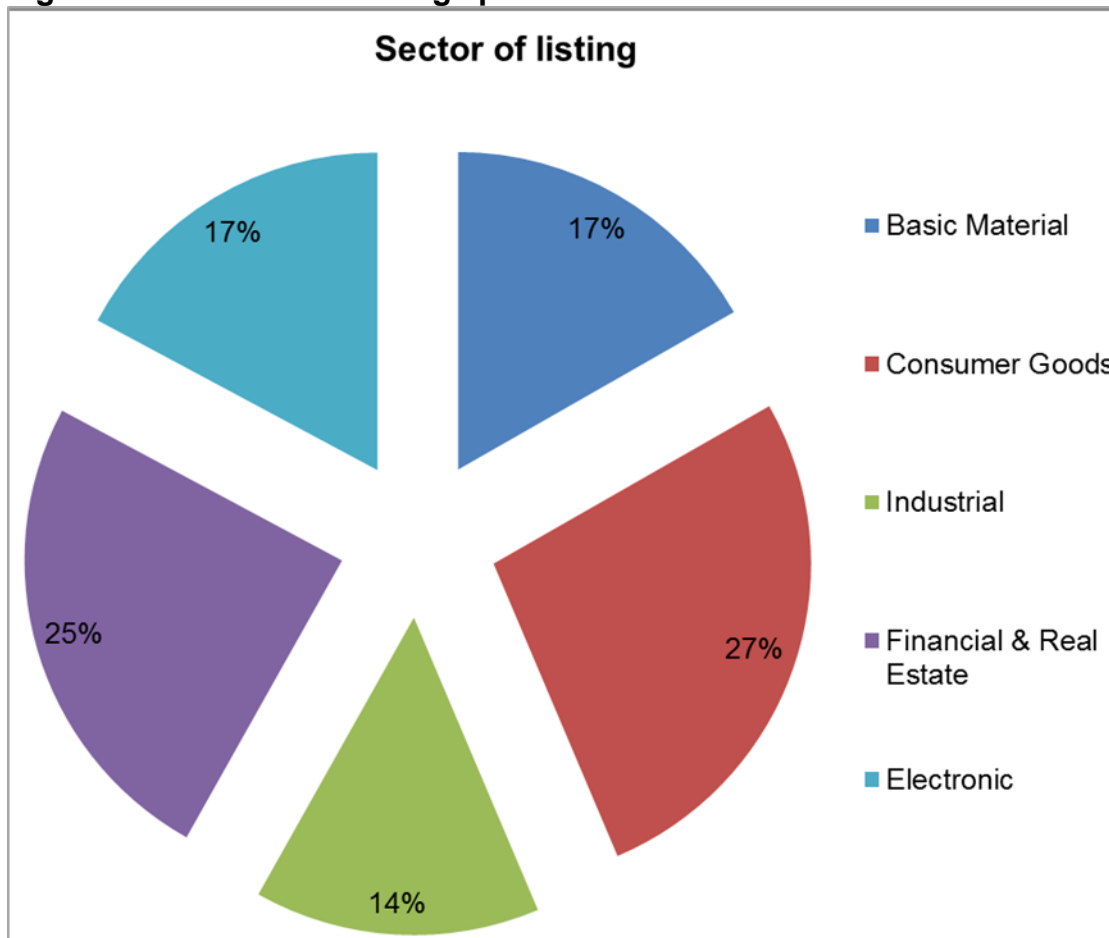
Sector	No. of IPOs	% of Total
Basic Material	38	10.95%
Consumer Goods	60	17.29%
Industrial	33	9.51%
Financial & Real Estate	56	16.14%
Electronic	39	11.24%
AltX	121	34.87%
Total	347	100%

The AltX will not be reported as it has already been discussed. From Table 6.3 it can be observed that the Consumer Good sector was the sector with the highest number of new listings followed by the Financial & Real Estate sector. The Industrial sector was the sector with the lowest number of new listings. However, Lattimer (2006:202) who studied IPOs on the JSE from 1995 till 1999 found that the Industrial sector displayed the highest number of listings with 63.07% of all new listings.

In order to display the number of listings per sector, a pie graph was constructed. Here the AltX was not considered and the spread of listing across all five Main Board

sectors are visible. It is encouraging to note that the spread of the listing amongst all the sectors are relatively even.

Figure 6.2: Number of Listings per Sector



6.2.4 Age before listing

The first company characteristic to be discussed is the average age before listing. A variety of studies have proven that the age of the company is a significant determinant at the time of issue when considering initial and long-term IPO performance (Ritter 1991:120; Younesi, Ardekani and Hashemijoo, 2012:152; Merikas, Gounopoulos and Nounis, 2009:481). The analysis of the average age presented a number of challenges, for example: when considering the age of companies prior to listing, the average age ranges were classified into four main categories. It can be noted that a category for companies with an age of zero does not exist. The reason for this being that, more often than not, companies with an age of zero were found to have undergone a name change prior to listing which subsequently resulted in the misperception that some companies have an age of

zero, whereas it is not the case in reality. Also, in almost all the cases of companies with an age of zero, it was very difficult to gather data pertaining to the real age of these companies. As a result of the high possibility of inaccurate reporting on companies with an age of zero, it was decided to discard these companies altogether. Discarding companies with an age of zero decreased the sample from 347 companies to 248 companies.

Further, during the data analysis the possibility of skewed data also became apparent. Thus, a test of skewness was performed and it was found that some of the data was indeed skewed. Ghasemi and Zahediasl (2012:489) elucidate that a Z-value exceeding +/- 2.58 is an indication of skewed data at a significance level of 0.01. Thus, one solution to the skewed data problem is to do a natural logarithmic transformation on the skewed variables (Field, 2009:154). Ott and Longnecker (2001:738) assert that logarithms convert a multiplicative relation to an additive one. A natural logarithmic transformation was therefore performed on the company age before listing values. The findings of the natural logged values on company age before listing are documented in the table below.

Table 6.4: Average age before IPO Log N

	Average Age	No. of IPOs	Median	Standard Deviation	Z Skew.
Actual Age	14.60	248	7	20.80	16.45
Log N Age	6.40	248	7	3.79	0.91

From the table above it can be seen that the Z skewness of the actual data was considerably higher than the accepted norm for a normal distribution of +/- 2.58 at 16.45. Another important indication of the skewness of the data is the fact that the standard deviation of the actual data is higher than the average age of the actual data. Thus, as a result of the highly skewed data, natural logarithms were used to standardize the data. The impact of the Log N on the output of company age prior to listing were substantial, with the average age being reduced to 6.31 years from 14.60 years, but most importantly the Z skewness came down from 16.45 to only 0.91. The data on the age of companies listed on the JSE is now more normally distributed. Therefore the Log N values of age prior to listing will be used for the rest of this study. The Log N age of the companies are documented in the table below.

Table 6.5: Average Log N age before IPO

Years	No. of IPOs	% of Total Sample	Average Log N Age	Standard Deviation
>0 - 5	112	45.16%	1.86	1.83
>5 - 10	46	18.55%	7.75	1.19
>10 - 15	20	8.06%	12.54	1.10
>15	70	28.23%	33.68	1.73
Total	248	100%	6.40	3.79

In Table 6.5 it can be seen that the average age before listing was 6.40 years. It can also be deduced that the lowest age group, with an average of 1.86 years, and highest age group, with an average of 33.68 years, had the biggest number of listings, with 45.16% and 28.23% respectively of the total sample. This observation gave rise to the assumption that mainly two types of companies listed during the period of study - very young and very old companies. It could be argued that the majority of the young companies are high growth companies coming to the market looking for funding and that most of the older companies are more mature companies looking for an exit strategy for existing shareholders.

However, the company's age was not the only variable which was significantly skewed and needed to undergo a natural logarithmic transformation, as will be seen with subsequent company characteristics. Natural logarithmic transformations on all relevant data resulted in two major advantages, which are; more representative averages and improved reliability of the data when performing cross tabulations.

6.2.5 Initial offer price

The second company characteristic to be discussed is the initial offer price. As was the case with the age of the companies the offer price was also grouped into four categories. It is worth noting that share prices are quoted in South African cents. Importantly, attention also needs to be given to the high levels of inflation over the course of this study. Thus, the offer price has been adjusted for inflation over the period of study. Inflation adjusted figures are beneficial for comparison reasons, especially when considering that the time period of the study stretches over twelve years. In the process of analysing the data signs of skewed data again began to appear. In order to remedy the skewness observed, a natural logarithmic transformation was performed on the inflated offer price values. Campbell, Hilscher and Szilagyi (2008:2906) also experienced skewed data in terms of the initial offer

price and logarithmic transformations were also used to consolidate the data to be more normally distributed. The table below documents the skewness of the original inflation adjusted data as well as the skewness after natural logarithmic transformations have been performed.

Table 6.6: Adjusted Offer Price

	Average Offer Price	No. of IPOs	Median	Standard Deviation	Z Skew.
Offer Price	708.40	347	199.00	2619.80	95.142
Inflated Offer Price	1167.50	347	272.00	4856.00	109.430
Log N Inflated Offer Price	371.49	347	272.00	3.60	1.677

On closer inspection with regards to the offer price, it was found that for both the original as well as the inflation adjusted offer prices, the standard deviations were higher than the average/mean. Also, in both cases the Z Skewness values were well above the norm of 2.58, at 94.73 and 109.43 respectively, indicating the considerable skewness of the data. Thus, after the natural logarithmic transformation had been performed the standard deviation came down from 4856.0 cents to only 3.6 cents, and the new average was found to be 371.50 cent which is much closer to the median, serving as an indication of reliable data. Importantly, the Z skewness came down from 109.43 to only 1.677. Thus moving forward, for comparisons and cross section analyses, the Log N values of the inflated offer price will be used. The table below documents the Log N inflation adjusted offer price values when divided into four categories.

Table 6.7: Log N Inflation Adjusted Offer Price

Offer Price Category	No. of IPOs	% of Total Sample	Average Offer Price	Standard Deviation
< 100c	40	11.53%	66.81	2.05
100 - 299.9c	138	39.77%	172.99	1.28
300 - 1 000c	97	27.95%	534.58	1.38
>1 000c	72	20.75%	2553.47	2.33
Total	347	100%	371.49	3.60

In the table above it can be noted that the average offer price on the JSE was 371.49 South African cents. The majority of the listings, 51.30%, took place at an offer price of 299.9 cents or less, whereas 20.75% of the sample had an average offer price of 2553.47 cents, which serves as an indication of the disparity amongst IPO listing prices.

6.2.6 Issue size

The final company characteristic which will be described is the size of the offering. Referring back to Chapter 4, the size of the offering is also known as the market capitalisation. The market capitalisation of a company is calculated by multiplying the number of share issued by the offer price per share. Again the same approach was followed as in the case of the age of the companies and the initial offer price, by grouping the average size of the offering into categories. Further, as in the case of the offer price, the normal average size was also adjusted for inflation. Also, in the analysing of the data it became evident that issue size is also skewed. The skewed data was dealt with in the same manner as Batta and Wongsunwai (2010:5) who also experienced skewed data in terms of company size, thus a natural logarithmic transformation was again performed on the values and documented in the table below.

Table 6.8: Adjusted Issue Size / Market Capitalization (R million)

	Average Issue Size	No. of IPOs	Median	Standard Deviation	Z Skew.
Normal Size	1 395.00	347	222.40	4 380.70	47.529
Inflated Size	2 323.30	347	385.00	7 600.20	49.613
Log N Inflated Size	472.94	347	385.00	4.75	1.810

From the table above, it should be taken into account that the normal size as well as the inflated size displayed a higher standard deviation than their respective averages proved the argument for skewed data. Also, when observing the Z value for normal size as well as inflation adjusted size, they are both well above the norm of +/- 2.58, at 47.53 and 49.61 respectively. After the using a natural logarithmic transformation to remedy the problem the inflation adjusted average size came down from R2 323.30 million to only R472.90 million which is again much closer to the median of R385 million. The standard deviation also reduced substantially, from R7 600.20 million to R4.75 million. Nevertheless, the most important adjustment is the fact that the Z value came down from 49.613 to only 1.810. As was the case with the natural logarithmic transformation of the initial offer price, the Z value of the inflated size came down considerably and is now within the boundaries to accept a normal distribution. Thus moving forward, the Log N inflation adjusted values of the offer size will be used for comparisons and cross tabulation analyses. The table below

documents the Log N inflation adjusted issue size when divided into four main categories.

Table 6.9: Log N Inflation Adjusted Issue Size (R million)

Issue Size Category	No of IPOs	% of Total Sample	Average Log N Size	Standard Deviation
< R100	47	13.54%	55.20	1.62
R100 - 299.9	101	29.11%	183.47	1.40
R300 - 999.9	106	30.55%	509.07	1.42
R1 000 - 10 000	73	21.04%	2168.67	1.69
> R10 000	20	5.76%	22921.38	1.77
Total	347	100%	472.94	4.75

From the table above it was observed that the average inflation adjusted size of an issue on the JSE was R472.94 million. From Table 6.9 it is revealed that the majority of the listings (73.20%) had an issue size of less than R1000 million, whereas a small percentage (5.76%) of IPOs had an issue size of more than R10 000 million, which served as an indication of the disparity amongst IPO issue sizes.

6.2.7 Market Adjusted Abnormal Return (MAAR)

As mentioned in the research methodology, the market adjusted abnormal return (MAAR) technique was used in calculating the short-term performance of the IPOs in the sample. Only the abnormal returns on the first day of trading were considered; thus the week one MAARs and the month one MAARs were not included, as the main focus of this study is on long-term performance. In analysing the data, it was noticed that the day one MAAR was substantially skewed and that a natural logarithmic transformations needed to be performed. The table below documents the transformation of the data.

Table 6.10: Adjusted day one MAAR

	Average MAAR	No. of IPOs	Median	Standard Deviation	Z Skew.
Normal day one MAAR	42.50%	347	12.70%	101.70%	33.787
Log N day one MAAR	25.85%	347	12.70%	55.54%	2.478

In the table above the descriptive values clearly indicate that the normal data of the day one MAAR has a standard deviation which is more than twice the value of the average, and that the Z skewness is 33.787 which was a very strong indication of significantly skewed data. The values of the natural logarithmic transformation

showed that the standard deviation as well as the average came down substantially and as a result reduced the Z skewness from 33.787 to 2.478. For future comparisons with MAAR day one, the Log N values will be used.

The table below documents the average day one MAAR of the sample. The returns were categorised into four intervals.

Table 6.11: Log N MAAR on day one

MAAR Categories	No of IPOs	% of Total Sample	Average Log N MAAR	Standard Deviation
< 0	77	22.19%	-15.25%	32.54%
0 - 19.9%	133	38.33%	8.04%	5.68%
20.0 - 100.0%	98	28.24%	44.44%	13.46%
> 100.0%	39	11.24%	227.01%	53.55%
Total	347	100%	25.85%	55.54%

Deduced from the table above, is the fact that IPO companies on the JSE were on average underpriced by 25.85% on the first day of trading from 1996 till 2007. Smit (2015:9) noted that a MAAR of between 0.0% and 19.9% on the JSE was normal and a MAAR less than 0% was abnormal and a MAAR greater than 100% was extremely abnormal. Thus, according to the parameters of Smit (2015) only 38.33% of the sample had normal underpricing. Whereas, 22.19% of the whole sample had abnormal underpricing and 11.24% displayed extremely abnormal underpricing. Abnormal returns on day one were also found to be present in other developing markets such as China, Brazil and India with 164.50%, 48.70% and 92.70% respectively (Loughran *et al.* 2010). Furthermore, 88.76% of the total sample had an average day one MAAR of 44.44% or less, whereas 11.24% of the companies had an average day one MAAR of 227.01% which is at least five times greater than that of any other category. This served as a strong indication of the disparities amongst the day one returns of IPOs listed on the JSE.

6.2.8 Summary of Characteristics

The discussion on the characteristics of the sample included a detailed outline of the company characteristics, market factors and short-term performance of IPOs on the JSE which listed from 1996 till 2007. In the analysing of the data it was found that the age before listing, the offer price, the issue size and the day one MAAR were skewed. In order to remedy the problem with skewed data and make the data more

reliable natural logarithmic transformations were used. This solved the problem with skewed data and in all subsequent analyses the Log N variables were used.

With regards to cyclical markets it was established that during cold market periods only 24.78% of the whole sample listed, whereas 75.22% of all the companies listed during two hot market periods. Interestingly, 65.13% of all the companies listed on the Main Board which provided evidence to suggest that companies are willing to grow more as a private company before issuing an IPO. The Consumer Good sector proved to be the sector with the highest number of listings and the Industrial sector noted to have the lowest number of new listings. It was found that the average age before listing for IPOs on the JSE from 1996 till 2007 was 6.40 years. The average initial offer price and issue size of the sample was 371.49 cent and R472.94 million respectively. The average day one MAAR was found to be 25.85%, which proved that IPOs were underpriced on the JSE from 1996 till 2007.

The next section aims to report on the first focus area of this study, which is the long term performance of IPOs on the JSE together with the characteristics and factors mentioned in the first part of this chapter.

6.3 IPO LONG-TERM PERFORMANCE

The following section will analyse the first main focus point of this study which is the long-term returns of IPO companies listed on the JSE from 1996 to 2007. Firstly, the absolute long-term returns of IPO companies will be considered. The difference between the long-term returns calculated based on the offer price and the closing price on the first day of trading will also be discussed. Secondly the relative seven long-term returns will be discussed. The yearly BHAR will also be considered in combination with the sample size in each year.

When considering the measurement of relative long-term performance, the buy-and-hold abnormal return (BHAR) technique was intentionally used as the only measuring technique. Eckbo (2010:163) advocates that one of the most attractive features of the BHAR technique for an investor is that it simulates the actual investment experience and the rebalancing required adjusting for risk. Kooli, L'her and Suret (2006:50) affirm the superiority of the use of BHAR by stating that is the most accurate simulation of the investor's experience. Barber and Lyon (1997:346)

further confirms the superiority of the buy-and-hold abnormal return (BHAR) technique over the cumulative abnormal return (CAR) technique mainly because it is a technique designed to detect long-term abnormal stock returns and also because it accounts for the underlying parameter of interest. Barber and Lyon (1997:370) further add that CAR is a biased predictor of BHAR which can lead to incorrect inferences and that CAR is not able to document the magnitude of returns experienced when investing in the average or median sample firm. Gregoriou (2006:202) is of the opinion that CAR is not based on a realistic ex-ante trading strategy and that it tends to overstate long-term IPO performance. M'kombe and Ward (2015:9) also add that the main weakness of CAR is that it ignores the effect of compounding. Barber and Lyon (1997:345) as well as Akhigbe *et al.* (2006:645) affirm that the compounding effect of BHAR adds to the measuring technique's superiority. Consequently, the BHAR technique was adopted for the purposes of this study.

It should also be noted that the seven year long-term returns were annualized. Kumar (2007:24), Westerholm (2006:31), Ho (2005:27) and Ritter (2003:267) also made use of annualized long-term returns. Annualising long-term returns is beneficial when comparing the long-term returns of different periods with one another and also when comparing findings in this study to other studies in the world, as it accounts for the yearly returns over the observation period. The annualised seven year performance for each company was calculated as the average monthly share price till the end of the seven year observation period. Regardless if a company merged, delisted or failed before the end of the observation period, the annualized returns were still calculated until the time of delisting. Thus, the annualised long-term returns could be calculated for all 347 IPOs, irrespective whether the companies were listed for the full seven years.

For the remainder of the study, when referring to the long-term performance, absolute (BHR) or relative (BHAR), it refers to the seven year annualised performance; unless stated otherwise.

6.3.1 Absolute Long-term Performance

The absolute long-term performance of IPOs were calculated by using the BHR technique. The following analysis will include the absolute returns based on both the

offer price (the price the company and underwriter offered the shares at) as well as the closing price (the price the market was prepared to pay for a share) on the first day of trading. The BHR analysis will not only include the whole sample of 347 companies but also an analysis on the absolute returns of a reduced sample that included all 176 companies. These 176 companies are companies which were able to remain listed for all seven years of study; the other 171 companies failed, became delisted or were involved in a merger / acquisition.

Table 6.12: Seven year annualized BHR

	Total Sample (347) Returns		Reduced Sample (176) Returns	
	Average BHR	Standard Deviation	Average BHR	Standard Deviation
Offer BHR	-11.88%	38.18%	-3.24%	20.60%
Closing BHR	-15.95%	37.13%	-6.14%	20.26%

The first observation to be noted from Table 6.12 is the fact that for the reduced sample as well as the total sample, the seven year annualized BHR based on the offer and closing prices were both negative. The BHR based on the closing price reported worse long-term returns than the BHR based on the offer price. This observation indicated that investors who were not able to obtain IPO shares at the offer price on the first day of trading experienced substantial losses over a seven year period regardless if the IPO was able to remain listed for the period of study. This clearly indicated the disparity amongst the company/underwriter valuation and market valuation and the inability of the market to correctly price IPOs on the first day of trading. Firer *et al.* (2012:472) attributed the difference between the offer price and the closing price at the end of the first day of trading to investors who are speculative and want to get rid of the long-term investment risk of holding the shares of an IPO company. Further, Neneh and Smit (2014:27), Govindjee (2012:44), Berger and Hinz (2008:6) as well as Ritter (1991:4) favoured the use of the closing price on the first day of trading in the analysis of long-term IPO performance, as it reflects the price of an IPO as determined by the market and investors. Therefore, for the remainder of this study the long-term performance will be calculated by making use of the closing share price on the first day of trading.

With regards to the closing BHR of the total sample it can be noted that the seven year returns were -15.95%. This is a critical observation as it proves that IPOs, on

average, lost almost sixteen percent per annum in absolute terms over a seven year period. When considering the reduced sample, which included 176 companies which were able to remain listed for the seven year observation period, the closing BHR was also found to be negative at -6.14%. Thus, even when considering companies which were able to remain listed for the period of study, the average absolute returns were still negative.

