

The long run impact of rights issues on share price performance and operating performance

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

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Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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11/11/2013

ABSTRACT

Rights issues continue to be a well-researched topic within the field of corporate finance. The focus of this study was to consider the long-run impact of rights issue on company performance both in terms of share price performance and operating performance. The long-run perspective taken in this study adds to the literature, which usually looks at the immediate share price reaction to a rights issue announcement. The study also looked at whether the intended use of capital stated in the SENS announcement had any post-issue effect on the share price.

The study found significantly negative cumulative average abnormal returns within the first year after the rights issue. This study confirms the expected negative share price reaction to a rights issue announcement. The study also found evidence that companies that use the proceeds to repay debt, invest or for general purposes had a negative share price reaction to a rights issue announcement. Companies that were vague about the intended purpose of the rights issue had the largest post-issue underperformance.

The study did not find any statistically significant evidence that the rights issue announcement had any effect on the operating performance. These findings suggest that rights issues have more impact on a company's share price, and no clear impact on the operating performance of the issuing company.

Keywords: Rights issue, share price performance, operating performance

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Table of Contents

| Researc | ch Title | . 1 |
|----------|---|-----|
| 1. Defin | ition of the Problem | 1 |
| 1.1 R | esearch Problem and Purpose | 1 |
| 1.2 | Research Context | 2 |
| 1.3 | Research Objectives | 3 |
| 2. Theo | ry and Literature Review | 4 |
| 2.1 | Purpose for Equity Issue | . 5 |
| 2.2 | Factors affecting Long-Run Post-issue Performance | . 8 |
| 2.3 | Summary of findings in the related literature | 12 |
| 2.3 | .1 Share Price Performance | 12 |
| 2.3 | .2 Operating Financial Performance | 15 |
| 2.4 | Benchmarking for Abnormal Returns | 16 |
| 3. Rese | arch Objectives and Hypotheses | 20 |
| 4. Rese | arch Design and Methodology | 23 |
| 4.1 U | nit of Analysis | 23 |
| 4.2 P | opulation of relevance | 23 |
| 4.3 E | vent study method | 24 |
| 4.4 D | ata Collection | 25 |
| 4.4 | .1 Share Price Performance – Event Window | 26 |
| 4.4 | .2 Operating Financial Performance – Event Window | 26 |
| 4.5 S | ampling Method and Size | 26 |
| 4.6 D | ata Analysis Approach | 32 |
| 4.6 | .1. Measuring Abnormal Returns | 33 |
| 4.6 | .2 Classifying Intended Use of Proceeds | 37 |
| 4.6 | .3 Bootstrapping Analysis | 38 |
| 4.6 | .4 Measuring Abnormal Operating Performance | 39 |
| 4.6 | .5 T-test Analysis | 41 |
| 4.7 R | esearch Limitations | 42 |
| 5. Res | sults | 44 |
| 5.1 | Description of Sample | 44 |
| 5.2 | Performance of CAARs | 46 |
| 5.3 | Operating Financial Performance | 55 |
| 6. Dis | cussion of Results | 57 |
| 6.1 S | hare price performance | 57 |
| 6.1 | .1. Cumulative average abnormal returns for full sample | 57 |

| | 6.1.2. Hypothesis testing of CAARs for full sample | . 59 |
|-----|--|------|
| | 6.1.3. Cumulative average abnormal returns of sub-samples | . 60 |
| | 6.1.4. Hypothesis testing of CAARs for debt-repayment sample | . 62 |
| | 6.1.5. Hypothesis testing for investment sample | . 64 |
| | 6.1.6. Hypothesis testing for general sample | . 65 |
| 6 | .2. Operating financial performance | . 66 |
| | 6.2.1 Hypothesis testing of operating performance sample | . 68 |
| 7. | Conclusion | . 69 |
| Ref | erence List | . 73 |