The following analysis divided the absolute returns of IPOs listed on the JSE in the four categories of performance. The table discussing the categories is noted below.

Table 6.13: Categories of Long-term Performance

Categories	Description
< -50%	Abnormally disappointing returns
> -50% -20%	Very disappointing returns
-19.99% - 0%	Disappointing returns
> 0%	Favourable returns

The seven year annualized absolute returns of the sample were divided into the four categories of long-term performance which is noted in the table below.

Table 6.14: Seven year Annualized Absolute IPO Returns (BHR)

Categories	% of Total Sample	Average BHR	Standard Deviation
< -50%	15.22%	-67.18%	10.16%
> -50% -20%	30.53%	-33.19%	8.50%
-19.99% - 0%	24.25%	-10.37%	5.98%
> 0%	30.00%	22.46%	36.43%
Total	100%	-15.95%	15.27%

Observed in Table 6.14 is the fact that only 30% of the whole sample of 347 companies displayed absolute positive returns and 70% reported negative absolute returns. It was also noted that 15.22% of the whole sample had abnormally disappointing returns; providing further evidence to assert that on average IPOs on the JSE underperform in absolute terms.

With regards to the yearly absolute returns earned on the JSE in the seven year observation period the table below was constructed (focusing on only the IPOs still in existence in the specific year, thus working with the reducing sample size).

Table 6.15: Yearly BHR performance

Year	No. of IPOs	% of Total Sample	BHR
Year 1 (Close)	347	100%	5.18%
Year 2	323	93.08%	-21.14%
Year 3	296	85.30%	-6.08%
Year 4	255	73.49%	7.96%
Year 5	236	68.01%	25.21%
Year 6	191	55.04%	53.50%
Year 7	176	50.72%	94.37%

From Table 6.15 it was established that the BHR in year one is positive with a negative BHR noted in the two subsequent years. The same trend was remarked by Ngek and Smit (2014:247) who also studied the absolute returns of IPOs listed on the JSE. They noted initial positive absolute returns in the first year after listing and negative yearly BHRs in years two and three. They noted average BHR returns of 3.19% in the first year, -9.60% in the second year and -25.06% in the third year; which is to a large extent in line with the findings in this study.

However, from year four till year seven the yearly BHR was found to be positive, with year seven reporting the highest yearly BHR of 94.37%. Thus, for investors who focus only on long-term absolute returns it can be recommended to invest in an IPO at the beginning of year four after the initial listing and holding it till year seven, which would have generated yearly absolute returns of 7.96% in year four, 25.21% in year five, 53.50% in year six and 94.37% in year seven.

It should also be noted that the sample size decreased substantially from 347 companies in year one to 176 companies in year seven, which was a reduction of 49.28% of the whole sample. Thus, the initial negative relative returns (years two and three) and the subsequent positive returns (year four until year seven) may give rise to the argument that as the weaker IPO companies failed, became delisted or merged, the strong companies remain listed and generated positive absolute returns.

It should however be noted that the total sample of 347 companies was again considered for the remainder of the study, unless stated otherwise. The next section will document the seven year relative (BHAR) returns for IPOs listed on the JSE from 1996 to 2007.

6.3.2 Relative Long-term Performance

The relative long-term performance was calculated by making use of the BHAR technique. The BHAR returns were also annualized and calculated based on the closing price of the first day of trading. The first analysis of BHAR will also be done on the total sample as well as the reduced sample of 176 companies. The table below documents the findings. BHAR measures IPO performance relative to the market using the All Share Index. Although it does not fully compensate for risk (such as using CAPM), it still benchmarks IPO performance against the JSE.

Table 6.16: Seven year annualized BHAR

	Total Sample (347) Returns		Reduced Sample (176) Returns	
	Average BHAR	Standard Deviation	Average BHAR	Standard Deviation
Closing BHAR	-27.31%	37.01%	-18.59%	20.33%

In Table 6.16 it was remarked that the seven year annualised BHAR for all 347 companies were -27.31%, confirming that companies underperformed the All Share Index (ALSI) on the JSE for a seven year period from 1996 till 2007. This was expected as it was already noted that the absolute returns were negative. The negative BHAR of the whole sample confirmed the observations made by Neneh and Smit (2014), M'kombe and Ward (2002) and Govindasamy (2010) who also found that IPOs underperform the market in the long-run on the JSE. With regards to the reduced sample, which included only the 176 companies which were able to remain listed for seven years, it was established that the closing BHAR was -18.59%; which proves that even companies that were able to remain listed underperformed the ALSI over the long-term.

The next analysis includes the reporting of the closing BHAR of the whole sample of 347 companies when divided into the four categories of long-term performance noted in Table 6.13.

Table 6.17: Seven year Annualized Relative IPO Returns (BHAR)

Categories	% of Total Sample	Average BHR	Standard Deviation
< -50%	20.13%	-73.29%	15.79%
> -50% -20%	33.45%	-37.51%	10.51%
-19.99% - 0%	26.42%	-13.91%	8.88%
> 0%	20.00%	15.47%	42.99%
Total	100%	-27.31%	19.54%

Evident from Table 6.17 was the fact that only 20% of the whole sample had positive relative returns, whereas 80% of the whole sample had a negative BHAR. Further, 20% of the whole sample had abnormally disappointing long-term returns, which contributed substantially to the negative average BHAR of -27.31%.

When considering the yearly relative returns of IPOs listed on the JSE from 1996 till 2007 for seven years the following was found. The analysis on yearly relative returns includes the wealth relative. A wealth relative greater than one serves as an indication that the share outperformed the ALSI, whereas a wealth relative smaller than one serves as an indication that the share underperformed the ALSI (Neneh, 2013:108).

Table 6.18: Yearly BHAR performance

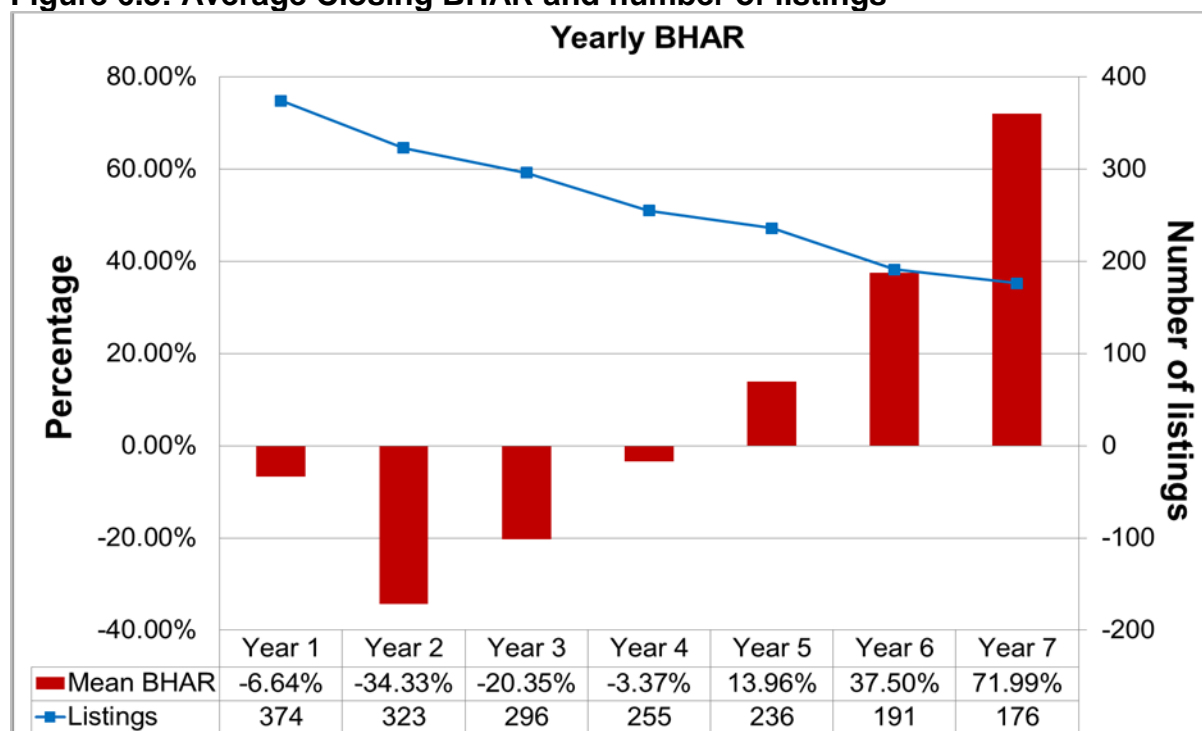
Year	No. of IPOs	% of Total Sample	BHR Share	BHR ALSI	BHAR Share	Wealth Relative
Year 1 (Close)	347	100%	5.18%	11.82%	-6.64%	0.94
Year 2	323	93.08%	-21.14%	13.19%	-34.33%	0.70
Year 3	296	85.30%	-6.08%	14.27%	-20.35%	0.82
Year 4	255	73.49%	7.96%	11.33%	-3.37%	0.97
Year 5	236	68.01%	25.21%	11.25%	13.96%	1.13
Year 6	191	55.04%	53.50%	16.00%	37.50%	1.32
Year 7	176	50.72%	94.37%	22.38%	71.99%	1.59

When considering the relative returns reported in Table 6.18 it was noted that the BHAR was negative for the first four years and positive in only years five, six and seven. Ngeek and Smit (2014:247) also studied the three year relative returns of IPOs listed on the JSE. They documented a negative yearly BHAR for the first three years of trading. They noted average BHAR returns of -7.6% in the first year, -34.6% in the second year and -65.4% in the third year. Thus, investors who only considered relative performance would have experienced yearly negative returns up to year four. However, from year five till year seven the absolute and relative long-term returns

were positive, which is confirmed by a wealth relative greater than one in each of these years. IPOs on the JSE therefore initially underperformed the ALSI, before generating positive returns from year five till year seven. Thus, this observation based purely on the long-term performance of IPOs on the JSE provides investors with an incentive to invest in an IPO at the beginning of its fifth year after listing and selling it at the end of the seventh year, which would have generated yearly relative returns of 13.96% for year five, 37.50% for year six and 71.99% for year seven.

It should again be emphasised that the sample size decreased substantially from 347 companies in year one to 176 companies in year seven, which was a reduction of 49.28% of the whole sample. Thus, the initial negative relative returns noted from year one close till year four and the subsequent positive returns from year five until year seven may suggest that as the weaker IPO companies failed, delist or merge up to year four the strong companies remain listed and generated positive BHAR returns. The figure below displays the performance of the average BHAR together with the sample size, from year one (close) to year seven.

Figure 6.3: Average Closing BHAR and number of listings



The figure above clearly displays the negative relationship between the average BHAR and the sample size, the negative relationship was also confirmed by a Pearson correlation of -0.8878 in the data analysis. At its worst in year two, the

average BHAR was -34.33% with a sample size of 323; at its best in year seven the average BHAR was 71,99% with a sample size of 176 companies. This observation may prove to be a strong argument for assuming that as bad performing companies fail, delist or merge, the sample gets smaller and average long-term performance of IPOs improve.

Concluding the analysis on relative long-term performance it was decided to use the seven year annualised closing BHAR for all analytical purposes for the remainder of this study; as it reflects the relative returns an investor would have earned over a seven year period if he bought the share at the end of the first day of trading. What is clear from analysing both the absolute and relative long term performance of IPOs are that IPO, on the average, gave very weak and negative long term returns over a seven year period, and only 30% of IPOs had positive absolute returns, while only 20% outperformed the market in relative terms. It highlights the problem that investors are confronted with in terms of the selection of IPOs to be included in their portfolios.

6.3.3 Long-term performance and Characteristics of the Sample

A detailed analysis of the annualized seven year closing BHAR will now be discussed together with company characteristics, market factors and short-term performance of IPOs. The purpose of this section is not only to establish if the market factors, firm characteristics and short-term performance discussed in the characteristics of the sample had a significant impact on IPO long-term performance on the JSE from 1996 till 2007 but also to report on the distribution between variables.

6.3.3.1 Long-term performance and Cyclical markets

The first market factor to be analysed in conjunction with the closing BHAR, are hot and cold market periods which were identified by the number of new listing each year. The table below documents the closing BHARs during the hot and cold market periods.

Table 6.19: Closing BHAR in Hot and Cold markets

Cyclical Markets	No. of IPOs	% of Total Sample	Average BHAR	Standard Deviation
Hot	168	75.22%	-32.54%	37.29%
Cold	21	24.78%	-13.47%	34.15%
Total	347	100%	-27.87%	37.03%
Significance	0.000***			

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

Table 6.19 reports that the average long-term returns of IPOs on the JSE were negative during hot markets as well as cold markets. As expected, the long-term returns of IPOs in hot markets were significantly worse than the returns earned during cold markets, with hot markets displaying an average closing BHAR of -32.54%, and cold markets displaying an average closing BHAR of -13.47%. This observation is in line with Neneh and Smit (2014:31) who also found a significant relationship between the market period and the long-term performance of IPOs listed on the JSE with hot market periods also producing the worst long-term returns and cold market periods having better long-term returns.

6.3.3.2 Long-term performance and Board of Listing

The board of listing is the second market factor which will be analysed together with the long-term returns. A company could either list on the Main Board or the AltX which was founded in 2003 (before the AltX companies listed in the Venture Capital sector but are included under the AltX for the purpose of this study). The findings are documented in the table below.

Table 6.20: Closing BHAR and Board of Listing

Board of Listing	No. of IPOs	% of Total Sample	Average BHAR	Standard Deviation
Main Board	226	65.13%	-21.20%	38.73%
AltX	121	34.87%	-40.33%	30.03%
Total	347	100%	-27.87%	37.03%
Significance	0.000***			

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

From Table 6.20 it can be seen that a significant difference was found between the long-term returns earned on the Main Board and the long-term returns earned on the AltX. The average long-term returns on both the Main Board and the AltX were negative. However, the long-term returns on the AltX were significantly more

disappointing than the returns earned on the Main Board, with a closing BHAR of -40.33% and -21.20% respectively. This result was expected, as it was noted earlier in Chapter 2 that the Main Board allows for bigger companies to list, whereas the AltX was mainly founded for smaller companies. Manikai (2011:31) also noted that companies listed on the AltX generated only half of the long-term returns when compared to companies listed on the Main Board, which confirm the observation noted in the table above.

6.3.3.3 Long-term performance and Sector of Listing

The final market factor that will be considered is the sector of listing. All the industries on the JSE have been divided into six main sectors. The AltX was included as one of the six sectors as it was known as the Venture Capital sector before the AltX was founded in 2003.

Table 6.21: Closing BHAR and Sector of Listing

Sector of Listing	No. of IPOs	% of Total Sample	Average BHAR	Standard Deviation
Basic Material	38	10.95%	-14.52%	64.99%
Consumer Goods	60	17.29%	-18.49%	35.16%
Industrial	33	9.51%	-26.95%	25.31%
Financial & Real Estate	56	16.14%	-16.92%	30.08%
Electronic	39	11.24%	-33.16%	27.21%
AltX	121	34.87%	-40.33%	30.03%
Total	347	100%	-27.87%	37.03%
Significance	0.000***			

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

Table 6.21 reports a significant difference between the long-term returns of IPOs and the sectors of listing on the JSE. The returns in each sector were negative with the Basic Material sector having the best long-term performance with a recorded average closing BHAR of -14.52%. This can perhaps to a large extent be explained by the high demand for natural resources during the period of study, especially when considering the aggressive economic growth worldwide and high commodity prices in 2006 and 2007. The Electronic sector is one of the worst performing sectors with an average closing BHAR of -33.16%. It must be mentioned that the Electronic sector includes technological companies. Demers and Joos (2005:37) noted in their study that US technological IPO companies displayed the worst long-term

performance, they attributed the disappointing long-term returns to the dotcom bubble of 1997 to 2000.

6.3.3.4 Long-term performance and Age before listing (Years Log N)

The first company characteristic to be considered is the average age before listing. The sample size decreased from 347 companies to 248 as a result of discarding the companies with a zero age.

Table 6.22: Closing BHAR and Age before listing

BHAR Categories	No of IPOs	% of Total Sample	Average Age	Standard Deviation
< -50%	50	20.16%	4.45	3.03
> -50% -20%	97	39.11%	6.66	3.71
-19.99% - 0%	65	26.21%	8.77	3.96
> 0%	36	14.52%	5.36	4.43
Total	248	100%	6.40	3.79
Correlation	0.766			
Significance	0.025**			

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

In Table 6.22 it was noted that a significant difference between long-term returns and the age before listing of IPOs on the JSE existed. It was also found that 85.48% of the sample which displayed long-term performance of 0% or less had an average age before listing of 8.77 years or less. Interestingly, it was observed that IPOs with a positive BHAR displayed an average age before listing lower than that of the sample average. Nevertheless, a positive correlation was still found between the age of the company and better long-term returns. Ritter (1991:20) also found that older companies in the US at the time of IPO have better long-term performance.

6.3.3.5 Long-term performance and Inflated Initial Offer Price (Log N)

The initial offer price is the second company characteristic which will be analysed and discussed. Again the natural logarithmic transformed variables of the inflated offer price have been considered for the purpose of this analysis.

Table 6.23: Closing BHAR and Initial Offer Price

BHAR Categories	No. of IPOs	% of Total Sample	Average Offer Price	Standard Deviation
< -50%	81	23.34%	260.94	3.14
> -50% -20%	127	36.60%	327.13	3.64
-19.99% -0%	81	23.34%	422.54	3.17
> 0%	58	16.71%	671.47	4.08
Total	347	100%	371.49	3.60
Correlation	0.989			
Significance	0.000***			

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

In Table 6.23 the average offer price for the period of study was found to be 371.49 South African cents. A significant difference between the offer price and the long-term returns of IPOs on the JSE were also established. It can also be seen that an improving closing BHAR is associated with a higher offer price. Companies with a closing BHAR of less than -50% had an average initial offer price of 260.95 cents whereas companies with a closing BHAR of greater than 0% reported an average initial offer price of 671.47 cents. This observation is confirmed by a positive correlation of 0.989. M'kombe and Ward (2015:19), who studied IPOs on the JSE, also found that companies with a higher offer prices have better long-term returns.

6.3.3.6 Long-term performance and Inflated Issue Size (Log N)

Issue size is the final company characteristic to be discussed. It was noted earlier that issue sized is also referred to as the market capitalisation of the company. The market capitalisation is calculated as the number of shares offered to the public multiplied by the offer price per share. The table below documents the natural logarithmic transformed issue size for each category of the closing BHAR.

Table 6.24: Closing BHAR and Issue Size (R million)

BHAR Categories	No. of IPOs	% of Total Sample	Average Issue Size	Standard Deviation
< -50%	81	23.34%	311.39	3.85
> -50% -20%	127	36.60%	373.35	4.53
-19.99% -0%	81	23.34%	681.75	4.73
> 0%	58	16.71%	853.72	5.36
Total	347	100%	472.94	4.75
Correlation	0.819			
Significance	0.000***			

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

In Table 6.24 it can be seen that the average issue size for companies listed on the JSE was R472.94 million. A significant relationship between the long-term performance and size of the offering was found, with a correlation of 0.819 confirming a positive relationship. With regards to the distribution, the size of the offering increases from R311.39 million for companies with a closing BHAR of less than -50% to R853.72 million for companies with a closing BHAR of greater than 0%, confirming that companies with bigger issue sizes have better long-term returns. Govindasamy (2010:57) and Neneh (2013:149) also found a significant relationship and a positive correlation between the long-term performance of companies listed on the JSE and their issue size.

6.3.3.7 Long-term performance and MAAR (Log N)

With regards to the relationship between the short-term and long-term performance of IPOs, the table below reports the relationship between closing BHAR and the day one MAAR. For the purpose of this analysis the natural logarithmic transformed day one MAAR variables were used.

Table 6.25: Closing BHAR and day one MAAR

BHAR Categories	No of IPOs	% of Total Sample	Average MAAR	Standard Deviation
< -50%	81	23.34%	40.09%	63.08%
> -50% -20%	127	36.60%	32.41%	58.74%
-19.99% -0%	81	23.34%	18.70%	52.22%
> 0%	58	16.71%	5.20%	30.16%
Total	347	100%	25.85%	55.54%
Correlation	-0.993			
Significance	0.000***			

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

Table 6.25 reports that the average day one MAAR was 25.85%. A significant negative relationship between the day one MAAR and closing BHAR was also established with a correlation of -0.993. It is clear that the MAAR decreases from 40.09% for companies with a closing BHAR of less than -50% to 5.20% for companies with a positive closing BHAR. Thus, proving evidence to suggest that companies with positive long-term returns have significantly lower levels of initial underpricing.

6.3.4 Summary of Long-term Returns

The first part of this section discussed the difference in absolute long-term returns based on the offer price and closing price on the first day of trading. It was found that IPOs on the JSE were underpriced. When calculating the seven year annualized long-term performance, the BHR as well as the BHAR were negative. This was a critical observation which confirmed that even in absolute terms IPOs on average generated negative returns; consequently the relative returns were worse than the absolute returns. In Table 6.12 it was also noted that the IPOs performed better in absolute terms than in relative terms on a yearly basis, which proved that IPOs did underperform the ALSI from 1996 till 2007. It was decided to use the seven year annualized closing BHAR for subsequent analytical purposes.

In Table 6.18 it was noted that the long-term returns of companies listed during hot market periods were significantly different to companies listed during cold market periods. The board of listing also proved to be significant, with the AltX reporting substantially worse long-term returns. A significant relationship was also found between the sector of listing and long-term returns on the JSE. It was found that a significant difference existed between long-term returns and company age before listing. Companies with a closing BHAR of 0% or worse had an average age before listing of 8.77 years or less. The offer price and issue size of IPOs also proved to be significant, each having a positive correlation with the closing BHAR. In Table 6.23 a significant difference between MAAR and BHAR was established along with a negative correlation.