Table of Figures

| Table 1: Cumulative Abnormal Returns (CAR) following a seasoned equity offer from Spiess |
|--|
| & Grave (1995) for the period 1975-1989 13 |
| Table 2: Summary of post-issue buy-and-hold returns from selected research papers over |
| different holding and sampling periods14 |
| Table 3: Results of analysis by McLaughlin et al (1996) on operating financial performance |
| (IACFRA) before and after a seasoned equity offering |
| Table 4: Results of analysis by Autore et al (2008) on operating financial performance |
| (median operating income scaled by total assets) before and after a seasoned equity |
| offering16 |
| Table 5: Companies excluded due to a lack of data 27 |
| Table 6: Companies excluded due to being an unrelated financial instrument |
| Table 7: Companies excluded due to a prior rights issue in the same period |
| Table 8: Companies excluded due to a small issue size 31 |
| Table 9: Summary of rights issues announced between 2002 and 2011 based on chosen |
| sampling criteria |
| Table 10: Descriptive Statistics for cumulative average abnormal returns based on three |
| weightings across all samples for the full event window [-40, 220] days |
| Table 11: Analysis of Cumulative Average Abnormal Returns (CAARs) of the full Sample for |
| selected event windows |
| Table 12: Analysis of cumulative average abnormal returns of sub-samples for selected |
| event windows |
| Table 13: Industry-Adjusted Cash flow Return on Assets (IACFRA) before and after a rights |
| issue |
| Table 14: Paired Industry-Adjusted Cash Flow Return on Assets (IACFRA) before and after |
| a rights issue |

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Research Title

The long run impact of rights issues on share price performance and operating performance

1. Definition of the Problem

1.1 Research Problem and Purpose

Corporate finance studies continue to study the link between equity issuance and performance. An equity issue occurs when companies sell new equity to investors to raise capital. Rights offers are a form of equity issue and are prevalent in the South African listed equity market. The foci around equity issues include funding, valuation and subsequent performance. This study will focus on the impact of equity issues on the subsequent long-run company performance. Further to that, this study will continue to develop a theme more recently explored by Autore, Bray & Petersen (2008) and Walker & Yost (2008) – the intended use of proceeds raised in an equity issue, and the link between this intention and the long run performance of a company.

Many studies, such as Bayless & Jay (2008), have been completed on the developed equity markets in Europe and the United States (U.S.), while few studies look at follow-on equity issuers in developing markets. In South Africa there were studies by Bhana (1998) and Pascoe, Ward, & Mackenzie (2005), this paper will seek to add value in that regard

This study also aims to add to the literature by assessing the stated use of rights issue proceeds and its significance with regard to rights offers in a developing market. Linking the stated use of funds to post-issue performance could potentially allow for the discernment of whether a manager is issuing due to the company share being overvalued, or for investment prospects (Walker & Yost, 2008). From an investor perspective, the results of this study could be an additional indicator of expected future company performance whenever an equity issue is announced. In South Africa, most studies focus on share price activity after an Initial Public Offering (IPO). This paper will further interrogate this by looking at later equity issues.

The study ventures into a contentious area of event studies by looking at price performance and operating financial performance in the long run. Given that investment horizons are often longer than 1 month, it would be justified to consider the impact on performance for longer subsequent periods.

Another purpose of the study was to analyse the company's stated use of issued capital, while analysing performance to assess if 'pro-active' uses or the expressed intention of capital use offer any form of premium over the companies that do not clearly specify their reason for raising capital.

1.2 Research Context

The research was based on companies listed on the Johannesburg Stock Exchange (JSE). The JSE is the largest and most developed stock market in Africa (JSE, 2013). The total market capitalization of the JSE as at December 2012 was USD903 billion, making it one of the largest stock exchanges in the world by market value.

Two key features of the JSE are the Stock Exchange News Service (SENS) and STRATE. SENS was launched in 1997 as a real-time news service which was used to disseminate relevant company information to the market. SENS was developed to increase market transparency and overall investor confidence in the market. STRATE is the central securities depository that is used for electronic settlement of all financial instruments in the market. This was developed to increase market efficiency and mitigate settlement risk.

The JSE's size and structural characteristics make it a suitable market, or sample, on which the research can be conducted.

1.3 Research Objectives

Research objectives for the study are as follows:

- a) Assess the impact of a rights offer on the share price in the long run.
- b) Investigate if the intended use of the proceeds from the rights issue has an impact on the share price in the long run.
- c) Assess the impact of a rights offer on the operating performance in the long run.

2. Theory and Literature Review

The literature review provides a précis on the underlying finance theory that is relevant to rights offers in terms of purpose. The study will then outline some of the key factors that affect the performance outcomes of the rights issue. Before delving into the heart of the topic, the study commences by briefly fitting equity issuance and subsequent company performance into the corporate finance context.