Thus, with regards to the findings concerning market factors it will be advisable for investors who have a long-term IPO investment strategy to favour companies which list during cold market periods, on the Main Board, a sector which is not characterised by a high volume of listings and companies which have relatively low day one returns. Taking the company characteristics into account investors need to take note of companies with an older age before listing, a bigger offer price and a larger issue size if better long-term performance is desired. The next section will discuss the performance of IPOs on the JSE.

6.4 PERFORMANCE OF FAILED, OTHER AND SUCCESSFUL IPOs

Considering that the two main areas of research in this study are the failure and long-term performance of IPOs on the JSE, the failure of IPOs from 1996 till 2007 will be discussed and described next. Firstly the performance of IPOs on the JSE will be described by categorising the performance of a company into one of three main categories. The main reason for only considering three categories of performance is that fewer categories of IPO performance allows for more powerful reporting with regards to the company characteristics, market factors and short-term performance of failed companies. The second part of the discussion on failed IPOs includes the analyses of failure together with the company characteristics, market factors and the short-term performance measure mentioned above. It is, however, worth noting that based on the criteria stipulated earlier, a company was considered a failure if the IPO delisted from the JSE with reasons such as 'failure', 'no longer quality for listing', 'failure to comply with JSE requirements' and 'Section 17 of the Stock Exchanges Control Act 1985'. A company was also considered a failure if the shares of the company traded below 20 cents and showed no share price movement for five consecutive months. An IPO was classified as 'Other' if it managed to survive for the duration of the study or if it delisted (for reasons other than failure) or merged. The 'Other' category also includes IPOs with a negative absolute return over seven years ($BHR < 0\%$). An IPO was classified as a success if there was an increase in the share price in absolute terms (BHR) from the original offer price over the period of study.

6.4.1 IPO Performance

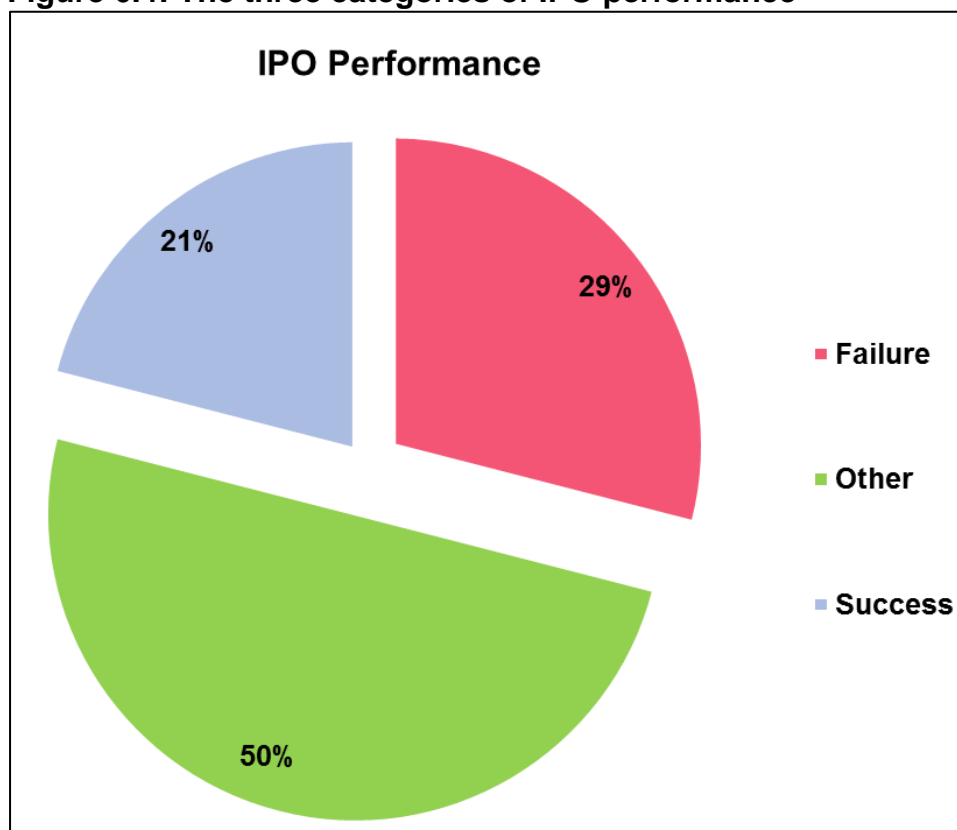
As mentioned above, the overall performance of IPO on the JSE from 1996-2007 will be discussed first. The performance of IPOs were divided into three main categories. These categories include failed, other and successful companies. Every company was classified into either one of these three categories based on the criteria of company performance mentioned in the previous chapter.

Table 6.26: The three categories of IPO performance

Performance	No. of IPOs	% of Total Sample
Failure	100	28.82%
Other	172	49.57%
Success	75	21.61%
Total	347	100%

It can be deduced that the Other category consisted of half of the study sample and that there were more failed companies than successful ones. When making use of a pie chart the distribution of IPO performance can be seen below.

Figure 6.4: The three categories of IPO performance



6.4.2 IPO performance and Characteristics of the sample

The following company characteristics, market factors and short term performance measure were analysed together with failed, other and successful companies to determine the impact of these characteristics on the performance of IPOs in South Africa:

- Impact of cyclical markets on IPO performance.
- Board of listing and IPO performance.

- Sector of listing and IPO performance.
- Average age before failure (Years Log N).
- Inflated offer price (Log N) and IPO performance.
- Market capitalisation (Log N) and IPO performance.
- MAAR (Log N) and IPO performance.
- Average time remaining listed.

6.4.2.1 IPO performance and Cyclical Markets

As noted by Ljungqvist, Nanda and Singh (2006) as well as Coakley, Hadass and Wood (2009), cyclical markets are one of the market factors which has the highest determining impact on aftermarket performance of IPOs. The performance of IPOs in the cyclical markets on the JSE, during the period of this study, are documented in the table below.

Table 6.27: Performance of IPOs in Hot and Cold markets

Categories of Performance	Hot market period		Cold market period		Total	% of Total Sample
	No. of IPOs	% of IPOs	No. of IPOs	% of IPOs		
Failure	81	30.92%	19	22.35%	100	28.82%
Other	131	50.00%	41	48.24%	172	49.57%
Success	50	19.08%	25	29.41%	75	21.61%
Total	262	100%	85	100%	347	100%
Significance	0.089*					

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

Table 6.27 confirmed a significant difference between the performance of IPOs in hot market periods and the performance of IPOs in cold market periods. As expected the failure rates of IPOs (30.92%) during hot market periods were significantly higher than the failure rates (22.35%) noted in cold market periods. Holding true to the notion of higher success rate during cold market periods, the success rate IPOs in this study were 10.33% higher in cold market periods relative to hot market periods, which is a significant difference. Neneh (2013:179) also noted higher failure rates and lower success rates during hot market periods and lower failure rates and higher success rates during cold market periods.

6.4.2.2 IPO performance and the Board of Listing

The second market factor to be analysed together with the performance of IPOs is the board of listing. As mentioned by Alhadab *et al.* (2015:82) there is a notion that companies listed on an alternative exchange have a higher likelihood of failure, and that companies listed on the main exchange have a better change on success. The table below documents IPO performance on the JSE and the board of listing.

Table 6.28: IPO Performance on the Main board and the AltX

Categories of Performance	Main Board		AltX		Total Sample	% of Total Sample
	No. of IPOs	% of IPOs	No. of IPOs	% of IPOs		
Failure	45	19.91%	55	45.45%	100	28.82%
Other	119	52.65%	53	43.80%	172	49.57%
Success	62	27.43%	13	10.74%	75	21.61%
Total	226	100%	121	100%	347	100%
Significance	0.000***					

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

From Table 6.28 it was noted that there was a significant difference between the performance of IPOs listed on the Main Board and the performance of IPOs listed on the AltX. It was revealed that the failure rate of IPOs (45.45%) listed on the AltX were significantly higher than the failure rate (19.19%) noted on the Main Board. It can also be seen that the success rate of IPOs listed on the Main Board were 16.69% higher than the success rate noted on the AltX. These observations are in line with that of Manikai (2011:32), who also found substantial failure rates on the AltX and went on to note that companies listed on the AltX are 117% more risky than companies listed on the Main Board, and also concluded that companies listed on the Main Board are more likely to be successful.

Further, the large number of listings on the Main Board of the JSE may serve as an indication that companies are willing to remain private for longer and to grow and expand as a private entity before going public.

6.4.2.3 IPO performance and Sector of Listing

The final market factor that will be discussed is the performance of IPOs when the sector of listing is considered. Kooli and Meknassi (2007:115) noted a very strong relationship between company performance and the sector of listing. Hamza and

Kooli (2010); Carpentier and Suret (2011) and Ahmad (2012) also found evidence that suggest that IPO performance can to a large extent be explained by the sector of listing. The next suitable step is to document the failed, other and successful companies on the JSE in each of the six sectors and the level of significance.

Table 6.29: IPO performance in each Sector of Listing

Sector of Listing	Failure	Other	Success	% of Total Sample
Basic Material	26.32%	57.89%	15.79%	100%
Consumer Goods	20.00%	48.33%	31.67%	100%
Industrial	21.21%	51.52%	27.27%	100%
Financial & Real Estate	10.71%	57.14%	32.14%	100%
Electronic	25.64%	48.72%	25.64%	100%
AltX	45.45%	43.80%	10.74%	100%
Total Average	28.82%	49.57%	21.61%	100%
Significance	0.001***			

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

Table 6.29 reported that there was a significant difference in the performance of IPOs and the listed sector. Apart from the AltX which has already been discussed, the sector with the highest failure rate was the Basic Material Sector followed by the Electronic sector. The sectors with the highest success rates were Financial & Real Estate and Consumer Goods with success rates of 32.14% and 31.67% respectively. Govindjee (2012:56) also found that the Basic Material sector on the JSE had the highest long-term failure out of all the categories in his study and that the Financial, Real Estate and Consumer Goods sectors were able to retain most of the initial listings over the long-term.

6.4.2.4 IPO performance and Age before Listing (Years Log N)

Merikas, Gounopoulos and Nounis (2009:481) as well as Sejjaaka (2011:284) concluded that the age of a company before listing is a significant determinant of post issue IPO performance. The findings of this study are documented in the table below. The sample size decreased from 347 companies to 248 as a result of discarding the companies with an age of zero.

Table 6.30: IPO performance and Age before listing

Categories of Performance	No. of IPOs	% of Total Sample	Average Age	Standard Deviation
Failure	73	29.44%	5.50	3.26
Other	120	48.39%	6.25	3.77
Success	55	22.18%	8.10	4.48
Total	248	100%	6.40	3.79
Significance	0.036**			

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

From Table 6.30 it is observed that a significant difference was found between the age of the company before listing and IPO performance. The average age of failed companies were the lowest of the three categories at 5.50 years before listing and successful companies displayed the highest age before listing with an average of 8.10 years. These findings from the table above are in line with Neneh (2013) who also established a significant relationship between company age before listing and IPO aftermarket performance. She noted 80% of all failed IPO companies in her sample had an age before listing of five years or less (Neneh, 2013:182).

6.4.2.5 IPO performance and Inflated Initial Offer Price (Log N)

Fernando *et al.* (2004:377) found a significant relationship between aftermarket IPO performance and the initial offer price, whereas Ahmad (2012:19) found no significant relationship between IPO aftermarket performance and initial offer price. The table below aims to assert if there was a significant relationship between IPO performance and initial offer price on the JSE as well as the average offer price for failed, other and successful companies.

Table 6.31: IPO performance and Initial Offer Price

Categories of Performance	No. of IPOs	% of Total Sample	Average Offer Price	Standard Deviation
Failure	100	28.82%	175.97	2.46
Other	172	49.57%	472.82	3.69
Success	75	21.61%	578.66	3.50
Total	347	100%	371.49	3.60
Significance	0.000***			

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

Regarding the table above, a significant relationship was found between the offer price and performance of IPOs on the JSE. The price difference between failed

companies and the other two categories of IPO performance are very apparent. As expected, failed IPO companies reported the lowest average offer price at 175.97 South African cent where as Other IPO companies and successful IPO companies had an average offer price of 472.82 cent and 578.66 cent respectively. Failed IPO companies also display the lowest standard deviation which indicated a high concentration of failure around a price level of 175.97 cent. These findings are complimentary to the conclusions made by Demers and Joos (2007) on US IPOs as well as Carpentier and Suret (2011) on Canadian IPOs, who found that a high initial offer price tends to be present in a successful company and more importantly that the likelihood of failure increases with a lower offer price.

6.4.2.6 IPO performance and Inflated Issue Size (Log N)

The final company characteristic to be considered is the size of the offering which is measured in market capitalisation. In many past studies the size of the offering has proved to be a determining factor when considering IPO performance (Brau and Osteryoung, 2001; Boubakri *et al.*, 2005; Jain and Kini, 2000; Shumway, 2001; Alhadab *et al.*, 2015). Noted in the table below is the relationship between IPO performance and natural logged issue size for IPOs listed on the JSE.

Table 6.32: IPO performance and Issue Size (R million)

Categories of Performance	No. of IPOs	% of Total Sample	Average Issue Size	Standard Deviation
Failure	100	28.82%	232.43	3.07
Other	172	49.57%	528.70	4.78
Success	75	21.61%	944.35	5.33
Total	347	100%	472.94	4.75
Significance	0.000***			

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

From Table 6.32 it can be seen that a significant difference between IPO performance and IPO issue size was found. As expected failed companies had the lowest average issue size, at R232.43 million and successful companies had the highest issue size, at R944.35 million. Failed companies, which consisted of 28.82% of the sample, also displayed the lowest standard deviation, indicating a high concentration of failed companies around the average issue size. Similar conclusions were made by Carpentier and Suret (2007:2) regarding Canadian IPOs as well as Fama and French (2004:259) regarding US IPOs, who noted that

companies with a bigger issue size tend to be more successful in the aftermarket and that companies with a small issue size have a higher likelihood of failure.

6.4.2.7 IPO performance and MAAR (Log N)

As mentioned in the previous chapter, the initial (day one) returns of IPOs on the JSE will be measured by making use of the Market Adjusted Abnormal Returns (MAAR) technique. The table below aims to assert the relationship between the day one MAAR and the aftermarket performance of IPOs on the JSE.

Table 6.33: IPO performance and MAAR (Log N) on day one

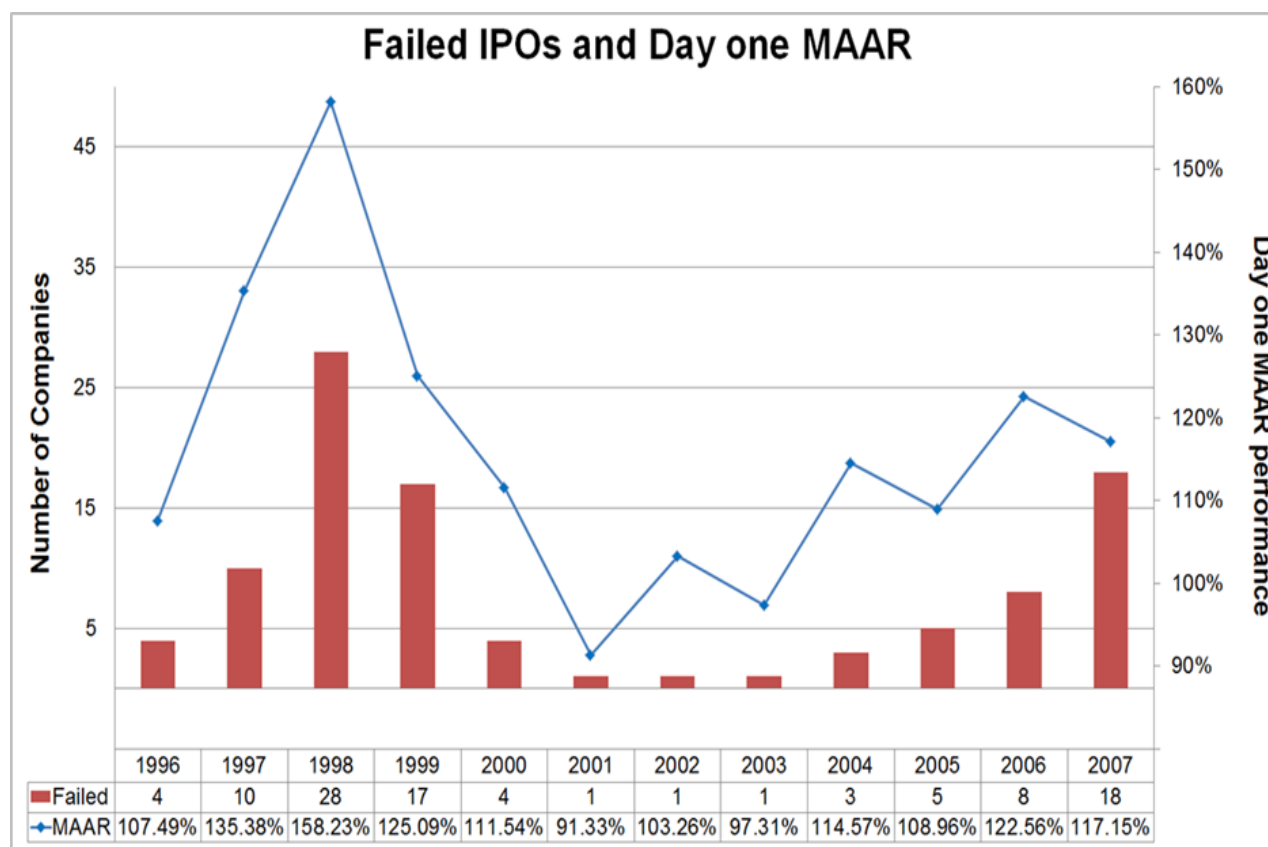
Categories of Performance	No. of IPOs	% of Total Sample	Average MAAR	Standard Deviation
Failure	100	28.82%	36.47%	61.75%
Other	172	49.57%	20.35%	55.05%
Success	75	21.61%	25.16%	46.36%
Total	347	100%	25.85%	55.54%
Significance	0.076*			

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

In Table 6.33 a significant difference between the day one MAAR and aftermarket IPO performance was found, with an average day one MAAR of 25.85% for the whole sample. As expected, failed companies had the highest day one MAAR at 36.47% which is significantly different from the day one MAAR of 25.16% found for successful companies. The observation of failed companies having the highest average initial returns is in line with findings concluded by Kooli and Meknassi (2007:113) who studied IPOs in the US as well as Alhadab *et al.* (2015:70) who studied IPOs in the UK. However on the JSE, Neneh (2013:226) found no level of significance between the short-term returns of IPOs and their success or failure patterns.

To better understand the positive relationship between the abnormal returns on day one and IPO failure, the figure below illustrates the number of failed IPOs per year together with the day one MAAR.

Figure 6.5: Yearly failure and day one MAAR



Clearly noticeable in the figure above is the relationship between failure and the day one MAAR, which is, as the day one MAAR increases so does the number of failed IPO companies.

6.4.2.8 IPO performance and Average Time to Delisting

The final aspect to be examined is the average time remaining listed. In this particular analysis successful companies were not considered, as one of the requirements of a successful company was that it needed to remain listed for the period of study, which was 84 months. Thus, only failed companies and companies in the Other category were considered, which totalled to 209 companies. The table below describes the average time remaining listed for the two categories of IPO performance on the JSE.

Table 6.34: IPO performance and average time remaining listed

Categories of Performance	No. of IPOs	% of Total Sample	Average Months	Standard Deviation
Failure	100	47.62%	59	21
Other	110	52.38%	61	26
Total	210	100%	60	24
Significance	0.000***			

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

Table 6.34 notes that there was a significant difference between the average time remaining listed between failure and Other IPO companies on the JSE. The average time remaining listed for the sample was 60 months. As expected, failed IPO companies had the lowest average time remaining listed of 59 months as oppose to Other companies displaying an average time remaining listed of 61 months. Although the difference between the two categories were very slight it was still significant. This observation is in line with the findings concluded by Demers and Joos (2005:9) who studied US IPOs, Ahmad (2012:19) who studied UK IPOs and Kooli and Meknassi (2007:107) who studied Canadian IPOs, who all noted an average merge, delist and failure time of five years.

6.4.3 Summary of IPO performance

The second main focus of this study was to report on the performance of IPOs on the JSE from 1996 till 2007. This section began by sorting IPOs into one of three categories of performance; failed, Other or successful. It was noted that 28.82% of all IPOs were deemed as failure on the JSE from 1996 till 2007.

It was established in Table 6.27 that the failure rates during hot market periods were significantly worse than the failure rate in cold market periods and that success rates were significantly better in cold markets than in hot markets. The board of listing also proved to be significant, with the AltX reporting a substantially higher failure rate and the Main Board proving to be more successful. A significant difference was also found between the sector of listing and IPO performance on the JSE, with the Basic Material sector having a failure rate of 26.32%. The average age proved to have a significant relationship with IPO performance. Failed companies on the JSE displayed an average age before listing of 5.50 years. The offer price and issue size of IPOs also proved to be significant, with failed companies reporting an average

offer price of 175.97 cent and an average issue size of R232.43 million. In Table 6.33 a significant difference between MAAR and IPO performance was established with failed IPOs displaying a day one MAAR of 136.47%.

6.5 IPO PERFORMANCE AND CLOSING BHAR

The final analysis will include the two main focuses of this study which is the performance and the long-term returns of IPOs on the JSE. In an attempt to report the relationship between these two variables the table below documents the findings when considering the IPO performance and the closing BHAR together.

Table 6.35: IPO performance and Closing BHAR

Categories of Performance	No. of IPOs	% of Total Sample	Average BHAR	Standard Deviation
Failure	100	28.82%	-60.69%	37.95%
Other	172	49.57%	-19.52%	21.50%
Success	75	21.61%	-3.26%	15.31%
Total	347	100%	-27.82%	24.92%
Significance	0.000***			

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

From Table 6.35 it is observed that a significant difference between the performance and the long-term returns of IPOs on the JSE was found. Although the average long-term returns for all three categories of IPO performance were negative, failed IPO companies displayed the worst long-term performance, with an average closing BHAR of -60.69%. Successful companies reported significantly better long-term returns with an average closing BHAR of only -3.26%. Nevertheless, this observation confirms that even successful IPOs generate negative long-term returns on the JSE. Smit and Neneh (2015:30), M'kombe and Ward (2002:12) and Govindasamy (2010:53) also found evidence of disappointing long-term IPO performance on the JSE. Amongst other conclusions they noted that poor long-term performance more often than not, leads to IPO failure.

Some explanations and reasons for poor long-term performance have been put forward by Ritter and Welsh (2002:34) who narrow the disappointing long-term performance of IPOs down to a market that is “unduly optimistic and unable to properly forecast tough times ahead”. Similarly, Purnanandam and Swaminathan

(2004:828) attribute disappointing long-term performance to poor initial valuations and unrealistic offer prices.

6.6 CONCLUSION

In reflection on the aspects covered, this chapter began by presenting the sample characteristics. Cyclical markets were considered first, after which the board of listing and sector of listing were discussed. The company characteristics reported include the age of the company before listing, initial offer price and issue size. It is important to mention that these company characteristics were adjusted for inflation. The inflated adjusted values made the comparison of the findings easier and more reliable. The short-term performance which was measured as the day one MAAR was also noted. However, some significant issues were encountered when company characteristics such as the age before listing, the initial offer price and the offer size as well as the day one MAAR were found to have skewed distributions. In order to remedy the high levels of skewness natural logarithmic transformations were performed.

The second part of this chapter focused on the long-term performance of IPOs on the JSE together with the company characteristics, market factors and short-term performance discussed in the characteristics of the sample. The first step was to report on the absolute returns over a seven year period. It was found that on average IPOs generated negative absolute returns on the JSE from 1996 till 2007. This was a crucial observation which confirmed that investors are faced with tremendous difficulty when making an IPO investment decision. Consequently, the seven year relative returns were also found to be negative, confirming that IPOs on the JSE underperform in absolute as well as relative returns. Table 6.18 also noted that from year one (close) to year seven the BHR was positive in each year except in years two and three, whereas the BHAR was positive in only three (years five, six and seven) out of the seven years. More specifically it was found that from year five till year seven the absolute and relative long-term returns were positive, which was confirmed by a wealth relative greater than one. Figure 6.3 displayed the yearly BHAR together with the number of listings in each of the seven years. A negative trend between these two variables were found; a possible reason being that as all

the weak and underperforming companies fail, merge or delist, the strong and growing companies remain listed and displayed above average long-term returns.

In Table 6.14 and Table 6.17 the seven year annualized closing BHR and BHAR were noted. It was found that returns were negative in absolute as well as relative terms, with a BHR of -22.07% and a BHAR of -27.31%. Thus, confirming the notion of long-term underperformance of IPOs on the JSE noted by Smit and Neneh (2015:30), M'kombe and Ward (2002:12) and Govindasamy (2010:53). It was also decided to use the annualized seven year closing BHAR for the remainder of the study. Neneh and Smit (2014:27), Govindjee (2012:44), Berger and Hinz (2008:6) as well as Ritter (1991:4) also favoured the use of the closing price on the first day of trading in the analysis of long-term IPO performance, as it reflects the price of IPO as determined by the market and investors.

The third part of this chapter considered the second main focus of this study which is the failure of IPOs on the JSE from 1996 till 2007. Firstly, the spread of IPO performance was discussed, the long-term performance of IPOs were divided into three main categories. It was found that 28.82% of the whole sample included failed companies. Secondly, the performance of IPOs were analysed together the company characteristics, market factors and short-term performance discussed in the characteristics of the sample.

The fourth and final part of this chapter included the analysis of IPO performance together with the closing BHAR. It was also noted, that failed IPO companies displayed the worst average closing BHARs at -60.69% and successful companies reported the best average closing BHARs at -3.26%, these findings were in line with Smit and Neneh (2015:30), M'kombe and Ward (2002:12) as well as Govindasamy (2010:53) who all investigated long-term IPO performance on the JSE.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7.1 INTRODUCTION

The primary aim of this study was to investigate the long-term performance of IPOs on the JSE, focusing specifically on failure. This study found evidence to report and explain the long-term returns and failure of IPOs listed on the JSE from 1996 till 2007. Various company characteristics, market factors along with short term returns were found to have a significant impact on the long-term returns and failure of IPOs.

This chapter will discuss the findings concluded in Chapter 2 which included the role of a stock exchange, the motives for going public, advantages and disadvantages of going public and the parties involved in an IPO. The discussion on Chapter 3 will entail the long-term performance and initial underpricing of IPOs. With regards to Chapter 4 the failure, success and survival of IPOs will be discussed along with the explanations of IPO performance.

The sample characteristics will also be mentioned which will include a discussion on skewed data and the market factors, company characteristics and short term performance noted in the period of study. The findings with regards to the analyses of the company characteristics, market factors and short-term performance along with the long-term performance, which was measured using a seven year closing BHAR, will be concluded. The final findings with regards to the analyses between IPO failure and company characteristics, market factors and shot-term performance will also be noted. The discussion on the data analysis will conclude with the observation noted between IPO failure and long-term performance. All the findings noted will be put into context by referring to other studies done on the JSE on in other world markets.

Finally the recommendations to investors, the achievement of objectives, limitations of this study and areas of further study will be noted. Thus, the aim of this chapter is; (1) to discuss the findings concluded in the literature; (2) to conclude the empirical findings noted in the previous chapter, (3) to present recommendations to investors and companies alike, (4) to provide an overview of the objective completed, (5) to

note any limitations of this study, (6) to identify any areas of future study, and (7) to close with a conclusion to the study as a whole.

7.2 CONCLUSION TO THEORETICAL CHAPTERS

7.2.1 Chapter 2

This chapter aimed to explain the role of a stock market, what an IPO is and where it fits into the business lifecycle as well as the advantages and disadvantages of issuing an IPO.

7.2.1.1 Stock Exchange

It was mentioned that a stock exchange is a capital market in which securities can be freely traded in a regulated environment (Firer *et al.*, 2012:466). With regards to the board of listing, it was found that one of the main differences between the Main board and the AltX is the share capital needed to list, with the Main Board requiring R25 million and the AltX requiring only R2 million.

7.2.1.2 Motives for going public

The main motives for going public which were discussed included financing, harvesting, marketability and talent attraction. From a company's point of view, the main advantage of issuing an IPO is the ability to raise external capital. The capital raised could assist the company in growing and expanding its business. It was found that issuing an IPO also presents the company and its existing shareholders an opportunity of harvest the investment and exchange their share in the company for cash (Draho, 2004:11). The third motive for going public which was discussed was the marketability of the company. When issuing an IPO the company receives heightened media attention and is exposed to a much greater audience.

7.2.1.3 Advantages and Disadvantages of going public

The advantages as well as the disadvantages of going public were also mentioned in Chapter 2. The advantages discussed were: access to alternative sources of funding, increased liquidity, increased value and increased transparency from

management. The disadvantages discussed were: increased disclosure, the cost to go public, loss of control and short-term goal driven investors.

Advantages of going public

It was noted that companies which have access to sources of external funding, such as a market, are much more likely to expand faster and exceed growth expectations than companies who have restricted sources of funding (Draho, 2004:116). Accordingly, companies consider the access to alternative sources of capital as the main advantage above all others when going public (Chanin, 2010:1).

Illiquidity is one of the biggest disadvantages of a private company; by issuing an IPO a company make their shares available for public trading which is much more liquid than the shares of a private company (Neneh, 2013:26). Geddes (2005:24) further stated that because of the increased liquidity of a listed company's shares, investors are willing to pay a premium for these shares, which increases the value of the company. Further, the required level of disclosure needed to trade as a public company reduces uncertainty and increases the value of the company, as its shares will be more desirable.

When trading as a public company management is required and encouraged by shareholders to disclose the company's business strategy which increases transparency to the advantage of all parties involved.

Disadvantages of going public

With regards to disadvantages of going public it was remarked that the increase in disclosure would also have a noticeable impact on the privacy of the company, especially on the management of the company (Correia *et al.*, 2013:13-5), also due to the availability of a public company's information, competitors could effortlessly follow and track the company's news and financial results to uncover its competitive advantage and weaknesses.

It was also mentioned that in order to be quoted on a stock exchange, a company has no other option than to bear all the costs associated with an IPO. These costs were grouped into four main categories, namely: short-term, long-term, direct and

indirect costs. According to Bansal and Khanna (2012:73) one of the main factors to consider when a company reaches the milestone to go public, is the effect it will have on the management structure, ownership structure and controlling rights of the company. Damodaran (2011:350) stated that a loss of control may be experienced due to the issuing of new shares. The shareholders of a public company have a big influence as to what decisions are taken in the company. This poses a threat to the existing management as going public may bring about a change in management and a possible restructuring of the company.

7.2.1.4 Parties involved in an IPO

The parties involved in the IPO process were also noted. These parties included: existing shareholders, the issuing company, underwriters, the Securities Exchange Commission (SEC) and investors. It was noted that existing shareholders are essentially the combined owners of the business. An IPO also provides the ideal opportunity for existing shareholders to divest themselves and cash in on their original investment (Brealey and Meyers, 2003:406).

7.2.2 Chapter 3

The aim of this chapter was to report on the long-term performance of as well as the initial underpricing of IPOs.

7.2.2.1 Long-term performance

It has been widely documented that IPOs underperform over the long-term (Ritter and Welch, 2002, Vithessonthi, 2008, Thomadakis, Nounis and Gounopoulos, 2012, M'kombe and Ward, 2015, Govindasamy, 2010, Neneh and Smit, 2014). Long-term underperformance can be defined as, relative to similar companies, investors are experiencing losses on their investment by holding the shares of an IPO company (Yuhong, 2010:2). Long-term underperformance was noted to be present in international markets such as US, Canadian, European, Asian as well as Australian markets. Amongst others Demers and Joos (2005) found underperformance of between -8.83% and -50.17% for US IPO companies. Kooli and Suret (2004) concluded that Canadian IPOs underperformed the market from 1991 to 1998 with a CAR of -11.02%. Schuster (2003) noted long-term underperformance

of between -11.02% and -41.85% over a three year period for European IPOs. In Thailand, 43 IPOs were found to underperform in the market with a BHAR of -41.70% from 1999 to 2005 (Vithessonthi, 2008).

Long-term underperformance was also noted in the South African stock market. M'kombe and Ward (2015) scrutinised a sample of 541 IPOs listed on the JSE between 1980 and 1998 and concluded a ten year BHAR of -87.84%. Govindasamy (2010) collected and analysed data of 229 IPO companies on the JSE and established that IPOs underperformed the market with a CAR of -47% and a BHAR of -50% between 1995 and 2006. Neneh and Smit (2014) studied the three year performance of 269 IPOs on the JSE which listed from 1996 to 2007, and found a CAR of -59.77% and a BHAR of -65.59%.

The possible reasons for long-term underperformance mentioned include the notion that long-term performance of IPOs tend to be sensitive to the time period when the issue was made. The economic, political, social and legal state of the country as well as the general health of the business environment and investors perception about the market at the time of issue had an impact on the companies considered (Govindasamy, 2010:8). Overoptimistic investors have also been found to have an impact on the long-term performance of IPOs.

7.2.2.2 Initial underpricing

Initial underpricing is also a phenomenon that is synonymous with the short-term under performance of IPOs. Initial underpricing can be identified when the closing price at the end of the first day of trading is higher than the initial offer price. This implies that the price the issuers determined the shares to be worth, are less than what the market was prepared to pay for the shares (Heeley, Matusik and Neelam 2006:2). Initial underpricing can also be defined as the abnormal gain or loss experienced during the first day of trading (Adams, Thornton and Baker, 2009:55). It was also noted that the most common measuring technique used in measuring the short-term IPO performance is the market adjusted abnormal return (MAAR) technique.

The worldwide common occurrence of initial underpricing has sparked a variety of investigations on this phenomenon in different stock markets (Boulton, Smart and

Zutter, 2010; Chen, Firth and Kim 2004; Gounopoulos, Nounis and Stylianides. 2008; Habib, and Ljungqvist. 2001; Hanley, 1993; Hau and Lai, 2012). Underpricing was found to be present in international markets, especially in the US, Canada, Europe and in Asia. Amongst others Loughran and Ritter (2003), found an average initial return of 18.90% for 6169 US IPOs which listed between 1980 and 2000. Kooli and Suret (2004) noted that a sample of 971 Canadian IPOs which listed between 1991 and 1998 were underpriced on average by 20.57%. In Europe it was found that Austria, Belgium, France, Italy, Spain, Sweden and Turkey had relatively low levels of initial underpricing. Germany, Greece, and the UK on the other hand, displayed substantial initial underpricing ranging from 43.32% to 86.07%. Further looking at China, Chen, Firth and Kim (2004) established that the mean underpricing was 145% for a sample of 734 Chinese IPOs.

Initial underpricing was also noted in South Africa. Amongst others Muller (2011:51) noted that the average level of initial underpricing on the JSE to be 17.10%. Govindjee (2012:36) considered a sample of 60 newly listed companies over a 12 year period, from 2000 to 2011; the results revealed that IPOs outperformed the All Share Index with 10.10% on the first day of trading. Mashaba (2014:47) studied the mean of the first day initial returns for 60 companies listed between 2006 and 2012 on the AltX, and found average underpricing of 21.42%.

When the possible reasons for initial underpricing theories and hypotheses such as information asymmetry, The Winner's Curse, the Signalling Hypothesis, The Bandwagon Effect and Ownership Hypothesis were and affirmed by previous studies.

7.2.3 Chapter 4

The main aim of this chapter was to sketch a picture of the IPO landscape, internationally as well as locally, when considering the failure and success of IPOs.

7.2.3.1 Failure of IPOs

The steep decline in the popularity of issuing an IPO could to a large extent be explained through the equally as worrying significant increase in the failure rate of newly listed companies. Concerning US IPO markets, Bradley, Cooney, Dolvin and

Jordan (2006:21) noted a three-year failure rate of 31.5% and a five-year failure rate of 51.4% for their sample of US penny stocks. In Canada, Carpentier and Suret (2011:109) documented an average failure rate of 48.52% for a sample of 2,373 IPO companies. When analysing the failure of small British IPOs, with the main focus being on companies who listed on the Alternative Investment Market, Amini and Keasey (2013:725) noted that the overall failure rate of all IPO listings was 66.85%

In South Africa, Neneh (2013:177) found that out of a sample of 310 IPOs which listed on the JSE between 1996 and 2007, 65 companies were deemed to have failed and only 32 were classified as a success.

For the purpose of this study an IPO was considered as a failure if the IPO delisted from the JSE with reasons such as 'failure', 'no longer quality for listing', 'failure to comply with JSE requirements' and 'Section 17 of the Stock Exchanges Control Act 1985' it was also considered a failure if the shares of the company traded below 20 cents and showed no share price movement for five consecutive months. Thus, for the purposes of this study, a very conservative approach was followed for failure.

7.2.3.2 Survival and Success of IPOs

Ahmad (2012:27) found that the survival rates of companies listed on the London Stock Exchange after five years never dipped below 50% and were the highest at 93% in the year 2002. The highest success rates over the long-term were observed by Corhay, Teo and Rad (2002) who noted the outperformance of IPOs compared to the market in Malaysia with a CAR of +41.70% from 1992-1996. In support to the observation of IPOs outperforming the market, Tsangarakis (2004:26) observed 108 Greek IPOs that outperformed the market with a BHAR of +54.90% from 1993 to 1997.

For the purpose of this study an IPO was classified as a success if there was an increase in the share price in absolute terms (BHR) from the original offer price over the period of study.

7.2.3.3 Explanations of IPO performance

In view of the possible reasons for IPO failure, the following company characteristics and market factors were discussed in explaining IPO performance.

The company specific characteristics include:

- Age of the company at the time of listing;
- Initial offer price per share;
- Company financials;
- Size (market capitalization) of the offering;
- Management and shareholding of the company;
- Underwriter prestige;
- Venture Capital backing.

The market specific characteristics include:

- Cyclical market period (hot and cold);
- Board of listing;
- Sector of listing.

7.3 CONCLUSION FROM EMPIRICAL FINDINGS

The following section aim to provide a comprehensive conclusion on the following; (1) characteristics of the sample; (2) the long-term performance of the sample; (3) the failure and success of the sample.

7.3.1 Sample Characteristics

According to the JSE database, 426 IPOs were listed on the JSE from 1996 till 2007. Excluding some companies from the population resulted in a final response rate of 81.46% which is a substantial sample size of 347 IPO companies. The high retention rate of the original sample makes the results reliable and will be a true reflection of long-term IPO returns and failure on the JSE. The reasons for excluding some of the IPOs are a) detailed data (such as offer prices and number of shares issued) for some of the IPOs were not available on the McGregor-BFA database, b) inconsistency in the specific IPO data amongst the various sources, and c)

unexplainable outliers that jeopardized the reliability of the data. It was crucial to exclude an IPO if discrepancies in the various data sources could not be resolved. The data for all the companies listed on the JSE from 1996 to 2007 was collected from McGregor-BFA database, the Stock Exchange Handbook, the companies' initial prospectus, as well as data provided by the JSE.

As the periods of this study stretches over 12 years the CPI (Consumer Price Index) was used to adjust the offer price and issue size (market capitalization) for inflation. It was noted that 1997 till 1999 and 2006 till 2007 were hot market periods with 75.22% of the listings and that 1996 and 2000 till 2005 were cold market periods with 24.78% of the listings. The IPOs were also classified into six sectors, namely Basic Materials (Mining/Minerals), Consumer Goods and Services, Industrial, Financial, Technology and AltX. Although the AltX was one of the six sectors it did not form part of the Main Board as was therefore analysed on its own.

Failure was defined as all IPOs which delisted from the JSE with reasons such as 'failure', 'no longer quality for listing', 'failure to comply with JSE requirements' and 'Section 17 of the Stock Exchanges Control Act 1985'. A company was also considered a failure if the shares of the company traded below 20 cents and showed no share price movement for five consecutive months. An IPO was classified as 'Other' if it managed to survive for the duration of the study or if it delisted (for reasons other than failure) or merged. The 'Other' category also included IPOs with a negative absolute return over seven years ($BHR < 0\%$). An IPO was classified as a success if there was an increase in the share price in absolute terms (BHR) from the original offer price over the period of study.

In analysing the data it was noticed that the normal distribution of some of the variables were skewed, which may cause further analyses to be inaccurate. The variables included the average age before listing, offer price, issue size as well as the day one MAAR. In order to remedy the problem of skewed data, natural logarithmic transformations were used. Middelton (2004:187) stated that a natural logarithmic transformation creates a trend line by which the observations in the data series are standardised. The table below documents the affected variables and their Z values.

Table 7.1: Z Skewness of Characteristics

Characteristic		Average	No. of IPOs	Standard Deviation	Z Skew.
Age	Actual Age	14.60	248	20.80	16.45
	Log N Age	6.40	248	3.79	0.91
Offer Price	Inflated Offer Price	1167.50	347	4856.00	109.430
	Log N Inflated Offer Price	371.49	347	3.60	1.677
Issue Size	Inflated Size	2 323.30	347	7 600.20	49.613
	Log N Inflated Size	472.94	347	4.75	1.810
MAAR	Normal day one MAAR	42.50%	347	101.70%	33.787
	Log N day one MAAR	25.85%	347	55.54%	2.478

It can be seen in each case that as a result of the natural logarithmic transformation that the Z skewness came down to between the accepted boundaries of normality which is +/- 2.5. With the decrease in skewness using natural logs, a substantial decrease in each of the variables averages and standard deviations can also be observed. Analysing the data using Log N resulted in much more reliable data, giving a true and accurate reflection of IPO performance on the JSE. It is the opinion of the author that isolating outliers, combined with using Log N to compensate for the skewness of the data of some variables, are critical to get a true and reliable reflection of IPO performance in almost all markets around the world.

The characteristics of the sample are listed below. The characteristics of the sample include company characteristics and market factors which could potentially influence long-term IPO performance and failure.

- **Cyclical Markets:** Only one cold market period was observed which consisted of 24.78% of the listings, two hot market periods were noted which consisted of 75.22% of the whole sample.
- **Board of Listing:** It was found that 65.22% of all IPOs listed on the Main Board and 34.87% listed on the AltX.
- **Sector of Listing:** Although the AltX accounts for one of the six sectors, it was still considered separately and did not form part of the sectors on the Main Board. Thus, without taking the AltX into account, the Consumer Goods sectors found to have the highest number of listings with 17.3%. The Industrial sector recorded the lowest number of listings with only 9.5%.

- **Age before listing:** The average age before listing was 6.4 years with a standard deviation of 3.79.
- **Offer price:** The average offer price was found to be 371.49 South African cents, with a standard deviation of 3.60 cents.
- **Issue Size (Market capitalisation):** It was noted that the average issue size was R472.94 mil with a standard deviation of R4.75 mil.
- **Day one MAAR:** The average day one MAAR was 25.85% with a standard deviation of 55.54%.

7.3.2 Long-term Performance

This study documented the long-term performance of IPOs for seven years after listing. It was intentionally decided to only use BHAR as a measuring technique and not consider Fama and French, CAR or CAPM. Barber and Lyon (1997:370) add that CAR is a biased predictor of BHAR which can lead to incorrect inferences and that CAR is not able to document the magnitude of returns experienced when investing in the average or median sample firm. Gregoriou (2006:202) is of the opinion that CAR is not based on a realistic ex-ante trading strategy and that it tends to overstate long-term IPO performance. M'kombe and Ward (2015:9) also add that the main weakness of CAR is that it ignores the effect of compounding. Consequently, the BHAR technique was adopted for the purposes of this study.