Finance studies and theory exist in order to elucidate the interactions between companies, its customers, its shareholders, and its environment. This study zones in on the connection between shareholders and/or investors, and the company and/or its management. The common language that is spoken between investors, management and analysts is one of risk and reward. For a given level of perceived risk, investors will have a commensurate level of expected return when deciding to invest in an asset (Bodi, Kane, & Marcus, 2005). Similarly company management, given expected returns from shareholders and borrowers, will require a certain premium on any investment because it carries risk – this is defined as capital budgeting (Firer, Ross, & Westerfield, 2012). Investments need to be supported by funding, with a choice between debt or equity or both - this is defined as capital structure (Firer, Ross, & Westerfield, 2012).

An equity issue falls within the management of 'capital structure' in corporate finance. Capital structure is crucial because it answers the question of how projects or investments will be funded. Capital structure also affects total company risk; which has consequent expectations for reward for both the company and its investors (Bodi, Kane, & Marcus, 2005). In essence, the relationship between equity issuance and long run performanace provides the link between the core concepts of capital structuring and budgeting, described above. Thus, there exist numerous studies, such as Bayless & Jay, (2008), Loughran & Ritter (1997), and Pascoe, Ward, & Mackenzie (2005), which have explored the relationship between an equity issue and the subsequent long-run company performance from different perspectives. We define this 'long-run' as any period longer than one trading year of 220 days

(approximately 1 calendar year). Operating performance is defined as the ability of a company to use its assets efficiently, to generate income for a selected period of time (Firer, Ross, & Westerfield, 2012). Share price performance is defined as price return on a share for a selected period.

2.1 Purpose for Equity Issue

This section will concentrate on the potential motives behind company management's decision to conduct an equity issue. Understanding the motives for issuing stock will provide the platform for analysing some of the influential factors that play a role in the post-issue performance at a share price and operating level. Management may sometimes have good intentions, but these may be affected by the economic landscape, stock liquidity and information asymmetry.

Equity Issues: definitions and differences

Prior to examining the motives for issuing equity, clarity is provided on the different types of equity issuance: initial public offering, rights offer, seasoned equity offerings and cash issues.

An initial public offering (IPO) is the company's first equity offer of ordinary shares to the public (Firer, Ross, & Westerfield, 2012). A rights offer is an issue of ordinary shares to **existing shareholders**, in this instance shareholders are given an opportunity to exercise their pre-emptive right to participate in the new issue. This is done in proportion to their share in the company. This pre-emptive right allows the shareholder the opportunity to avoid having their ownership in the business diluted by the increased number of outstanding shares. Rights offers are usually offered to shareholders at a slight discount to the prevailing market price. Shareholders may waive their pre-emptive rights, which may compel management to seek capital beyond the current shareholder base (Firer, Ross, & Westerfield, 2012).

Seasoned equity offerings (SEOs) are different to rights offers because a SEO is an offer of new shares to the **public**, specifically for a company that already has shares trading in the secondary equity market. The shares are offered to the public at the prevailing market price. Seasoned equity offers are prevalent in the financial markets of the U.S. and the United Kingdom (U.K.). In South Africa, the closest occurrence of

a SEO is a cash offer – the offer is to the general public, the offer is not proportionate to shareholder rights and shareholders will have waived their rights at a general meeting (Firer, Ross, & Westerfield, 2012).

In South Africa, a total of R84.9 billion has been raised through 108 rights offers from 31 January 2005 to 28 January 2013 (JSE Bulletin, unknown). The equity issues relevant to this study are rights offers, seasoned equity offers and cash offers. Although it is acknowledged that there are differences between rights offers and cash offers; the study will not distinguish between the two aforementioned definitions, and considers both as relevant for the study of follow-on equity issues and post issue performance.

Motives for raising equity capital

The notion of capital-raising has been well-documented in corporate finance textbooks such as Bodi, Kane, & Marcus (2005) and Firer, Ross, & Westerfield (2012), as the main reason for companies to issue equity. However, the underlying question is, for what purpose was the capital raised?

Understanding the intended use of the proceeds of a rights offer or SEO is a useful departure from other studies on SEO issues and performance (Autore, Bray, & Petersen, 2008). Raising capital is normally considered a long-term funding exercise. DeAngelo, DeAngelo, & Stulz (2010) showed that firms can conduct a SEO for short-term financing needs. DeAngelo, DeAngelo, & Stulz (2010) stulz (2010) state that other reasons, such as the opportunity to sell the share price at a high price, were subordinate to the need for cash.

Ideally, companies are expected to raise capital in instances where they have positive Net Present Value (NPV) projects to invest in, and no other source of finance. This is particularly true given that equity finance is typically associated with more costs than debt finance (Firer, Ross, & Westerfield, 2012).

DeAngelo, DeAngelo, & Stulz (2010) contest this by asserting that if the motive to raise capital was to invest in good prospects as detailed in the NPV argument, then most equity issuing firms would have a stockpile of cash after an issue. The cash would be stockpiled while management seeks high-yielding projects. However

DeAngelo, DeAngelo, & Stulz (2010) found that 62.5% of firms that conducted SEOs would have run into cash problems had they not proceeded with an equity issue.

In keeping with choices on NPV projects, Jensen's (1986) seminal paper on agency theory showed how managers could potentially act as bad agents by spending excess funds on negative NPV projects. The free-cash flow theory detailed by Jensen (1986) predicts that SEO announcements will have a negative effect on share prices, due to the extra money raised being invested in value-eroding projects. The theory also posited that with a limited number of positive NPV projects available, companies will experience a decline in operating performance subsequent to an equity issue.

McLaughlin, Safieddine, Vasudevan, & Gopala (1996) found a statistically significant decrease in company profitability following a SEO. Their research also established that companies with higher free cash flows as defined in Jensen (1986), experience greater declines in operational profitability after a rights issue. There is as much as a 20% decline in relative free-cash flows three years after an issue. The findings by McLaughlin, Safieddine, Vasudevan, & Gopala (1996) are consistent with Jensen (1986).

Autore, Bray, & Petersen's (2008) work found that companies that were specific in announcing potential investment prospects as the justification for a SEO, showed little or no underperformance after three years. In contrast, a negative relationship between growth opportunities and the post offering earnings performance was found by Lee (1997).

Capital Structure

At the heart of the decision to have a rights issue lies a choice around capital structure. In Modligiani & Miller's (1958) definitive paper on capital structure, they show that the market value of any firm is independent from its capital structure. However, with more practical assumptions such as the inclusion of tax effects, firms would be better off increasing their debt levels to an optimal level. However, further developments highlighted the increased risk of financial distress that came with increased debt levels (Stiglitz, 1974).

With a targeted debt-equity ratio, a firm can 'optimise' by maximising gains from its interest tax shield while remaining clear of increased likelihood of financial distress or bankruptcy (Stiglitz, 1974). The interest tax shield is a reduction in taxable income for an individual or company achieved through claiming an allowable deduction from interest on debt. A rights offer plays the role of reducing the gearing in the business, allowing a firm to remain within its targeted debt-equity levels. Gearing is the amount of financial leverage in a business (Bodi, Kane, & Marcus, 2005).

The alternate 'Pecking Order' theory asserts that firms will first finance internally, then move to external financing with a preference for external debt and lastly external equity (Myers, 1984). Myers (1984) also showed that firms will not necessarily have a targeted capital structure, but will apply 'pecking order' financing best when they are in conditions where there are high transaction, agency and tax costs.

2.2 Factors affecting Long-Run Post-issue Performance

The following section will focus on the dynamics that affect the company earnings and share price performance after an equity issue. This study will focus on a few key factors which have significance – information asymmetry, liquidity, company lifestage, corporate governance and economic factors.

Information Asymmetry

Frielinghaus, Mostert, & Firer (2005) state that Myers (1984) used information asymmetries to argue that firm insiders are unlikely to issue equity, because they know that it may signal that their share price is overvalued to the market. The information model by Myers & Majluf (1984) has regularly appeared as an explanation for the subsequent poor post-issue performance. The information model was a decision-based model which identified situations when management would prefer to issue equity.