It should also be noted that the seven year long-term returns were annualized. Kumar (2007:24), Westerholm (2006:31), Ho (2005:27) and Ritter (2003:267) also made use of annualized long-term returns of IPOs. Annualising long-term returns is beneficial when comparing the long-term returns of different periods with one another and also when comparing findings in this study to other studies in the world, as it accounts for the yearly returns over the observation period. The annualised seven year performance for each company was calculated as the average monthly share price till the end of the seven year observation period. Regardless if a company merged, delisted or failed before the end of the observation period, the annualized returns were still calculated until the time of delisting. Therefore, the annualised long-term returns could be calculated for all 347 IPOs, irrespective whether the companies remained listed for the full seven years.

7.3.2.1 Yearly Absolute and Relative Returns

The long-term returns was considered together with the company characteristics, market factors and short-term performance discussed in the characteristics of the sample. Firstly, the yearly absolute (BHR) and yearly relative (BHAR) returns were considered. The table below documents the BHRs and BHARs in years one (offer and close), three, five and seven. The wealth relative is also given which serves as an indicator of favourable (greater than one) and unfavourable (less than one) long-term returns relative to the benchmark, which was the ALSI.

Table 7.2: BHR and BHAR performance

Year	No. of IPOs	% of Total Sample	BHR	BHAR	Wealth Relative
Year 1 (Offer)	347	100%	47.95%	36.13%	1.32
Year 1 (Close)	347	100%	5.18%	-6.64%	0.94
Year 3	296	85.30%	-6.08%	-20.35%	0.82
Year 5	236	68.01%	25.21%	13.96%	1.13
Year 7	176	50.72%	94.37%	71.99%	1.59

As seen in Table 7.2 the long-term returns based on the offer price and closing price on the first day of trading in year one have been calculated. As was expected, both the BHR and BHAR at the closing price was worse than at the offer price, as a result of the high levels of underpricing on the JSE. This clearly indicated the inability of the market to correctly price IPOs on the first day of trading. This observation also indicated that investors who were not able to obtain IPO shares at the offer price on the first day of trading experienced substantial losses over a seven year period (both in absolute as well as relative terms), regardless if the IPO was able to remain listed for the period of study. For the remainder of this study the same approach as Neneh and Smit (2014:27), Govindjee (2012:44), Berger and Hinz (2008:6), M'kombe and Ward (2015:11) as well as Ritter (1991:4) was followed, which was to use the closing price on the first day of trading in the analysis of long-term IPO performance, as it reflects the price of IPOs as determined by the market.

In Table 7.2 the absolute and relative performance in year one, three, five and seven can also be observed. It was found that from year one (close) till year seven the BHR yielded positive returns except for year three when the BHR was -6.08%. This is an interesting observation which provides evidence to suggest that IPOs do not only underperform in relative terms but also in absolute terms on a yearly basis. However,

years five and seven had substantially better long-term performance. With regards to the BHAR, negative returns were noted in year one (close) and in year three, which were confirmed by a wealth relative of less than one in each of these years. The BHAR of -20.35% in year three was in line with a study of 81 IPOs listed on the JSE from 1996 till 2002 by Neneh and Smit (2014:30) who noted a year three BHAR of -16.44%. Interestingly, much better and positive returns were noted in year five and seven with BHARs of 13.96% and 71.99% respectively which was confirmed by a wealth relative of 1.13 in year five and 1.59 in year seven. Again Neneh and Smit (2014:30) also noted positive year five and year seven BHARs for IPOs on the JSE.

It should however be noted that the sample size decreased from 347 in year one to only 176 in year seven, which gave rise to the argument that the initial negative relative returns (year one close till year three) and the subsequent positive returns (year five until year seven) may be as a result of weaker IPO companies failing, delisting or merging up to year three and strong companies remaining listed and generating positive BHAR returns. Thus, the better long-term returns of IPOs on the JSE should not be considered without taking the decrease in the sample size into account.

7.3.2.2 Annualized Absolute and Annualized Relative Returns

The next step included examining the annualized seven year long-term performance of IPOs. The table below documents the seven year annualized absolute returns (BHR) and relative returns (BHAR) of IPOs listed on the JSE from 1996 till 2007 over a seven year observation period. The two categories of performance are long-term returns equal or less than 0% and long-term returns greater than 0%.

Table 7.3: Annualized BHR and Annualized BHAR

Categories	BHR Share		BHAR Share	
	% of Total Sample	Average BHR	% of Total Sample	Average BHAR
≤ 0%	70%	-66.60%	80%	-70.09%
> 0%	30%	22.46%	20%	15.47%
Total	100%	-22.07%	100%	-27.31%

From Table 7.3 it can be seen that the BHR of -22.07% confirmed that IPOs listed on the JSE from 1996 till 2007 generated negative average absolute returns. The bulk of the sample (70%) reported substantial negative long-term returns. This was a critical observation presenting evidence as to the scale of the dilemma long-term IPO investors face, which is IPOs do not only generate negative relative returns but also negative absolute returns over the long-term.

The negative relative returns of IPOs were confirmed by a BHAR of -27.31%. As anticipated, the percentage of the sample which displayed negative long-term returns increased from 70% (in absolute terms) to 80% (in relative terms). This observation served as confirmation that IPO underperformance in relative terms was worse than in absolute terms; which further provided evidence that IPOs do underperform the ALSI on the JSE over seven years.

In summary, it was clear from analysing both the absolute and relative long term performance of IPOs are that IPOs, on average, generated very weak and negative long term returns over a seven year period, and only 30% of IPOs had positive absolute returns, while only 20% outperformed the market in relative terms. It further highlighted the problem that investors are confronted with in terms of the selection of IPOs to be included in their portfolios. This observation was expected as it confirms the conclusions made by Neneh and Smit (2014), M'kombe and Ward (2002) and Govindasamy (2010) who found that IPOs do underperform in the long run on the JSE. Also, it was decided to use the annualised closing BHAR for all analytical purposes for the remainder of this study, as it reflects the relative returns an investor would have earned over a seven year period if he bought the share at the end of the first day of trading.

7.3.2.3 Long-term returns and Characteristics of the Sample

The seven year annualized closing BHAR was considered together with the company characteristics, market factors and short-term performance discussed in the characteristics of the sample. The table below summarises the findings.

Table 7.4: Long-term returns and Characteristics

Characteristic		% of Total Sample	Average BHAR	Correlation	Significance
Cyclical Markets	Hot	75.22%	-29.55%	N/A	0.000***
	Cold	24.78%	-15.60%		
Board of Listing	Main Board	65.13%	-21.20%	N/A	0.000***
	AltX	34.87%	-40.33%		
Sector of Listing	Basic Mat.	10.95%	-14.52%	N/A	0.000***
	Cons. Goods	17.29%	-18.49%		
	Industrial	9.51%	-26.95%		
	Fin. & Real	16.14%	-16.92%		
	Electronic	11.24%	-33.16%		
	AltX.	34.87%	-40.33%		
Age before Listing	>0 - 5	45.16%	-30.35%	0.766	0.025**
	>5 - 10	18.55%	-31.35%		
	>10 - 15	8.06%	-30.52%		
	>15	28.23%	-17.71%		
Offer Price	< 100c	11.53%	-42.81%	0.989	0.000***
	100 - 299.9c	39.77%	-34.72%		
	300 - 1 000c	27.95%	-21.18%		
	>1 000c	20.75%	-15.45%		
Issue Size	< R100	13.54%	-39.74%	0.819	0.000***
	R100-299.9	29.11%	-30.88%		
	R300-999.9	30.55%	-29.35%		
	R1000-10 000	21.04%	-14.95%		
	> R10 000	5.76%	-24.06%		
MAAR	< 0%	22.19%	-14.68%	-0.993	0.000***
	0 - 19.9%	38.33%	-26.11%		
	20.0 - 100.0%	28.24%	-33.03%		
	> 100.0%	11.24%	-46.95%		

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

In light of the findings in the table above the following can be concluded:

- **Cyclical markets:** A significant difference was found between cyclical markets and long-term IPO performance. Confirming the finding made by Neneh and Smit (2014:31) who noted that long-term IPO returns on the JSE are significantly affected by market periods. It was noted that the long-term returns over a seven year period in both hot and cold cyclical markets were negative. Thus, although cold market periods indicated significantly better long-term returns the average returns were still negative. Even though the difference in long-term returns were significant, investing in IPOs which listed during cold market periods from 1996 till 2007 did not guarantee positive long-term returns but rather less negative long-term returns. Govindasamy (2010:42) also found negative long-term returns on the JSE in hot as well as cold market periods for 229 IPOs listed from 1995 till 2006, with hot market periods displaying the worst long-term returns.
- **Board of listing:** It was observed that a significant difference existed between the board of listing and long-term returns. The seven year closing BHAR on both the Main Board and the AltX were negative. Thus, IPOs listed on the AltX from 1996 till 2007 displayed significantly worse long-term returns, although the returns on the Main Board were also negative. This observation is in line with the findings concluded by Manikai (2011:31) who studied 76 IPO companies listed from 2004 till 2007, he also found better long-term returns for IPOs listed on the Main Board relative to the AltX.
- **Sector of listing:** In the data analysis a significant difference between the sector of listing and long-term returns was established. It was noted that all six sectors reported a negative seven year closing BHAR. Without taking the AltX in to account because it has already been discussed, the Electronic sector had the lowest long-term returns with a BHAR of -33.16%, Demers and Joos (2005:37) noted in their study of US IPOs that technological companies displayed the worst long-term performance and attributed the disappointing long-term returns to the dotcom bubble of 1997-2000. The sector with the best long-term performance was the Basic Material sector (which included mining companies) with a BHAR of -14.52%. Govindasamy (2010:66) attributes the

good performance of mining IPOs on the JSE to South Africa's rich resources and high commodity prices in the early 2000s. Ngeke and Smit (2014:248) who studied the three year performance of IPOs on the JSE also found that the Electronic sector performed the worst with a BHAR of -101.40% and that the Basic Material sector performed the best with a BHAR of -50.8%.

- **Average age before listing:** There was a significant difference between long-term IPO returns and company age before listing. A positive correlation of 0.766 indicated that older companies at the point of IPO had better long-term returns. It should be noted that all the categories of age before listing displayed a negative seven year closing BHAR, confirming that although the difference in long-term returns were significant, a larger age of a company before listing will not guarantee positive long-term returns but rather less disappointing long-term returns. Ritter (1991:20) also found negative long-term returns for US IPOs with an age before listing of 19 years or less.
- **Offer price:** The initial offer price and long-term returns were found to be significantly different. A positive correlation of 0.989 indicated that a larger offer price at the point of IPO had better long-term returns. It should however be noted that all the categories of initial offer price displayed a negative average seven year closing BHAR, confirming that although the difference in long-term returns were significant, a larger initial offer price did not necessarily ensure positive long-term returns but rather minimized disappointing long-term returns. M'kombe and Ward also found a significant difference between IPO long-term returns and the initial offer price for companies listed on the JSE; with larger initial offer price IPOs having better long-term returns.
- **Issue Size:** In the data analysis a significant difference between the issue size and long-term returns was established. A positive correlation of 0.819 indicated that a larger IPO issue size had better long-term returns. It should however be noted that all the categories of issue size displayed a negative average seven year closing BHAR, confirming that although the difference in long-term returns were significant, a larger IPO issue size did not guarantee positive long-term returns but rather less disappointing long-term returns. This was confirmed by companies with an issue size smaller than R100 million

displaying an average seven year closing BHAR of -39.74%, and companies with an issue size greater than R10 000 million reporting an average seven year closing BHAR of -24.06%. Ngeek and Smit (2014:249) did not only find a significant difference between the issue size and the three year BHAR but also noted a negative correlation, which is in line with this study. Ngeek and Smit (2014:248) noted that the average three year BHAR for companies with an issue size larger than the median of the sample had returns of -79.9% and companies with an issue size smaller than the median of the sample displayed returns of -46.9%.

- **Day one MAAR:** A significant difference was observed between the day one MAAR and long-term returns. A negative correlation of -0.993 confirmed that a high day one MAAR resulted in significantly negative long-term returns. Companies with a day one MAAR greater than 100% displayed an average seven year closing BHAR of -46.95%, whereas companies with a negative day one MAAR had an average seven year closing BHAR of only -14.68%. This observation provides evidence to suggest that even though companies are not underpriced on day one, on average they still reported negative long-term returns. Nevertheless, the difference was still found to be significant suggesting that substantially better long-term returns were earned for companies which displayed a negative day one MAAR on the JSE from 1996 till 2007. M'kombe and Ward (2015:14) also noted that IPOs with a higher initial premium displayed poorer long-term returns on the JSE. However, their findings were found to be insignificant.

7.3.3 Failed, Other and Successful IPOs

The second main focus of this study was to report on the performance of IPOs on the JSE from 1996 till 2007 and more specifically on the failure during this time. Company performance was divided into three main categories namely, failure, other and success. This study defined an IPO as a failure if the IPO delisted from the JSE with reasons such as 'failure', 'no longer quality for listing', 'failure to comply with JSE requirements' and 'Section 17 of the Stock Exchanges Control Act 1985' it was also considered a failure if the shares of the company traded below 20 cents and showed no share price movement for five consecutive months. An IPO was

classified as 'Other' if it managed to survive for the duration of the study or if it delisted (for reasons other than failure) or merged. The 'Other' category also included IPOs with a negative absolute return over seven years (BHR < 0%). An IPO was classified as a success if there was an increase in the share price in absolute terms (BHR) from the original offer price over the period of study. The table below documents the distribution of IPO performance found in the sample.

Table 7.5: The three categories of IPO performance

Performance	N	% of Total Sample
Failure	100	28.82%
Other	172	49.57%
Success	75	21.61%
Total	347	100%

In Table 7.5 it was noted that 29% of the whole sample failed, 50% were classified as Other and 21% of all the companies listed on the JSE from 1996 till 2007 were successful.

The failure of IPOs have been documented worldwide and from previous studies all indications point to the fact that the failure rate of IPOs are on the increase. Demers and Joos (2005:37) who studied IPOs worldwide from 1997 until 2000 and found an average long-term failure rate of 18.97%, whereas Kooli and Meknassi (2007:39) found a long-term failure rate of 44.82% for US IPOs listed from 1985 until 2005. The failure rates in other international markets include 66.85% of IPOs on the UK Alternative Investment Market (Amini and Keasey, 2013:725) and 48.52% of Canadian IPOs (Carpentier and Suret, 2011:109).

Very similar to the failure rate found in this study, Neneh (2013:177) also noted 20.97% failure rate of IPOs listed on the JSE over a twelve year period. Thus, failure is not limited to only one market and at least in the US IPO market, the failure rate has been increasing over the years.

The table below summarises the findings concerning only the failure (excluding Other and successful IPOs) together with the company characteristics, market factors and short-term performance discussed in the characteristics of the sample.

Table 7.6: Failure and Characteristics

Characteristic		% of Total Sample	Average	Significance
Cyclical Markets	Hot	30.92%	N/A	0.089***
	Cold	22.35%	N/A	
Board of Listing	Main	19.91%	N/A	0.000***
	AltX	45.45%	N/A	
Sector of Listing	Basic Mat.	2.82%	N/A	0.001***
	Cons. Goods	3.46%	N/A	
	Industrial	2.02%	N/A	
	Fin. & Real	1.73%	N/A	
	Electronic	2.88%	N/A	
	AltX	15.85%	N/A	
Age before listing	N/A	29.44%	5.50	0.036**
Offer Price	N/A	28.82%	175.97	0.000***
Issue Size	N/A	28.82%	232.43	0.000***
MAAR	N/A	28.82%	136.47%	0.076*

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

In light of the findings in the table above the following can be concluded:

- Cyclical markets:** A significant difference between IPO performance and cyclical markets were found. The substantial number of listings and high failure rates noted during hot market periods may give rise to assumption that companies listed on the JSE from 1996 till 2007 took advantage of the “window of opportunity”. As a result of the high demand for public equity, private companies see this as an opportunity to take advantage of investor’s sentiment and to issue an IPO (Kooli and Meknassi, 2007:115), subsequently resulting in immature and inexperienced companies to go public which severely increases the probability of failure (Demers and Joos, 2007:350). Neneh (2013:224) also concluded that the failure of IPO companies on the JSE are much higher during hot market periods. The findings also confirmed the conclusions of Loughran and Ritter (2004:17) (who studied IPOs worldwide), Kooli and Meknassi (2007:115) (who studied US IPOs) and Ahmad (2012:7) (who studied UK IPOs), which is that the failure rate during a hot market period is higher than during a cold cyclical market.

- **Board of listing:** In the data analysis a significant difference between IPO performance and the board of listing was found. Although there were more listings on the Main Board than the AltX, the AltX reported the highest failure rate at 45.45% as appose to the 19.91% failed IPOs listed on the Main Board. This observation confirmed the riskiness of IPOs which listed on the AltX. This is in line with the observation made by Manikai (2011:32) who also noted that IPOs listed on the AltX of the JSE were 117% riskier than IPOs listed on the Main Board. Although their definitions of failure were not as conservative as this study's, Amini and Keasey (2013:730) (who studied IPOs in the UK), Bradley *et al.* (2006:25) (who studied IPOs in the US) as well as Carpentier and Suret (2011:109) (who studied Canadian IPOs) also found abnormally high levels of failure on alternative exchanges/boards at 66.8%, 51.4% and 48.52% respectively.
- **Sector of listing:** The difference between the sector of listings and IPO performance proved to be significant. Without taking the AltX into account because it has already been discussed, the sector with the highest failure rate was also the sector with the largest number of listings which is the Consumer Goods sector. The sector with the second highest failure rate is the Electronic sector. Neneh (2013:180), who studied IPOs on the JSE, also noted a 40% failure rate for companies in included in her Other category. Amongst the sectors included in this Other category were Consumer Goods and Electronic companies.
- **Average age before listing:** Of all the companies listed (excluding the companies with an age of zero), 29.44% of all companies failed based on their age. The average age of failed companies was noted to be 5.5 years. These findings proved to be significant. On the JSE Ngek and Smit (2014:15) established a positive relationship between IPO failure and company age.
- **Offer price:** A significant difference was noted between the initial offer price and IPO performance. Failed IPO companies on the JSE accounted for 28.82% of the whole sample and had an average initial offer price of 175.97 South African cents from 1996 till 2007. Carpentier and Suret (2011:15) (who

studied Canadian IPOs) also indicated that a low initial offer price increases the likelihood of IPO failure.

- **Issue Size:** The average issue size of failed IPO companies was noted to be R232.43 million. This relationship was also found to be significant. On the JSE Neneh (2013:181) concluded a 65% failure rate for IPO companies with an issue size of R200 million or less, which is to a large extent what was observed in this study.
- **Day one MAAR:** With regards to MAAR and failure, a significant difference was noted between the day one MAAR and IPO performance. Failed IPO companies displayed an average day one MAAR of 136.47%. This observation confirmed the findings noted by Kooli and Meknassi (2007:113) (who studied US IPOs) as well as Alhadab *et al.* (2015:70) (who studied UK IPOs) who also found that failed IPOs tend to display the highest initial returns.

7.4 IPO FAILURE AND LONG-TERM PERFORMANCE

The final part of the data included the analysis of the two main focus points of this study in conjunction with each other. A significant difference was observed between the performance and the long-term returns of IPOs. It was found that failed IPOs displayed an average closing BHAR of -60.69%, confirming that failed IPO companies reported abnormally disappointing returns. Other companies, which include surviving, delisted (for reasons other than failure) or merged IPOs, noted to have an average BHAR of -19.52%, whereas successful companies displayed an average BHAR of -3.26%. Demers and Joos (2005:41), who studied US IPOs, also concluded that IPOs with increased failure risk were also the IPOs with the worst long-term BHARs. They found that IPOs which displayed a high risk of failure reported a BHAR of -50.17% over a two year period.

7.5 RECOMMENDATIONS TO INVESTORS

Taking the above mentioned into consideration the following will be recommended to investors to be able to identify IPOs with high failure risk and potential poor long-term returns. With regards to cyclical markets, investors need to be particularly cautious

when investing in an IPO which lists during a hot market period as a significant difference was found between cyclical markets and IPO failure as well as long-term returns. When considering the board of listing, the AltX proved to have the most company failures as well as the worst long-term returns. With regards to the sector of listing, it will be recommended to avoid sectors which experience high volumes of listings, especially during hot market periods. These listings have proved to produce poor long-term returns and increased risk of failure, as was the case with the Electronic and Industrial sectors on the JSE from 1996 till 2007. A significant difference was established between IPO age before listing and long-term returns as well as IPO failure, with companies which had an age of 15 years or more before listing displaying the best long-term returns and failed IPO companies having an average age before listing of 5.5 years. An initial offer price of below 175.97 cents and an issue size smaller than R232.43 million greatly improved the chances of poor long-term returns and company failure.

Thus, in order to avoid IPO failure and poor long-term returns, it would be recommended to investors to favour IPOs with a high initial offer price and a big issue size. The possibility of poor long-term performance as well as IPO failure is also increased when the day one MAAR is 136.47% or greater. Conclusively, it is recommended to investors to take all the market factors, company characteristics and initial share price movements mentioned above into consideration when making an investment decision, as it will assist them in being able to identify potential failing IPO companies and companies with poor long-term returns.

7.6 ACHIEVEMENT OF OBJECTIVES

7.6.1 Achievement of the Primary Objective

The primary objective of this study was to investigate the long-term performance of 347 IPO companies listed on the Johannesburg Stock Exchange (JSE) from 1996 to 2007. With the main purpose being able to assist investors in their IPO selection process by presenting them with factors and characteristics which can assist them in identifying potentially failing IPO companies and IPO companies with poor long-term returns.