Myers & Majluf (1984) and Jensen (1986) were two defining papers which most influenced the debate on adverse share price reactions to SEO announcements. In Myers & Majluf's (1984) adverse selection model, managers are agents for shareholders and have inside information about the company. Given this asymmetric

information, managers will prefer to issue equity when their company is overvalued. Myers & Majluf (1984) also found that, given an undervalued company, managers would rather let go of viable projects than issue at under-priced share levels. This theory is supported by DeAngelo, DeAngelo, & Stulz (2010) who found that rights issues are correlated with market timing. However, DeAngelo, DeAngelo, & Stulz (2010) identify incompleteness in the market timing analysis, due to the theory not taking into account companies that choose not to raise equity, regardless of encouraging market timing conditions and having a need for cash.

Autore, Bray & Petersen (2008) following on from Loughran & Ritter (1997) show that SEO issuers face a decline in operating performance subsequent to a SEO. Autore, Bray & Petersen (2008) and Loughran & Ritter (1997) also show declining post-issue share returns.

These findings are considered to be the result of the issued share being overvalued at time of issue, with managers having more information about prospects at the time of issue (Loughran & Ritter, 1997).

Liquidity

Liquidity risk has been shown to play an important role in asset pricing (Lin & Wu, 2013). Its role in asset pricing captures the responsiveness of a share's return, to sharp changes in market liquidity (Lin & Wu, 2013). Given this abovementioned role, liquidity should be considered as factor when making a rights offer. Lin & Wu (2013) argue that firms issue when their respective liquidity risks are at a low – thus explaining the poor subsequent share performance. As liquidity risk declines, investors will demand a smaller liquidity premium and expected returns would be lower (Firer, Ross, & Westerfield, 2012). This dovetails with Eckbo, Masulis & Norli (2006), who showed that issuing firms experienced higher post-issue liquidity, which would result in lower premiums, that would in turn reduce expected post-issue returns.

Crucially, Lin & Wu (2013) found that the issuing firms' liquidity risk remained relatively low for two to three years, compared to non-issuing firms, with investors demanding less in price for firms that show larger liquidity risk declines. This links the

low liquidity risk to low post-issue price performance that is experienced by issuing firms, due to lower expected returns.

Company Lifestage

Organisational lifestage theory can play a useful part in the equity issuance debate. Different firms have differing characteristics and business needs, at different parts of the corporate lifecycle (Frielinghaus, Mostert, & Firer, 2005). Business needs include, but are not limited to, the method of financing that will be selected by the company management. A pilot study conducted by Frielinghaus, Mostert, & Firer (2005) supported the pecking order theory developed by Myers & Majluf (1984) which postulates that firms will finance first with internal equity, then debt - if retained earnings are insufficient, then external equity will be utilised as a last resort. Initially when in an early stage, according to the pecking order theory, a firm will have a high use of debt financing (Frielinghaus, Mostert, & Firer, 2005).

As the firm enters its prime and into the maturity lifestage, it is more likely to use its own equity and external equity (Frielinghaus, Mostert, & Firer, 2005). Finally, in its maturity stage, the firm will again select debt as its chief financing mechanism.

DeAngelo, DeAngelo & Stulz (2010) found evidence that the phase of lifecycle that a firm finds itself in has a significant influence on the decision to undertake a seasoned equity offering. Growth-stage firms were the most prevalent of issuers in the SEO market – specifially growth-stage firms that have high market-to-book ratios and low operating cash flows (DeAngelo, DeAngelo, & Stulz, 2010). Firms with low operating cashflows exhibit increased operational risk which could impact the probability of financial distress – this is seen as an underlying driver of the choice to have an equity issue. These firm characteristics around the time of an SEO tie in with the behavioral market timing theory, which argues that managers will sell their company stock when their share price is high.

Corporate Governance

Corporate governance is defined as the system through which organisations are directed and controlled. Corporate governance sets control mechanisms which guide

and observe managers' actions, ensuring that their decisions are aligned with shareholder interests (Dbouk & Ismail, 2010). Dbouk & Ismail (2010) found that strong governance structures and systems are associated with positive abnormal performance after an equity issue.

It is suggested that good corporate governance assists in mitigating the agency problems identified by Jensen (1986) by impelling the manager to invest to better serve shareholder interests and to invest equity issue proceeds in higher yielding projects – corporate governance limits a managers ability to use capital irresponsibly.