The achievement of the primary objective was made possible by the reading and documenting the findings and conclusions of previous studies, both locally and internationally. With the main focus of this study being on the long-term performance of failed IPO companies on the JSE, Chapter 3 made mention of the long-term underperformance noted not only on the South African stock exchange but also on stock exchanges worldwide. Chapter 4 went on to document the level of failure as well as the characteristics associated with failed IPO companies. Therefore based on the findings, conclusions and recommendations of previous studies, Chapter 6 went about documenting the relationship between market factors, company characteristics and initial share price movements together with the failure of IPO companies as well as the long-term returns of IPO companies. It was found that 29% of all the IPOs in the sample failed and that the closing BHAR over a seven year observation period was -27.31%.

7.6.2 Achievement of the Secondary Objectives

The realising of the primary objective was made possible through the achievement of the secondary objectives of this study. The secondary objectives and the manner in which they were achieved are mentioned below.

- To study the performance of IPOs listed on the JSE from 1996 to 2007: In Chapter 6 it was noted that 28.82% of all the companies failed, 49.57% were classified as other and 21.61% were deemed to be successful.
- To compare the failure of IPOs on the JSE to failure of IPOs in other markets internationally and to determine if the IPO environment on the JSE is better or worse compared to the rest of the world: It was noted that Demers and Joos (2005:37) who studied IPOs worldwide from 1997 until 2000 found an average long-term failure rate of 18.97%, whereas Kooli and Meknassi (2007:39) found a long-term failure rate of 44.82% for US IPOs listed from 1985 until 2005. The failure rates in other international markets include 66.85% of IPOs on the UK Alternative Investment Market (Amini and Keasey, 2013:725) and 48.52% of Canadian IPOs (Carpentier and Suret, 2011:109). Thus, compared to other world markets the JSE has substantially lower failure rates, at 28.82%.

- To assert whether the yearly long-term returns of IPOs change significantly over a seven year period on the JSE: In Table 6.18 It was noted that from year one (close) till year four the yearly BHAR was negative, however from year five till year seven the average yearly BHAR was positive. Indicating that on a yearly basis IPOs are able to outperform the ALSI.
- To determine if the IPOs underperformed the JSE in absolute and relative terms over a seven year period: Table 7.3 reported that the average seven year annualized BHR as well as the BHAR were negative. Confirming that IPOs generated negative returns both in relative and absolute terms.
- To report on the day one performance of IPOs on the JSE from 1996 till 2007; and to find out whether initial share price returns had a determining impact on long-term IPO returns and failure: It was found that IPOs were underpriced on day one with a MAAR of 25.85%. It was also noted that the day one MAAR did have a significant impact on IPO long-term returns and IPO failure, with failed IPOs displaying an average day one MAAR of 136.47%.
- To determine whether company characteristics can be used to explain the long-term returns and failure of IPOs listed on the JSE: from 1996 till 2007 It was found that the company's age before listing, the initial offer price and issue size had a significant impact on IPO long-term returns and failure.
- To examine if IPO failure and long-term returns can be explained through market factors: Cyclical markets, the board of listing as well as the sector of listing proved to be significant when considering IPO long-term returns and failure.

7.7 CONTRIBUTION

This study contributed to the existing literature of IPO studies on the JSE. Another benefit is that the sample size is very comprehensive and up to date, which will allow any interested party to have access to timely findings pertaining to IPO long-term performance and failure on the JSE.

This study was of particular importance to companies, existing shareholders and possible investors, as they are constantly looking for methods, models and measurements to forecast and predict financial distress and prevent any losses of their original investment. Therefore, this study assists in the selection process for investors whereby they will be able to identify failing IPO companies and also assist them to rather invest in potentially successful IPOs, which will allow them to experience above average long-term returns. As a result of improving the selection process for investors, companies will also be able to price their shares more correctly and hence “leave less money on the table” during the process of going public.

The characteristics and factors covered in this study will also assist the underwriters of IPO companies. Underwriters will be able to identify and distinguish between possible successful and failing companies. This will substantially decrease the risk for an investment bank looking to underwrite an IPO with a high failure risk. The findings will also act as an early warning system to identify any irregularities in the company which may lead to failure. This study will thus make it possible for companies, existing shareholders and investors to react in a timely manner, while also improving the selection process by being able to differentiate between possible favourable and unfavourable IPO opportunities.

The other main contribution of this study was that it made use of natural logarithmic transformations in addressing skewed data. The use of natural logarithmic transformation on skewed data is crucial in ensuring more representative and reliable data. Natural logs were used on the age of the company before listing, the initial offer price, the issue size and the day one returns.

7.8 LIMITATIONS OF THIS STUDY

The limitations to this study include the following:

- Although other studies on the JSE made use of the cumulative abnormal return (CAR) technique (Neneh, 2013:213; Mashaba, 2014:45 as well as M'kombe and Ward, 2015:9) this study measured long-term performance of IPOs by only making use of the buy-and-hold abnormal return (BHAR) technique.
- The all share index (ALSI) was used as the only benchmark against which the long-term performance of IPOs were measured.
- With the main focus of this study being on the long-term returns of failed IPO companies, little attention was given to the short-term performance of IPO shares. Only the initial share price movements on day one were taken into account. It has been proved that initial share price movements of IPOs on the JSE is a determining factor when considering long-term performance (Lattimer, 2006:171; Muller, 2011:51; Govindjee, 2012:38; Neneh, 2013:154)
- Although, as noted in Chapter 4, the financials of a company proved to be a determining factor in long-term IPO performance (Fama and French, 2004:265; Jain *et al.*, 2008:166; Pour and Lasfer, 2013:4853; Alhadab *et al.*, 2015:55) financials of the companies in this study were not considered.

7.9 AREAS OF FURTHER STUDY

The recommendations for future studies include the following:

- This study also focused only on South African IPO companies that initially listed on the JSE (companies with the primary listing on the JSE). Other studies could focus on international companies who issue a secondary IPO listing on the JSE.
- The main focus of this study was on the long-term performance of failed IPO companies, where the performance of these companies were compared to the long-term performance of successful companies. However, almost 50% of the

study sample consisted of surviving, delisted or merged companies. Other studies could investigate the behaviour of these companies to come to a meaningful conclusion.

- Another company characteristic which was not considered in the empirical findings is the prestige of the underwriters. Weber and Willemborg (2003:686), Howton (2006:429), Demers and Joos (2007:350) and Dong *et al.* (2011:219) found evidence that prestigious underwriters improve the chances of long-term company success. Future studies could aim to assert whether this is also true for IPOs listed on the JSE.
- As this study did not take the competence of the management team of each company into account, it is encouraged that future studies also need to consider the management of an IPO company and their ability to steer the company to success. Howton, Howton and Olson (2001:111); Crutchley *et al.* (2002:84) as well as Howton (2006:428) proved the significant role the management team plays in the success of the IPO company in the aftermarket.
- This study considered the first and second hot market period as a single hot market period. Thus, further studies could be done to investigate IPO performance in the first and second hot market period separately to come to a meaningful conclusion. In 2015, Prof. Van Aardt Smit and the author did compile a research paper titled “Are the changing performance and characteristics of IPOs over the last two consecutive hot market periods on the JSE reasons for concern?” Which is included in this study under the heading of Research Output on page 253.

7.10 CONCLUSION

The aim of this chapter was to, (1) discuss the findings concluded in the literature; (2) to conclude the empirical findings noted in the previous chapter, (3) to present recommendations to investors and companies alike, (4) to provide an overview of the objectives completed, (5) to note any limitations of this study and (6) to identify any areas of future study.

The first chapter of this dissertation served as an introductory chapter to this study and includes the problem statement and research objectives. The second chapter gave an overview of the IPO process and where an IPO finds its place in the life cycle of a business. The role of a stock market was also discussed along with the listing requirements of the JSE Main Board and AltX. Mentioning was also made of the advantages and disadvantages of going public. Chapter 3 documented the two main anomalies associated with IPOs which is the long-term underperformance and the initial underpricing. The general deduction from recent studies affirmed the occurrence of long-term underperformance and initial underpricing of IPOs worldwide. The fourth chapter documented the failure and success of IPOs. The company characteristics and market factors impacting on the long-term performance of IPOs were also discussed.

Chapter 5 described the research methodology. It was noted that the market adjusted abnormal return technique (MAAR) would be used to measure the day one abnormal returns. With regards to the long-term performance of IPOs the buy-hold-abnormal-return technique (BHAR) was employed. Mentioning was also made of the fact that all the industries on the JSE were divided into six main categories, namely: Basic Material, Consumer Goods, Industrial, Financial and Real Estate, Electronic (information technology) and AltX. In Chapter 6 the analysis of the data was done. Natural logarithmic transformations were also performed and documented on skewed data. The variables that were skewed and needed Log N transformations included the age of the companies before listing, the initial offer price, the offer size and the day one MAAR. The first part of Chapter 6 entailed presenting the characteristics of the study sample, the second part documented the long-term returns of IPOs together with the characteristics of the sample, the third part of Chapter 6 the performance, with the emphasis on the failure of IPOs, were analyzed in combination with the characteristics of the sample.

In this chapter it was emphasised that companies listed on the JSE from 1996 to 2007 had on average long-term returns of -27.31% over a seven year observation period based on the closing BHAR. The short-term performance was also noted to be abnormally high, with the day one MAAR being 25.85%. These observations confirmed that IPOs on the JSE were initially underpriced and underperformed the

ALSI over the long-term from 1996 until 2007. Almost 30% of the IPOs included in the study sample were deemed to be failures.

In conclusion to the empirical findings it was noted that the poor long-term returns of failed IPO companies on the JSE are amplified during hot market periods, confirming the “window of opportunity”. With regards to the board of listing, poor long-term returns and higher failure rates were noted on the AltX. Additionally, a company listing in a sector which is accompanied by abnormally high number of issues are most likely a company with a higher risk of poor long-term returns and failure. A low age before listing, a small offer price and a low issue size are also associated with the increased probability of poor long-term returns and company failure. A negative relationship was found between the initial share price movements and the long-term returns of IPOs. Thus, in the analysing of the data it was found that cyclical markets, the board of listing, the sector of listing, age before listing, the initial offer price, the issue size and the day one MAAR are all significant determinants of IPO failure and long-term returns. It was therefore recommended to investors to take all the market factors, company characteristics and initial share price movements into consideration when making an investment decision, as it will assist them in being able to identify potential failing IPO companies with poor long-term performance.

The achievement of objectives were also mentioned. The primary objective of this study was to investigate the failure as well as the long-term performance of IPO companies on the JSE from 1996 until 2007. This objective was achieved primarily via Chapter 6. It was noted that 28.82% of all the IPOs in the sample failed and that the average closing BHAR over a seven year observation period was -27.31%.

Finally the limitations and recommendations of this study were also mentioned. Some limitations included the use of only one long-term performance measuring technique (BHAR), the use of the all share index (ALSI) as the only benchmark, the consideration of only the day one MAAR and also the fact that company characteristics such as financial ratios, venture capital backing and underwriters prestige were not considered. Recommendations for further studies include the consideration of the impact of a prestigious underwriter on the aftermarket performance of IPOs, the performance of venture capital backed IPOs versus non-venture capital backed IPOs over the long-term. Almost half of the IPOs in the study

sample were categorised as survived, delisted or merged. Future studies could therefore investigate the reasons and explanations for the manner in which these companies behave in the aftermarket.

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APPENDIX 1

The table below documents the JSE industries divided into the six sectors which were used in this study.

Sector	JSE Industry
Basic Material	Basic Materials Oil and Gas Mining
Construction	Building and Construction Development Engineering
Industry	Agriculture Beverages and Hotels Consumer Goods Chemicals Clothing Education Food Furniture Healthcare Media Packaging and printing Pharmaceutical & Medical Retail Stores Transport
Financial	Banks Financial services Investment trusts Insurance Mining Houses Private Equity
Electronic (Information Technology)	Electronic Technological
Real estate	Property Redevelopment
Venture Capital	AltX listings

APPENDIX 2

As noted in Chapter 5, from 1996 until 2007 361 IPO companies listed on the JSE, however only 347 had sufficient information available to include in the final sample.

The table below documents all 426 IPO companies listed from 1996 until 2007 together with the share codes of each share as well as the year of listing.

IPO COMPANY	Share Code	List Date
Admiral Leisure World	ADL	1996
ENERGY AFRICA LIMITED	ENR	1996
Clicks Group Ltd	NCL	1996
NATIONAL CHICK LIMITED	NCX	1996
Masterfridge Ltd	FGM	1996
Howden Africa holdings Ltd	HWN	1996
ENVIROSERV HOLDINGS LIMITED	ENV	1996
SWEETS FROM HEAVEN HOLDINGS LIMITED	HVN	1996
Alliance Pharmaceuticals	ALN	1996
CHILLERS GROUP LIMITED	CHL	1996
CARSON HOLDINGS LIMITED	CRS	1996
Buildmax Ltd	BDM	1996
HOMECHOICE HOLDINGS LIMITED	HCH	1996
KALAHARI GOLDRIDGE MINING COMPANY LIMITED	KGL	1996
Rebserv Holdings	RBV	1996
ALEXANDER FORBES GROUP LIMITED	AFB	1996
AMLAC LIMITED	ALC	1996
AFGRI Ltd	AFR	1996
Abacus Technology Holdings Limited	ABC	1996
TEREXKO LIMITED	TRX	1996
Netcare Ltd	NTC	1997
CELTRON TECHNOLOGIES LIMITED	CTC	1997
STOCKS HOTELS & RESORTS LIMITED	SCH	1997
Megacor Holdings Ltd	MGC	1997
Mustek Ltd	MST	1997
TOURISM INVESTMENT CORPORATION LIMITED	TRT	1997
NANDO'S GROUP HOLDINGS LIMITED	NDS	1997
Amalgamated Appliance Holdings Ltd	AMA	1997
SAFLIFE LIMITED	SFL	1997
BHP Billiton Plc	BIL	1997
Afribrand Holdings Limited	ABR	1997
OTR MINING LIMITED	OTR	1997
CHESTER INVESTMENT HOLDINGS LIMITED	CES	1997

Computer Configurations Holdings Limited	CCH	1997
African Harvest Ltd	AHV	1997
Software Connection Group Limited (Software)	CCT	1997
SOUTHERN MINING CORPORATION LIMITED	SMC	1997
AM Moolla Group	AGR	1997
MMW Technology Holdings Limited	MMW	1997
Woolworths Holdings Ltd	WHL	1997
Bonatla Property Holdings Ltd	BNT	1997
Moulded Medical Supplies Ltd	MUM	1997
NBS Boland Group Ltd	NBB	1997
Excel Medical Holdings Limited	EXC	1997
Enterprise Risk Management (Spec Outsourc)	OUS	1997
Paragon Business Forms Limited	PAG	1997
O'Hagan's Investment Holdings Limited	OHA	1997
Set Point Technology Holdings Limited	STO	1997
The House of Busby Limited	BSB	1997
RADIOSPoor TECHNOLOGY HOLDINGS LIMITED	RDS	1997
ABRAXAS INVESTMENT HOLDINGS LIMITED	ARX	1997
MOLOPE FOODS	MOL	1997
RETAIL APPAREL GROUP LIMITED	RAG	1997
Astrapak Ltd	APK	1997
ADvTECH Ltd	AVE	1997
Awethu Breweries Ltd	AWT	1997
Beige Holdings Ltd	BEG	1997
Thabex Ltd	TBX	1997
Trematon Capital Investments Ltd	TMT	1997
AMB Holdings Limited	AMB	1997
Wetherlys Investment Holdings Limited	WET	1997
Chet Industry Limited (Integrate cons)	ICO	1997
Prima Toy and Leisure Group	PRT	1997
WineCorp Limited: savanha	SVH/WNE	1997
Aquila Growth Limited	AQL	1997
ITI TECHNOLOGY HOLDINGS LIMITED	ITI	1997
NE T1 APPLIED TECHNOLOGY HOLDINGS LIMITED	APL	1997
African Media Entertainment Ltd	AME	1997
FASHION AFRICA LIMITED	FSH	1998
SERVEST HOLDINGS LIMITED	SRV	1998
TRIDELTA MAGNET TECHNOLOGY HOLDINGS LIMITED	TDL	1998
Barnard Jacobs Mellet Holdings Limited	BJM	1998
Infiniti Technologies Limited	INF	1998
RENAISSANCE RETAIL GROUP LIMITED RENAISSANCE	RNS	1998
TOP INFO TECHNOLOGY HOLDINGS LIMITED	TOT	1998

Technology Communication Holdings Limited	TCM	1998
Qala Group Limited: tallow	QLA	1998
IOTA Financial Services Limited	IOT	1998
MSI HOLDINGS LIMITED	MSH	1998
Primeserv Group Ltd	PVT	1998
Lonrho Africa plc	LAF	1998
Truworths International Ltd	TRU	1998
Onelogix Group Ltd (Venmil)	VNM	1998
E-data Holdings Limited	EDT	1998
Zaptronix Ltd	ZPT	1998
Iliad Africa Ltd	ILA	1998
Peregrine Holdings Ltd	PGR	1998
Real Africa Durolink Holdings limited	RAD	1998
Unifer Holdings: credit sure	CDS	1998
ACCORD TECHNOLOGIES LIMITED	ACR	1998
BRYANT TECHNOLOGY LIMITED	BRY	1998
Brimstone Investment	BRT	1998
NIMBUS HOLDINGS LIMITED	NMB	1998
Comair Ltd	COM	1998
CORE HOLDINGS LIMITED	COR	1998
GLOBAL VILLAGE HOLDINGS LIMITED	GLL	1998
Value Com Holdings Limited	VLC	1998
BILLBOARD COMMUNICATIONS LIMITED	BLB	1998
Intertrading Limited	ITR	1998
IDION TECHNOLOGY HOLDINGS LIMITED	IDI	1998
KROONDAL KPM	KPM	1998
VIKING INVESTMENTS & ASSET MANAGEMENT LIMITED	VKG	1998
EOH Holdings Ltd (Enterprise)	EOH	1998
Aqua Online holdings: ABSEC	ABE	1998
MICROmega Holdings Ltd:legven	LGV	1998
CRUX TECHNOLOGIES LIMITED	CRX	1998
WORLD EDUCATIONAL TECHNOLOGIES LIMITED	WTC	1998
IST Group Limited	IST	1998
Gijima Ast Group Ltd: abraxas	GIJ	1998
UCS Group Limited	UCS	1998
MB Technologies	MBT	1998
TERRAFIN HOLDINGS LIMITED	TRF	1998
Datacentrix Holdings Ltd	DCT	1998
EMERALD TOPBRAND SPORTS LIMITED	ETS	1998
Steinhoff International Holdings Ltd	SHF	1998
MORESPORT HOLDINGS LIMITED	SPR	1998
Adapt IT Holdings limited: infowave	IFW	1998

ConvergeNet Holdings Ltd: vesta technology	VST	1998
PENTACOM HOLDINGS LIMITED	PNT	1998
Value Group Ltd	VLE	1998
Compu- Clearing Outsourcing Ltd	CCL	1998
Indequity Group Ltd	IDQ	1998
AFRICAN PARTNERSHIPS LIMITED	PTR	1998
WHETSTONE INDUSTRIAL HOLDINGS LTD	WTS	1998
EC-Hold Limited	ECH	1998
Purple Capital Ltd / DecTronic	DTR	1998
OSI HOLDINGS LIMITED	OSI	1998
GLOBAL TECHNOLOGY LIMITED	GLT	1998
CAPE EMPOWERMENT TRUST LIMITED	CAE	1998
EQUINOX HOLDINGS LIMITED	EQX	1998
SECUREDATA SOLUTIONS LIMITED	SDA	1998
Faritec Holdings Ltd	FRT	1998
SOTTA SECURITISATION INTERNATIONAL LIMITED	SOT	1998
Sanlam Ltd	SLM	1998
PLASGROUP LIMITED	PLG	1998
Digicore Holdings Ltd	DGC	1998
JEM TECHNOLOGY HOLDINGS LIMITED	JMH	1998
Micrologix Limited	MRX	1998
DECOMAC HOLDINGS LIMITED	DOC	1998
METROPOLIS	MTR	1998
ISA Holdings Ltd (Y3K)	YHK	1998
AH- vest Ltd (All Joys Food)	ALJ	1998
Adrenna (Quyn Holdings)	QUY	1999
President Steyn Gold (Skills Accel)	SKL	1999
African Dawn Capital Ltd (ABC Cash)	APS	1999
Conduit Capital Ltd (The Appleton Bank)	APT	1999
MERCURY ALPHA CAPITAL LIMITED	MAC	1999
Thuthukani Group Limited	THK	1999
Tile Afrika Holdings Limited	TLF	1999
Gray Security Services Limited	GRA	1999
HIX TECHNOLOGIES LIMITED	HXT	1999
SMACSOFT GROUP LIMITED	SMT	1999
Women Investment Portfolio Holdings Limited	WPH	1999
TAUFIN HOLDINGS LIMITED	TUF	1999
MILLIONAIR CHARTER LIMITED	MIL	1999
Cadiz Holdings Ltd	CDZ	1999
SilverBridge Holdings Ltd/Synergy	SNG	1999
NetActive	NET	1999
Foneworx Holdings Ltd (Interconnective Sol)	ITL	1999