Macroeconomic Risk-Factors

The dearth of research on post-issue operating and share price performance has explanations and methods which mostly support the information model by Myers & Majluf (1984). Recent research has focussed on explaining the variance within the negative share price responses (Pascoe, Ward, & Mackenzie, 2005). Pascoe, Ward, & Mackenzie (2005) following from Korajczyk, Lucas, & McDonald (1991) state that periods of high economic growth account for a larger portion of all equity issues. In periods of high economic growth, asymmetric information is low. Low asymmetric information is accompanied by low adverse selection costs because there is less uncertainty in the market (Pascoe, Ward, & Mackenzie, 2005). Equity issues are most prevalent in strong equity markets, with firms that have relatively well performing stocks being more amenable to issuing equity (Korajczyk, Lucas, & McDonald, 1991).

In South Africa, Pascoe, Ward, & Mackenzie (2005) examined the effects of economic factors on the share price, after a rights issue announcement. The economic factors examined included interest rates, stock maket performance, business cycles, economic growth and business confidence. Economic factors have been found to account for the changes in the share price with respect to rights issue announcements (Pascoe, Ward, & Mackenzie, 2005).

Eckbo, Masulis, & Norli (2006) found firms are relatively less risky than matched companies after an equity issue. Matched companies are those that company can

benchmark themselves against, based on similar company characteristics. These matched characteristics include, but are not limited to, nature of business, size, leverage and performance. Given a downward risk-adjustment based on some of the factors mentioned above, the market makes a commensurate reduction in expected returns – therefore explaining the poor long run post-issue performance. In their study, Eckbo, Masulis, & Norli (2006) examine the influence of macroeconomic factors on post-issue performance. The selected macroeconomic factors for their analysis included unanticipated inflation, a value-weighted market index, real per capita consumption, short-term and long-term soveriegn interest rates, and a corporate spread between BAA and AAA Moody-rated bonds. Eckbo, Masulis, & Norli (2006) argued that the matched-firm technique by Loughran & Ritter(1997) does not adequately account for risk, and thus presented the additional six factor model.

The six factor model showed that SEO firms have slightly higher sensitivity to market risk than comparable non-issuer firms (Eckbo, Masulis, & Norli, 2000). The relatively higher sensitivity to the market was negated by a higher reduction in post-issue risk exposure. This was due to unanticipated inflation, and measures of interest rate risk (Eckbo, Masulis, & Norli, 2000). This market sensitivity is simply understood by recognising that as equity issuers decrease their leverage, their direct exposure to interest rates and inflation also decreases. As a result, the market discounts the issued stock, with low post-issue performance as a consequence.

Bayless & Jay's (2008) findings were slightly different to those of Eckbo, Masulis, & Norli (2000), despite using similar macroeconomic factor model. For Bayless & Jay (2008), equity issuing firms have significantly lower systematic risk and risk-adjusted returns, during the post-issue period.

2.3 Summary of findings in the related literature

2.3.1 Share Price Performance

Most studies such as Bayless & Jay (2008), Eckbo, Masulis, & Norli (2000) and Loughran & Ritter(1995) assess share price reaction to rights issues using buy-and-hold returns, which will be further explained later in this paper. This study employs

cumulative abnormal returns which are similar to those used in Spiess & Grave (1995). The table below is an excerpt from their findings.

| | | Sample |
|-------|---------|--------|
| Month | CAR | Size |
| 1 | 2.55% | 1247 |
| 2 | 2.17% | 1246 |
| 3 | 1.23% | 1246 |
| 4 | 0.93% | 1246 |
| 5 | -0.34% | 1243 |
| 6 | -0.65% | 1243 |
| 7 | -0.76% | 1243 |
| 8 | -1.07% | 1242 |
| 9 | -1.28% | 1241 |
| 10 | -2.25% | 1237 |
| 11 | -3.42% | 1234 |
| 12 | -4.30% | 1229 |
| | | |
| • | | • |
| | | |
| 60 | -31.24% | 900 |

Table 1: Cumulative Abnormal Returns (CAR) following a seasoned equity offer from Spiess & Grave (1995) for the period 1975-1989

The findings above indicate a negative abnormal return across the months for the selected trading year. This corroborates the extensive literature with regard to the expected poor performance after an equity issue, with a 60 month CAR of -31.24%. However the results appear to have an element of downward bias, which brings in the 'bad model' problem mentioned by Kothari & Warner (2007), in that long-run event studies on share price are susceptible to bias. The 'bad model' problem also premises that the testing of abnormal returns may lead to specious results due to the choice of benchmark. This will be further discussed in Chapter 4 of this paper.