APS TECHNOLOGIES (PTY) LTD	APE	1999
ESSENTIAL BEVERAGE HOLDINGS LIMITED:Essent	ESS	1999
Sekunjalo Investments Ltd	SKJ	1999
AMB PRIVATE EQUITY PARTNERS	APP	1999
Elvey Security Technologies	ESC	1999
NATIONAL SPORTING INDEX LIMITED	NSI	1999
ACUITY GROUP HOLDINGS LIMITED	ACY	1999
Appleton Limited	ALE	1999
STREAMWORKS Group Limited	SNMK	1999
NOBLE MINERALS LIMITED	NBL	1999
Stella Vista Technologies Ltd	SLL	1999
FORZA GROUP LIMITED	FOZ	1999
MoneyWeb Holdings Ltd	MNY	1999
Liberty International	LBH	1999
Magnum Global Funds	MGF	1999
Acumen Holdings Limited	AUM	1999
Aveng Ltd	AEG	1999
ShawCell Telecommunications Limited	SWL	1999
Old Mutual plc	OML	1999
AG Industries Ltd (African Glass)	AGS	1999
Bynx Limited	BYX	1999
Intervid Limited	ITV	1999
NEDCOR INVESTMENT BANK HOLDINGS LIMITED	NIB	1999
Omega Alpha Int IT	OAI	1999
SPEARHEAD PROPERTY HOLDINGS LIMITED	SPE	1999
INCENTIVE HOLDINGS LIMITED	ICT	1999
SecureData Holdings Ltd (ERP.COM)	ERP	1999
Fe SQUARED HOLDINGS LIMITED	FEQ	1999
PRADA TECHNOLOGIES LIMITED	PDH	1999
Discovery Holdings Ltd	DSY	1999
Spur Corporation Ltd	SUR	1999
PRIMEGRO PROPERTIES LIMITED	PMG	1999
CENTURY CARBON MINING LIMITED	CNY	1999
Command Holdings Ltd	CMA	2000
Redefine Properties Ltd	RDF	2000
Square One Solutions Group Limited	SQE	2000
ALLAN GRAY PROPERTY INVESTMENTS LIMITED	GRV	2000
m Cubed Holdings Ltd (Escher)	0	2000
Massmart Holdings Ltd	MSM	2000
THE INTERNET GAMING CORPORATION LIMITED: Igaming	IMG	2000
SEMPRES INTERNATIONAL TECHNOLOGY HOLDINGS LTD	SEM	2000
Remgro Ltd	REM	2000

Tradehold Ltd	TDH	2000
ApexHi Properties Limited	AXI	2001
Astral Food	ARL	2001
Shops For Africa Ltd	SFA	2001
Nova Educ & Tech Hlds Ld	ETH	2001
SA RETAIL PROPERTIES LIMITED	SRL	2001
Exxaro Resources Ltd	KMB	2001
Kumba Resources Ltd	KMB	2001
Stratcorp Ltd	STA	2001
Fairvest Property Hldgs	FVT	2001
Capitec Bank Holdings Ltd	PHM	2002
Acucap Properties Ltd	ACP	2002
Spectrum Shipping Ltd	SUM	2002
AFRICAN RAINBOW MINERALS GOLD LIMITED	AOD	2002
iFour Properties Limited	IFR	2002
Phumelela Gaming and Leisure Ltd	PHM	2002
Investec Plc	INP	2002
Resilient Property Income fund Ltd	RES	2002
Beget Holdings Limited	BEE	2002
Telkom SA Ltd	TKG	2003
Coronation Fund Managers Ltd	CML	2003
Micc Property Income Fnd	MCP	2003
Exxoteq Ltd	EXO	2003
Emira Property Fund	EMI	2003
Bidbee Ltd	BDE	2003
Ambit Properties Limited	ABT	2004
Indus Credit Co Africa H	ICC	2004
Business connexion Grp L	BCX	2004
Vukile Property Fund Ltd	VKE	2004
Morvest Ltd (Xantium Tech)	XAN	2004
Xantium Tech Hldgs Ltd	XAN	2004
Peermont Global Ltd	PTG	2004
Milkworx Ltd	MKX	2004
Lewis Group Ltd	LEW	2004
Datapro Group Ltd	DTP	2004
The Spar Group Ltd	SPP	2004
Metoz Holdings Ltd	MOZ	2004
South Africa coal Mining holdings Ltd (Yomhlaba)	YBA	2004
Yomhlaba Resources Ltd	YBA	2004
Mvelaphanda Group Ltd	MVG	2004
Consol Ltd	CSL	2005
Makalani Holdings Limited	MKL	2005

Enaleni Pharmaceuticals	ENL	2005
New Corpcapital Ltd	NCA	2005
Verimark Holdings Ltd	VMK	2005
Wescoal Holding Ltd	WSL	2005
SIYATHENGA PROPERTY FUND LIMITED	SYA	2005
Chrometco Ltd	CMO	2005
Amalgamated Electronic	AER	2005
BioScience Brands Ltd (Wellco Health)	WLL	2005
Wellco Health Ltd	WLL	2005
Diversified Prop Fund Ld	DIV	2005
Tawana Resources NL	TAW	2005
Oasis Crescent Prop Fund	OAS	2005
CBS Property Portfolio Limited	CBS	2005
Oando Plc	OAD	2005
Miranda Mineral Holdings Ltd	MMH	2005
SXR Uranium One Inc	SXR	2005
Wesizwe Platinum Ltd	WEZ	2005
Primedia Limited	PRI	2006
Hospitality Property Fund A Ltd	HPA	2006
WG Wearne Ltd	WEA	2006
IFA Hotels and Resorts Ltd	IFH	2006
Esorfranki Ltd (ESCOR??)	ESR	2006
Eland Platinum Hldgs Ltd	ELD	2006
Teal Explore And Min Inc	TEL	2006
PSV Holdings Ltd	PSV	2006
Witwatersrand Consolidated Gold Resource Ltd	WGR	2006
Metmar Ltd	MML	2006
Sanyati Holdings Ltd	SAN	2006
JSE Ltd	JSE	2006
Madison Property fund	MDN	2006
Taste Holdings Ltd	TAS	2006
Dialogue Group Hldgs Ltd	DLG	2006
Gooderson Leisure Corporation Ltd	GDN	2006
Blue Financial services Ltd	BFS	2006
Litha Health care Group Ltd / Mariyad	MYD	2006
Myriad Medical Hldgs Ltd	MYD	2006
IPSA Group Plc	IPS	2006
Great Basin Gold Ltd	GBG	2006
Afrimat Ltd	AFT	2006
Kumba Iron Ore Ltd	KIO	2006
Workforce Holdings Ltd	WKF	2006
Celcom Group Limited	CEL	2006

Accentuate Ltd / Safic	SIC	2006
SAFIC HOLDINGS LTD	SIC	2006
African cellular Towers	ATR	2006
GVM METALS LTD	GVM	2006
SAB&T Ubuntu Holdings Limited	SUL	2006
Zeder Investments Ltd	ZED	2006
Top Fix Holdings Ltd	TFX	2006
Jubilee Platinum Plc	JBL	2006
IFCA Technologies Ltd	IFC	2006
Pamodzi Gold Ltd	PZG	2006
Tiger Automotive Limited	TAL	2006
IMUNITI HOLDINGS LTD	IMU	2006
Nutritional Holdings Ltd (Imuniti)	IMU	2006
Atlatsa Resources (Anooraq)	ARQ	2006
Austro Group Ltd	ASO	2007
Rare Holdings Ltd	RAR	2007
South Ocean Holdings Ltd	SOH	2007
Alert Steel Holdings Ltd	AET	2007
TeleMaster Holdings Ltd	TLM	2007
Raubex Group Ltd	RBX	2007
First Uranium Corp	FUM	2007
Kelly Group Ltd	KEL	2007
Country Bird Holdings Ltd	CBH	2007
Eastern Platinum Ltd	EPS	2007
Rolfes Holdings Ltd	RLF	2007
Ansys Ltd	ANS	2007
Interwaste Holdings Ltd	IWE	2007
Finbond Group Ltd	FPF	2007
Hulamin Ltd	HLM	2007
Mondi Ltd	MND	2007
William Tell Holdings Ltd	WTL	2007
B & W Instrumentation and Electrical Ltd	BWI	2007
KAGISANO GROUP HLDGS LD	KGH	2007
Infrasors Holdings Ltd	IRA	2007
PAN AFRICAN RESOURCE PLC	PAN	2007
Stefanutti Stocks Holdings Ltd	SFB	2007
Brikor Ltd	BIK	2007
Protech Khuthele Holdings Ltd	PKH	2007
Huge Group Ltd	HUG	2007
IQuad Group Ltd	IQD	2007
1 Time	1TM	2007
Sea Kay Holdings	SKY	2007

SOUTH AFRICAN COAL MIN	SAH	2007
Imbalie Beauty Ltd (Placecol)	PLC	2007
PLACECOL HOLDINGS LTD	PLC	2007
African Eagle Resources Ltd	AEA	2007
Ellies Holdings Ltd	ELI	2007
RBA Holdings Ltd	RBA	2007
Hardware Warehouse Ltd	HWW	2007
COUNTRY FOODS LTD	CFO	2007
African Brick Centre limited	ABK	2007
RACEC Group Ltd	RAC	2007
BSI Steel Ltd	BSS	2007
Ideco Group Ltd	IDE	2007
Chemical Specialities Ltd	CSP	2007
DYNAMIC VISUAL TECH HLD LD	DTH	2007
SA French Ltd	SFH	2007
Central Rand Gold	CRD	2007
Kwikspace Modular Buildings Limited	KWS	2007
MiX Telematrix Ltd	MIX	2007
TELIMATRIX LTD	MIX	2007
Blue Label Telecoms Ltd	BLU	2007
KayDav group Ltd	KDV	2007
Calgro M3 Holdings Ltd	CGR	2007
ARB Holdings Ltd	ARH	2007
Mazor Group Ltd	MZR	2007
O-LINE HOLDINGS LIMITED	OLI	2007
TWP Holdings	TWP	2007
Cons Infrastruc Group / Buildworks	BWK	2007
Vunani Ltd	VUN	2007
Universal industries corporation Limited	UNI	2007
CIC Holding Limited	CCI	2007
Rockwell Diamonds INC	RDI	2007
FREEWORLD COATINGS LTD	FWD	2007
Erbacon Investment Holdings Ltd	ERB	2007

RESEARCH OUTPUT

This paper was presented by Prof. van Aardt Smit and me at the 27th Annual SAIMS Conference at the University of Cape Town from 30 August to 1 September 2015.

Are the changing performance and characteristics of IPOs over the last two consecutive hot market periods on the JSE reasons for concern?

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Abstract

Gao, Ritter and Zhu (2012), describes the increasing failure of IPO listings as a problem in the IPO “ecosystem” and deem the IPO market as “broken”. Fama and French (2004) claim that there has been a change in IPO characteristics over the years. All indications are that the IPO market internationally has deteriorated regarding issues such as underpricing, long term underperformance, failure and the number of IPO listings. This study therefore seeks to determine whether the performance and characteristics of IPOs on the JSE have changed when focusing on two consecutive hot market periods (1997-99 and 2006-07). The findings are, contrary to expectations, that the level of underpricing, long term underperformance as well as the success rate of IPOs in South Africa have improved over time.

Key words: *IPOs, Hot Markets, Failure, Characteristics*

JEL Classification: *G24, G33, G11, G14, C9, M21*

1. Introduction

As described by Latham and Braun (2010:5), the progression from being a private company to being a public company is one of the most significant milestones in the life cycle of a company. The transition from being a private to a public company occurs via an initial public offering (IPO). An IPO is defined by Zimmerer and Scarborough (2005:393) as “a method of raising equity capital in which a company sells shares of its stock to the general public for the first time”. Draho (2004:1) also defines an initial public offering as the process where the shares of a private company become available to public investors for trading on the stock market. The majority of research done on IPOs found to document two main anomalies, which are the initial underpricing of IPO shares and also long term underperformance (Chan, Wang and John Wei, 2004, Ritter and Welch, 2002, Alvarez and Gonzalez 2001, Guo, Lev and Shi, 2006; Muller 2011, Kooli and Suret, 2002). Neneh (2013:60) states that an IPO presents investors with an opportunity to earn substantial returns on their investment. However, due to the ever present initial underpricing and poor long term performance, both the investor and the issuing company potentially experience a loss in capital.

Initial underpricing can also be defined as the abnormal gain or loss experienced during the first day of trading (Adams, Thornton and Baker, 2009:55). Gajewski and Gresse (2006:27) define the initial return of an IPO as “the difference between the equilibrium price following the issue and the IPO price”. Loughran and Ritter (2004:15) define first-day returns as the change from the offer price to the closing market price. Zhu (2011:47), found initial underpricing to be present in a various stock markets; Argentina (46.67%), Australia (22.44%), Finland (34.19%), Hungary (99.76%), Pakistan (75.93%) and Singapore (29.40%).

Long term underperformance of IPOs can be defined as “relative to other companies, investors appear to lose out by continuing to hold the shares of a company that have recently gone public” (Yuhong, 2010:2). The average negative return, relative to the market, earned over an extended period of time can also be defined as long term underperformance (Liu 2009:76). The level of long term underperformance of IPOs has been found to vary across different markets worldwide. In the US IPOs underperformed the market by 23.4% (Ritter and Welch, 2002:1795). Schuster (2003) studied the long term underperformance of European IPOs and found underperformance in Germany (11.66%), France (19.01%), Italy (41.85%), Netherlands (15.58%), Spain (30.21%) and Sweden (12.70%). Further, long term underperformance was also documented for England (21.98%), Thailand (41.70%), China (29.60%) and Japan (34.49%) (Goergen, Khurshed and Mudambi, 2007; Vithessonthi, 2008; Cai, Lui & Mase, 2008; Kirkulak, 2008).

2. Literature Review

Several studies (M'kombe and Ward, 2002:10; Hughes and Lee, 2006:5, Sohail and Raheman, 2009:63; Sahoo and Rajib, 2010:27; Durukan, 2002; Demers and Joos, 2005:17; Carpentier and Suret, 2011) have identified characteristics of IPO companies such as the company's age, timing of issue, issue size, profitability, gross proceeds, leverage, price to book value (P/B), market to book value (M/B), financial ratios, pre-IPO performance, and technical riskiness to be significant determinants of IPO performance. Fama and French (2004:229) argue that over time a change in company characteristics has taken place, mainly as a result of new equity becoming more accessible and also because of a decline in the cost of equity, which allows weaker companies and companies with more distant expected payoffs to issue public equity. Thus companies are able to manipulate their business (Agarwal and Taffler, 2006:1542; Beaver, McNichols and Rhie, 2005:115) to be able to look as attractive as possible for new investors, when in actual fact they are not as attractive as initially suggested. Demers and Joos (2005:3) assert that very little has been done in terms of documenting company characteristics associated with IPO failure, specifically over time.

The hot market phenomenon has found to have a significant determinant relationship with IPO performance (Ljungqvist, Nanda and Singh, 2006; Coakley, Hadass and Wood, 2009; Ritter, 1991; How, 2000; Jaskiewicz, Gonzalez, Menendez and Schiereck 2005). A hot IPO market can be defined as a period of unusually high volumes of IPO listings. In their study, Kooli and Meknassi (2007:112) distinguished between a hot and a cold market periods based on the number of quarterly IPO listings. Ahmad (2012:7) further asserts that a hot market period is characterised by abnormally high initial returns and a great number of new listings whereas a cold period is characterized as a period with few private companies going public and fewer IPO listings in respective industries (Ljungqvist *et al.*, 2006:1689). Helwege and Laing (2004:541) make a clear distinction between hot and cold IPO market periods with hot market periods being distinguished from cold market periods by greater numbers of IPO listings, more significant underpricing as well as oversubscribed offerings.

It is important to be aware that hot and cold markets are cyclical of nature. In research done by Guo, Brooks and Shami (2009:12) over the period of 1994 to 2004, their data showed five hot periods, and six cold periods. Further, information gathered by Ernst and Young (2012:3) documented IPO activity across the world from 1996 to 2011, and found five hot market periods and three cold market periods thus confirming the cyclical nature of IPO market.

Nevertheless, hot market cycles have found to have a significant impact on IPO performance. Ritter (1991:22) initially found that a hot market period has a significant

negative relationship with the three year returns of IPOs. Loughran and Ritter (2004:17) add that one of the phenomena present in a hot market is the high demand for IPOs in a particular sector resulting in many companies going public in that specific sector, as was the case with the technology boom from 1997 to 2000. Moreover, as a result of the high demand for public equity, private companies see this as an opportunity to take advantage of investor's sentiment and to issue an IPO (Kooli and Mekassi, 2007:115), subsequently resulting in immature and inexperienced companies to go public which severely increases the probability of failure (Demers and Joos, 2007:350). This phenomenon is known as the window of opportunity (Kooli and Suret, 2004:50). Chang, Kim and Shim (2013:98) affirm that small and more risky companies take advantage of the window of opportunity to exploit the irrational investors' sentiment in a hot IPO market; thus companies going public during a hot period have a bigger chance of failure than firms issuing an IPO in a cold market. Additionally, in a hot market, companies seize the opportunity to raise capital at a lower cost by increasing the original offer price of their stock which results in long term underperformance and ultimately failure (Lowry and Schwert, 2002:1178; Kooli and Suret, 2004:65). Kooli and Meknassi (2007:115) affirm that the issue period is significantly linked to the likelihood of company failure. Carpentier and Suret (2011:111) found that chances of company failure increase to 54.45% when an issue takes place during a hot market period.

The age of a company before it goes public has been identified as a significant indication of post-issue performance. It has been found that younger less established companies have a considerably higher probability of failure than older and more experienced companies (Weber and Willenborg 2003; Demers and Joos 2007). Companies with a longer pre-IPO operating history tend to have less information asymmetry and are therefore less likely to experience post-IPO failure (Ahmad, 2012:6). An additional determinant of aftermarket IPO performance is the initial offer price of the issue (Fernando, Krishnamurthy and Spindt, 2004:377). Studies done by Seguin and Smoller, 1997; Demers and Joos, 2007 and Carpentier and Suret, 2011 concluded that a high offer price decreases the chances of company failure. Further, Jain, Jayaaman and Kini (2008:166) place emphasis on the financial situation of the company and its ability to survive. Carpentier and Suret (2011:114) found that failure is 1.77 times more likely to occur in the case of a non-profitable IPO company than a profitable IPO company. Amongst others, higher levels of leverage also have a significant relationship with the probability of failure (Demers and Joos, 2007:350). Fama and French (2004:265) postulate that failure is also associated with growth (investment in assets and projects) which is un-rewarded by earnings.

Size of an issue (which is measured in market capitalization) has been found to be an accurate indication of IPO aftermarket performance (Shumway, 2001:115). A significant negative relationship between size and the probability of failure has been established by numerous studies (Brau and Osteryoung, 2001:219; Boubakri, Kooli and L'Her, 2005; Jain and Kini, 2000; Schultz, 1993; Alhadab, Clacher and Keasey, 2015:70). Small size issues have a considerably higher chance of failure, whereas large issues have less uncertainty and a lower likelihood of failure (Kooli and Meknassi, 2007:117). Another important determinant of IPO performance is the board of listing. Alhadab, Clacher and Keasey (2015:82) suggest that companies listing on an alternative exchange of a stock market are companies that are smaller, less experienced and have high growth prospects. However with questionable earnings management at IPO, the companies listed on an alternative exchange are less likely to succeed. With the JSE having the AltX and the Main Board, the impact of the board of listing on failed companies in hot market periods could therefore be tested. Moreover, the survival rate of IPOs could also be influenced by the sector of listing (Hamza and Kooli, 2010). The best example of companies benefiting from a boom in a specific sector could arguably be the tech boom in the US stock market from 1997 to 2000. Companies that went public during this time experience abnormally favourable IPO performance. Affirming the differences between sectors, Ahmad (2012:13) also found a significant difference between the resource sector and the non-cyclical services sector, where the survival rates were found to be 76% and 62% respectively.

In an attempt to reduce information asymmetry between the investors and the company, the company sends out a signal to the market to indicate company quality, which is known as the signalling hypothesis (Muller, 2011:37). Under the signal hypothesis companies deliberately and significantly underprice their offering with the hope of attracting investors (Zheng and Stangeland, 2007:61). However, Espenlaub, Kurshed and Mohamed (2012:449) prove the opposite by concluding that IPOs with low initial returns are more likely to survive than IPOs with high initial returns. Kooli and Meknassi (2007:113) also found that failed companies are on average, significantly more underpriced than surviving companies.

When defining failure of an IPO, Foster-Johnson *et al.* (2001:7) deemed an offering to be a failure if the offering displayed bankruptcy issues and if the minimum listing requirements could not be maintained. Alhadab, Clacher and Keasey (2015:73) define failure as any IPO company that delists from the exchange within five years of listing due to negative reasons; which include administration, receivership, liquidation, winding up and bankruptcy. The trading of an IPO stock below a certain level could also be considered a failure. Carpentier and Suret (2011:108) classified an IPO as a failure if the stock traded below CAN \$0.1 for

seven consecutive months. Raputdosne (2009:1) argues that failure is also experienced when the investor does not gain enough returns relative to the risk undertaken. Additionally, failure according to economic criteria is “the realized rate of return on invested capital, with allowances for risk consideration, is significantly and continually lower than prevailing rates on similar investments” (Altman and Hotckiss, 2005).

3. Problem Investigated

Higher levels of underpricing, coupled with more long term underperformance and declining numbers of listings are often associated with increasing failure rates of IPOs. Research pertaining to IPO failure on the JSE is very limited, thus the greater body of research conducted on failure relates to overseas markets (Foster-Johnson, Lewis, Seward, 2001; Amini and Keasey, 2013; Fischer and Pollock, 2004; Li, Zhang, Zhou, 2006; van der Goot, Giersbergen and Botman, 2011; Espenlaub, Khurshed and Mohamed, 2012 and Vismara, Paleari and Ritter, 2012). Some secondary findings deduced in a variety of these studies have proven the decrease in the success rate of IPOs despite some improving characteristics such as age, an increase in the average size of the offerings and favourable accounting ratios. The decline in the success rates of IPOs have in most cases resulted in failure of the companies rather than survival. Additionally, as a possible result of the increased failure observed, a steep decline in the number of IPO listings has also been documented.

Gao, Ritter and Zhu (2012:1664) describes the decline of IPO listings as a problem in the IPO “ecosystem” and deem the IPO market as “broken”. The steep decline in the popularity of issuing an IPO could to a large extent be explained through the equally as concerning and significant increase in the failure rate of newly listed companies. Between 1980 and 1991 it was observed that more than two out of five small US IPO companies have delisted within the first ten years of trading due to poor performance (Fama and French, 2004:230). In their study Demers and Joos (2005:37) specifically analysed the difference between high technology firms and non-technology firms. Thus, they divided their 3 990 US IPO sample into three main categories, namely non-tech, high-tech and high-tech and internet IPOs. Each of these categories displayed failure rates of 19.7%, 16.4% and 20.8% respectively. Still concerning the US IPO markets, Bradley, Cooney, Dolvin and Jordan (2006:21) noted the five-year failure of U.S. penny stocks to be 51.4%. Kooli and Meknassi (2007:39) also found that after five years 44.82% of their original sample failed or were involved in mergers or acquisitions.

However, failure is not limited to just the US IPO market. Substantial failure rates of new equity issues were also observed in Canada. Carpentier and Suret (2011:109) documented

an average failure rate of 48.52% for a sample of 2373 IPO companies. Only 13.81% of all the companies were deemed to be surviving successfully. Additionally, Carpentier and Suret (2011:111) pointed out that in the long term only 10% of all Canadian IPOs are successful and that 60% of all IPOs fail. When analysing the failure of small British IPOs, with the main focus being on companies who list on the Alternative Investment Market, Amini and Keasey (2013:725) noted that the overall failure rate of all IPO listings was 66.85%. Further, 27.05% of the IPOs remained listed and only 6.10% of the whole sample graduated to become listed on the London Stock Exchange. In South Africa, Neneh (2013:177) found that out of a sample of 310 IPOs which listed on the JSE between 1996 and 2007, only 32 were classified as a success whereas 65 companies were deemed to have failed. The rest of the companies were either acquired or just merely survived.

In summary, mention was made of the increasing failure rate of IPO companies and the role cyclical markets play in this regard. Further, prior research pertaining to the relationship between the various company and market related characteristics and their impact on IPO company failure were also documented. However, no evidence was found to gain insight to the change of characteristics of failed IPO companies during two consecutive hot market periods. Therefore, the main focus of this paper is to establish whether there are significant differences in terms of IPO performance and characteristics, focusing specifically on success versus failure, between two consecutive hot market periods on the Johannesburg Securities Exchange (JSE) in South Africa.

4. Methodology

4.1 Research questions

The fundamental research question addressed in this paper is whether the characteristics of IPO companies on the JSE in two consecutive hot market periods (1997 to 1999 versus 2006 to 2007) have changed significantly, focusing specifically on success versus failure. To answer the primary research question, the following secondary research questions have been formulated regarding the two consecutive hot market periods:

- Did the failure rate of IPOs increase from the first hot market period to the second hot market period?
- Did the level of underpricing and the long term performance of IPOs in hot market periods change over time?
- Did company specific characteristics such as age of the company before going public, the initial offer price and the size of the offering (market capitalization) change significantly from the first hot market period to the second?

- Did the composition of IPOs change over time in terms of specific sectors as well as the decision regarding listing on the Main Board versus the AltX?

4.2 Statistical Analysis

In this paper, statistical analyses, such as cross tabulation, chi-square, one-way analysis of variance (ANOVA), T-test, regression analysis, and Pearson correlation coefficient were done using excel and the Statistical Package of Sciences (SPSS) software.

The market-adjusted abnormal return (MAAR) has been the most widely used method in calculating underpricing (Van Heerden and Alagidede, 2012:132). The market-adjusted abnormal return ($MAAR_{x,i}$) for stock 'x' after i^{th} , trading period is calculated as follows:

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

The market-adjusted model measures the initial returns (offer price versus closing price after first day of trading) in excess of the market return. The JSE All Share Index (ALSI) was used to calculate the market return.

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

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

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

To test the significance of $\overline{MAAR}_{x,i}$, the following t-statistic is calculated:

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

Where 's' is the standard deviation of $MAAR_{x,i}$ for a 'n' number of companies.

For comparative purposes, this study will adopt the mean market-adjusted abnormal return ($\overline{MAAR}_{x,i}$), which is the standard method for calculating underpricing of new issues and t-stats to measure the significance of the level of underpricing.

We used buy-and-hold return (BHAR) to compute the seven-year holding period returns. BHAR is the return on a buy-and-hold investment in the sample company, less the return on a buy-and-hold investment in the market index (JSE ALSI). Mitchell and Stafford (2000:296) assert that BHAR can be defined as "the average multiyear return from a strategy of

investing in all firms that complete an event and selling at the end of a pre-specified holding period versus a comparable strategy using otherwise similar nonevent firms.” BHAR as a measuring technique of long term performance is preferred by authors such as Eckbo (2010:163) and Kooli, L'her and Suret (2006:50). They argue that it best represent the investors experience in terms returns achieved. Additionally, for comparing the long term returns of the two consecutive hot periods the same standardising principal that Kumar (2007:24), Westerholm (2006:31), Ho (2005:27) and Ritter (2003:267) used will be followed, which is to annualize the long term returns (BHAR for the seven year period).

For each firm i stock, the long-term returns in the aftermarket are calculated from the first trading month to the month where the stock celebrates its third anniversary.

The holding period return (BHR) for a firm i stock is calculated for the period T as

$$BHR_{i,T} = [(1 + R_{i,1})(1 + R_{i,2}) \dots \dots \dots (1 + R_{i,t})] - 1$$

This formula can be rewritten as;

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

Where $R_{i,t}$ is the raw return of firm i stock at time t and T is the time period for which the BHR is calculated. (Suherman and Buchdadi, 2010:12).

In order to calculate the BHAR on firm i over T period, the return of the market is subtracted from the return of the firm which can be calculated as follows:

$$BHAR_i = \frac{1}{N} \sum \left[\left(\prod_{t=1}^T (1 + R_{i,t}) \right) - \left(\prod_{t=1}^T (1 + R_{m,t}) \right) \right]$$

Where $BHAR_i$, is the buy-and-hold return of firm i in event month t . While $R_{i,t}$ is the return for firm i in period t and $R_{m,t}$ is the return on a benchmark (JSE ALSI) for the same period.

4.3 Data

The sample for the study comprised of 262 IPOs that were listed on the Johannesburg Securities Exchange (JSE) in two consecutive hot periods from 1996 to 2007 as was available in the McGregor-BFA database, the Stock Exchange Handbook, the companies' initial prospectus, as well as data provided by the JSE. Neneh and Smit (2013:900) classified the periods 1997 to 1999 and 2006 to 2007 as hot market periods with 75.5% of the listings in these five years compared to only 24.5% in the seven cold market years from 1996 to 2007. According to the JSE database, 327 IPOs were listed in these two hot market periods, indicating a sample size in this study of 80.1%. The reasons for excluding some of the IPOs are a) detailed data (such as offer prices and number of shares issued) for some of

the IPOs were not available on the McGregor-BFA database, b) inconsistency in the specific IPO data amongst the various sources, and c) unexplainable outliers that jeopardized the reliability of the data. It was crucial to exclude an IPO if discrepancies in the various data sources could not be resolved. Previous studies by Neneh, Ngeek and Smit relied predominantly on the McGregor-BFA database (Neneh & Smit, 2013; Smit and Ngeek, 2014). Verifying the individual IPO data using four sources led to adding many more IPOs to the sample, but more importantly, it also created the opportunity to exclude any inconsistent data and unexplained outliers, thus increasing the reliability of the data. The substantially bigger sample size, combined with the exclusion of certain IPOs from the study, have influenced the empirical results from previous papers and articles, specifically regarding MAAR, BHAR and the characteristics impacting both initial underpricing and long-term performance.

The JSE All Share Index (ALSI) was used to calculate market return and the CPI (Consumer Price Index) was used to adjust the offer price and issue size (market capitalization) for inflation. The IPOs were also classified into six sectors, namely Basic Materials (Mining/Minerals), Consumer Goods and Services, Industrial, Financial, Technology and Venture Capital (AltX). The Alternative Exchange (AltX) creates a unique opportunity for companies to list if they do not comply with the requirements of the Main Board (such as profit history, size of the listing, subscribed capital, etc.).

Failure was defined as all IPOs delisted from the JSE with reasons such as 'failure', 'no longer quality for listing', 'failure to comply with JSE requirements' and 'Section 17 of the Stock Exchanges Control Act 1985'. If there was an increase in the share price in absolute terms from the original offer price over a seven year period, the IPO was regarded as successful, at least in absolute terms. The IPOs that were delisted for other reasons or had a market price less than the original offer price over a period of seven years were classified as "Other".

5. Results

In Table 1 the level of underpricing using the mean-adjusted abnormal return (MAAR) for the first day of trading was calculated (in the first part of this table, 85 IPOs listed in cold market periods for the period 1996 to 2007 were included).

Table 1: Market adjusted abnormal return (MAAR) for the period 1996-2007

	No. of IPOs	MAAR	Std. Dev.	T Stats
1996-2007	347	42.5%	101.7%	7.79***
Cold Markets: 1996, 2000-05	85	9.5%	24.7%	3.52***
Hot Markets: 1997-99 & 2006-07	262	53.3%	114.2%	7.55***
<i>Significance</i>		0.000***		
Hot Market 1: 1997-99	168	70.3%	137.5%	6.63***
Hot Market 2: 2006-07	94	22.8%	34.3%	6.46***
<i>Significance</i>		0.001***		

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

The results clearly indicate that IPOs are significantly underpriced (using T-Stats), as well as that in the hot market periods IPOs were significantly more underpriced than the IPOs in cold market periods (53.3% versus 9.5%). What is actually more relevant to this paper is the fact that the IPOs in the earlier hot market period (1997-99) were significantly more underpriced (70.3%) than in the second hot market period (22.8% in 2006-07). Another observation from the second part of Table 1 is that there were substantially fewer listings in the second (94) compared to the first hot market period (168).

Table 2 focuses on the seven year long term performance of the IPOs only in the two hot market periods, using an annualized BHR (to measure absolute performance) and annualized BHAR to measure the IPO performance relative to the market. The annualized BHR and the BHAR where IPOs were delisted because of any reasons, such as failure or mergers, were still calculated. This is also the main reason why annualized BHRs and BHARs were used, rather than the normal BHRs and BHARs. BHRs and BHARs were also calculated using both the offer price and the closing price of the share after the first day of trading. The BHR and BHAR at the offer price indicated how realistically the original owners and underwriters priced the shares, while the BHR and BHAR at the closing price focus on the effectiveness of the market to price these IPOs initially.

Table 2: Long term performance of IPOs in two hot market periods (annual BHAR)

At Offer Price:	Total	Hot 1	Hot 2	Significance
No. of IPOs	262	168	94	
BHR (Share)	-16.1%	-20.4%	-8.3%	0.015**
BHR (Market)	11.1%	13.2%	7.2%	0.000***
BHAR	-27.1%	-33.6%	-15.5%	0.000***
At Close Price:				
No. of IPOs	262	168	94	
BHR (Share)	-21.1%	-26.1%	-12.0%	0.003***
BHR (Market)	11.2%	13.6%	7.0%	0.000***
BHAR	-32.4%	-39.9%	-18.9%	0.000***

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

Table 2 confirms the underperformance of IPOs in the long run, both in absolute (BHR) and relatively to the market (BHAR) terms, with all the annualized BHRs and BHARs being negative. What was however surprising, was that both the absolute and relative long term performance of IPOs in the second hot market period was significantly better than in the earlier hot market period. As was expected, both the BHRs and BHARs at the closing price was worse than at the offer price, given the high levels of underpricing. This clearly indicates the inability of the market to correctly price IPOs on the first day of trading. The next table focuses on whether the IPO market has changed since the first hot market period in terms of the different sectors.

Table 3: IPOs listed in different Sectors comparing two hot market periods

Sector	Percentage IPOs Listed	
	Hot Market 1	Hot Market 2
No. Of IPOs	168	94
Basic Materials	4.2%	18.1%
Consumer	19.6%	4.3%
Industrial	7.7%	14.9%
Financial	16.7%	4.3%
Technology	17.3%	3.2%
Venture/AltX	34.5%	55.3%
Significance	0.000***	

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

The results in Table 3 clearly indicate that there was a shift in sectors regarding the listing of IPOs in the two consecutive hot periods. As was expected there were substantially more technology stocks listed in the period 1997 to 1999, as well as IPOs in the consumer and financial sectors, while the period 2006 to 2007 saw a major increase in basic materials (resources) to capitalize on the higher mineral prices that were typical of that period. What is

also interesting to observe is the significant increase in IPOs getting listed on the alternative board (AltX) from earlier hot market to the last hot market period (2006-07). A possible explanation for this phenomenon could be that many companies find it difficult to comply with the Main Board requirements. A major concern regarding the shift to the AltX is the possibility of higher failure rates of IPOs in the last hot market period. In the next table, the IPOs were classified as successful (seven year share price higher in absolute terms than the offer price) or failed, with the “Other” category including all those IPOs who either were delisted or merged or had a share price less than the original offer price.

Table 4: Success versus Failure of IPOs for both hot markets: Main Board versus AltX

Sector	Total		Main Board		AltX		% AltX
	No.	%	No.	%	No.	%	
Success	50	19.1%	37	24.3%	13	11.8%	26.0%
Failed	81	30.9%	31	20.4%	50	45.5%	61.7%
Other*	131	50.0%	84	55.3%	47	42.7%	35.9%
<i>Total</i>	262	100.0%	152	100.0%	110	100.0%	42.0%
<i>Significance</i>	0.000***						

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

Table 4 highlights the riskiness of IPOs in both hot market periods with only 19.1% regarded as successful over a seven year period, while 30.9% failed. As was expected, the IPOs listed on the Main Board were performing significantly better than those listed on the AltX (Venture Capital). In the next table the two consecutive hot market periods were compared.

Table 5: Success versus Failure of IPOs comparing two hot market periods

Sector	Total		Main Board		AltX		Significance
	Hot 1	Hot 2	Hot 1	Hot 2	Hot 1	Hot 2	
No. Of IPOs	152	110	110	58	42	52	
Success	17.9%	21.3%	22.7%	28.6%	8.6%	15.4%	0.000***
Failed	32.7%	27.7%	22.7%	14.3%	51.7%	38.5%	0.025**
Other*	49.4%	51.1%	54.5%	57.1%	39.7%	46.2%	0.000***
<i>Total</i>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

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

Regarding all three categories (Success, Failed and Other), Table 5 highlights that IPOs in the second hot market period performed significantly better than in the first hot market period. What is also very encouraging is the fact that the IPOs listed on the AltX improved its success rate from only 8.6% in the earlier hot market period to 15.4% in the second, with IPO failure down from 51.7% to 38.5%. What makes these results even more important is that relatively more IPOs in the second hot market period were listed on the AltX. In the next few tables certain IPO characteristics, such as the offer price, size (market capitalization),

years of existence before listing versus IPO success versus failure are assessed to verify whether the IPOs in two consecutive hot periods on the JSE differ significantly. It is important to note that given the relative high levels of inflation, combine with the fact that these IPOs were listed over a period of 11 years, it was essential to adjust both the offer price and the size (market capitalization) for inflation.

Table 6: Offer Price, Size and Maturity of IPOS in two Hot Markets

HOT MARKET 1 VS 2:		Inflation Adjusted		Years Exist
		Offer Price	Market Cap.	before Listing
Hot Market 1: 1997-99	Mean	1 098	2 521	22
	No. Of IPOs	168	168	168
	Std. Dev.	6 492	9 278	155
	Median	206	289	3
Hot Market 2: 2006-07	Mean	1 085	2 142	14
	No. Of IPOs	94	94	94
	Std. Dev.	2 336	6 140	21
	Median	257	482	7
Significance		0.985	0.635	0.723

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

The results in Table 6 indicate that there were no significant differences in terms of size (market capitalization), offer price (both size and offer price adjusted for inflation) or years in existence before listing (age) in terms of the two consecutive hot market periods. A note of caution should, however, be made. The size of the standard deviation, specifically in the first hot market period regarding all three characteristics clearly indicates the level of skewness of the data from a normal distribution. In the next two tables the question whether these characteristics impacted the success or failure of IPOs are addressed, focusing only on the successful and failed IPOs (thus excluding the “Other” category).

Table 7: Characteristics of IPOS versus Success/Failure

Characteristics:	Success		Failure		Significance
	Mean	Median	Mean	Median	
Offer Price (Inf. Adj.)	1 308.0	402.1	314.5	183.0	0.027**
Market Cap. (Inf. Adj.)	4 850.0	798.7	532.2	247.0	0.001***
Years Exist Before	17.5	6.0	9.0	3.0	0.004***
No. Of IPOs	50		81		

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

Table 7 confirms significantly, as was expected, that failed IPOs typically have lower offer prices, smaller initial market capitalization and fewer years in existence prior to listing in hot market periods. However, the research question to be addressed in this paper is whether the

influence of these characteristics regarding success or failure has changed in the two consecutive hot market periods.

Table 8: Characteristics of IPOS versus Success/Failure in two Hot Markets

Characteristics:	Success		Failure		Significance
	Hot 1	Hot 2	Hot 1	Hot 2	
Offer Price (Inf. Adj.)	909.4	1 906.1	220.0	514.6	0.065*
Market Cap. (Inf. Adj.)	5 046.0	4 556.1	368.6	878.1	0.743
Years Exist Before	19.0	15.4	4.6	18.3	0.061*
No. Of IPOS	30	20	55	26	

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

In Table 8 similar trends are observed for both hot market periods. Although there seems to be a significant difference at only the 10% level regarding the offer price in the two consecutive hot markets, the trend is still that IPOs with lower offer prices are more inclined to fail. Regarding the size of the IPOs, there are no significant differences between the two market periods. The issue of years prior to listing indicates a significant difference between the two hot market periods, but again, the skewness from the normal distribution explains the apparent contradiction in terms of the number of years in existence prior to listing for the failed versus the successful IPOs in the second hot market period.

6. Conclusions

The purpose of this paper was to verify whether the performance and characteristics of IPOs in hot market periods have changed over time, focusing specifically on success and failure. High levels of underpricing combined with long term underperformance are the two classic anomalies typically associated with IPOs issued in hot market periods (Muller, 2011). However, what is even more concerning is that various authors, such as Amini *et al.* (2013) and Espenlaub *et al.* (2012) reported that the IPO market internationally has been characterized by increasing levels of underpricing and increasing levels of long term underperformance, which is typically associated with higher failure rates and dwindling numbers of IPOs. By comparing the performance of IPOs in the last two consecutive hot market periods (1997-99 versus 2006-07), it was possible to verify whether these concerning negative trends were also applicable to the securities exchange in South Africa.

The results of this study highlights, in many cases, remarkably different results for the South African IPO market over time. With the focus on last two consecutive hot period markets, the results indicated that the number of IPOs listed did decline substantially, but that the level of underpricing, against all expectations, decreased significantly from 70.3% for 1997-99 to 22.8% for 2006-07. Looking at the seven year period, both the annualized absolute (using BHR) and relatively to the market (using BHAR) performance of IPOs were still negative, but

there were significant improvements in both the annualized BHR and BHAR over time. Regardless of the improvement in the long term underperformance of IPOs in hot market periods, the level of long term underperformance in South Africa still highlights the riskiness of investing in IPOs and the importance of improving the IPO selection process.

There were, as was expected, significant changes in the main activities of companies, as were reflected in the sectors they were listed in. Substantially more IPOs were listed in the consumer, technology and the financial sectors in the hot market period 1997-99, while basic materials and the AltX became increasingly more popular in the hot market period 2006-07. The significant relative increase of IPOs getting listed on the AltX in the last hot market period was a concern, given the results of Table 4 clearly indicting that IPOs getting listed on the AltX are less inclined to succeed with higher failure rates. Regardless of this negative trend, there were significant improvements regarding both the success and failure rates of IPOs over time, which most probably explain the lower levels of underpricing and the improvement of long term performance of IPOs from the previous to last hot market period on the JSE.

In contrast to previous studies (Weild, 2011; Demers and Joos, 2005), other surprising findings were that the characteristics of the IPOs listed in two consecutive hot markets, such as the inflation adjusted offer price and size (market capitalization) did not change significantly, nor did the age of the companies prior to listing decreased. What was, however, confirmed was that the offer price, size of the listing and the years of existence prior to listing had a significant impact on potential failure in hot market periods, but with relatively insignificant (at least to the 5% level) differences between the two consecutive hot market periods.

7. Investor Implications and Recommendations

Contrary to international trends as stated by Gao, Ritter and Zhu (2012:1664) who describes the decline of IPO listings and the increasing IPO failure rates as a problem in the IPO “ecosystem” and deem the IPO market as “broken”, the IPO market is well and improving in South Africa, specifically over the last two consecutive hot market periods (1997-99 versus 2006-07). Investors are still confronted with information asymmetry and adverse selection regarding the decision to invest in IPOs at the offer price, but both the levels of underpricing as well as the long term underperformance of IPOs are improving in the two consecutive hot market periods in South Africa. The declining numbers of IPOs listed in the two consecutive hot markets could be a concern, but at the same time could possibly indicate that owners and underwriters are more cautious regarding their decision to list, which may give rise to the assumption that higher quality companies are more likely to issue an IPO than lower

quality companies. The relative increase of IPO listings on the AltX should concern investors, but, equally important is the significant decrease in the levels of IPO failure on the AltX. Investors should still be concerned about IPOs with relatively small market capitalization, low offer prices and young companies getting listed, because these IPOs have significantly higher failure rates in hot market periods.

One of the major concerns regarding IPO research, and limitations of this study as well, specifically concerning underpricing, long term underperformance and the characteristics indicating IPO success / failure, is the level of skewness of the data from a normal distribution. Outliers influence the results substantially, sometimes creating a distorted picture of both the levels of underpricing and long term underperformance. Although the authors took great effort in eliminating unexplainable outliers, it still creates the opportunity for further research.

Conclusively, the good news for investors is that the IPO market in South Africa is alive and well, showing significant improvements over the last two consecutive hot market periods. The IPO market is, from an investors' point of view, still risky with high levels of underpricing, coupled with negative long term performance. But, what makes specifically the improvement of both the South African long term IPO underperformance and IPO failure / success over the last seven years so remarkable, is that it happened over period of one of the worst recessions the world has ever experienced.

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