Buy-and-Hold returns are not to be confused with cumulative abnormal returns, thus the paper distinctly sets the findings apart. The table (2) below is a synopsis of the findings of both recent and past papers that studied the share price performance after a rights issue.

Table 2: Summary of post-issue buy-and-hold returns from selected research papers over different holding and sampling periods

| Authors | Devia | Sample | Holding | Period | Equal-Weighted |
|---------------------------|--------|--------|---------|--------|----------------|
| Author | Period | Size | (years) | | BHARS |
| | 1970- | | | | |
| Loughran & Ritter (1995) | 1990 | 3702 | 3 | | -59.40% |
| Spiess and Affleck-Graves | 1975- | | | | |
| (1995) | 1989 | 1247 | 3 | | -22.84% |
| Eckbo, Masulis & Norli | 1980- | | | | |
| (2007) | 2000 | 4971 | 5 | | -29.70% |
| Autore, Bray & Petersen | 1997- | | | | |
| (2008) | 2003 | 880 | 3 | | -11.15% |

The studies above all employed the BHAR method, with similar matched firm bases such as size and book-to-market ratios. All studies show the highly negative BHAR at the end of the holding period. It is important to note that, for such long sample periods, caution should be taken in deducing associations between the returns and the rights issue. (Barber & Lyon, (1997) say that the most important matter when calculating abnormal share returns is the selection of a benchmark.

14

2.3.2 Operating Financial Performance

There are various ways in which operating performance is measured in the literature. McLaughlin, Safieddine, Vasudevan, & Gopala (1996) used similar measures to this study. While studies such as Autore, Bray, & Petersen (2008) used operating income, scaled by assets to measure performance; this study follows on from McLaughlin, Safieddine, Vasudevan, & Gopala (1996) by using pre-tax operating cash flow scaled by total assets and a similar matched-firm technique identified in Barber & Lyon (1997). However this study also closely followed Smit & Ward (2007) by matching according to industry and pre-issue size. The results for the Industry-Adjusted Cash flow Return On Total Assets (IACFRA) from McLaughlin, Safieddine, Vasudevan, & Gopala (1996) are shown below:

| IACFRA | Year (-2) | Year (-1) | Year (1) | Year (2) |
|----------------|-----------------|--------------|--------------|------------------|
| Median | 0.020*** | 0.034*** | 0.021*** | 0.013*** |
| Mean | 0.014 | 0.026 | 0.009 | 0.004 |
| Standard Error | 0.14 | 0.176 | 0.148 | 0.169 |
| Sample Size | 1044 | 1133 | 1147 | 1118 |
| Change in | Year (-2) to (- | Year (-1) to | Year (-1) to | Voor (1) to (2) |
| IACFRA | 1) | (1) | (2) | rear (-1) to (3) |
| Median | 0.008*** | -0.008*** | -0.015*** | -0.017*** |
| Mean | 0.012*** | -0.018*** | -0.030*** | -0.032*** |
| Standard Error | 0.096 | 0.159 | 0.159 | 0.177 |
| Sample Size | 1037 | 1118 | 1982 | 872 |

Table 3: Results of analysis by McLaughlin *et al* (1996) on operating financial performance (IACFRA) before and after a seasoned equity offering

The tests for the medians were conducted based on two-tail t-test, the key variables representing operating financial performance being found to be significant. The study points to the negative changes in industry-adjusted cash flow return on total assets from year (-1) to year (1) with a median value of -1.8%. Similarly, the shift from year (-1) to year (2) had a mean change of -3%. McLaughlin, et al (1996) mention that these results should be interpreted with caution given that there could be industry-wide impacts affecting the operating financial performance ratios. The findings of

McLaughlin et al (1996) show that pre-issue operating financial performance is superior to subsequent operating financial performance.

Autore, Bray, & Petersen (2008) assessed operating financial performance using a slightly different measurement. The measurement for operating financial performance was similiar to that of Loughran & Ritter (1997) where both studies looked at median operating income scaled by total assets, before and after a rights issue. The table below provides a brief summary of Autore, Bray, & Petersen's (2008) findings.

Table 4: Results of analysis by Autore *et al* (2008) on operating financial performance (median operating income scaled by total assets) before and after a seasoned equity offering

| Industry- Income | Adjusted | Operating | Year (-1) | Year (0) | Year (1) | Year (2) |
|---------------------|--------------|------------------|----------------------|----------|-------------|-------------|
| Median | | | 0.003 | 0.007 | 0.004 | - 0.011 |
| Sample Size | in Induction | | 843 | 796 | 711 | 633 |
| Operating In | ig Income | Year (-1) to (2) | Year (0) to (2) - | | | |
| Median | | | -0.016*** | 0.019*** | | |

*** - indicates statistical significance at the 1% level

Despite using slightly different measures for operating financial performance, the findings exhibit a clear trend of inferior operating performance after a rights issue. Autore *et al* (2008) also included performance at the category level, concluding that companies that used the proceeds of a rights issue for investment purposes had a smaller decline in subsequent operating financial performance. Whereas companies that specified that the proceeds would be used to repay debt or general corporate services, experienced large declines even up to three years after the issue.

2.4 Benchmarking for Abnormal Returns

So far the study has provided a description of what rights issues are, and also documented the various factors that may influence share price and operational financial performance after a rights issue.

In examining performance at both the share price and operating levels, the measurement thereof becomes of considerable importance. The research by Fama, Fisher, Jensen, & Roll (1969) was groundbreaking, they described distinct share price returns as what we commonly call 'Abnormal Returns' today. Abnormal returns are the difference between expected returns and actual returns for a company stock or portfolio (Fama, Fisher, Jensen, & Roll, 1969). Expected returns can be loosely defined as the return expected by an investor on an asset or security in a given risk environment. Abnormal returns can be applied to both share price returns and operational financial performance.

These abnormal returns are due to a market reaction to new information about a corporate event being announced (Fama, Fisher, Jensen, & Roll, 1969). For this research report, the corporate event under study is a rights offer. Statistically, these abnormal returns would then be tested to see if they were significantly different from zero during the period of analysis, which is known as the event window.

Barber & Lyon (1997) showed how the choice of benchmark has a significant effect on the outcomes of studies using abnormal return measures. The benchmark return is the expected return which was briefly described above. Marquee papers by Fama & French (1993,1996) have shown how firm characeristics, such as size and bookto-market ratios, can account for a significant amount of variation in stock returns. These characteristics provide a basis for calculating benchmark or expected returns. In their study, Barber & Lyon (1997) focused on how the use of certain methods to calculate abnormal returns introduced or reduced bias which would influence results. It is recommended that the benchmark be calculated by using control firms, first by matching on size and then matching by book-to-market ratios. The caveat in the control firm approach is that both firms must be listed on an exchange in the same month (Barber & Lyon, 1997).

There are various models which have emerged as ways to calculate abnormal returns for stocks. These models have their advantages and disadvantages, which will be briefly discussed below:

i) Mean-Adjusted Model abnormal returns:

 $AR_{it} = R_{it} - K_i$... Equation 1

Where

AR_{it} is the abnormal return for security i for period t

R_{it} is the actual return for security i for period t

 K_i is the average return earned by security i over a period not in the event window

ii) Market-Adjusted Model abnormal returns:

 $AR_{it} = R_{it} - R_{mt}$... Equation 2

Where

 R_{mt} is the return on an equal-weighted market index for period t

iii) Market Model abnormal returns

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$$
 ... Equation 3

Where

 α_i and β_i are parmeters which are found by linearly regressing share returns for security i against equally-weighted market index returns

iv) Capital Asset Pricing Model(CAPM) abnormal return abnormal return:

 $AR_{it} = R_{it} - R_{ft} - \beta_i [[R]_{mt} - R_{ft}] \qquad \dots Equation 4$

Where

 β_i is the slope found by regressing $(R_1it - R_1ft)$ on $(R_mt - R_ft)$ for a period not in the event window (estimation period), the regression line is to have a y-intercept of zero

*R*ft is the risk-free rate during period t

v) Fama – French three factor abnormal return model:

$$AR_{it} = R_{it} - R_{ft} - \beta_{i1} \left[\left[R \right]_{mt} - R_{ft} \right] - \beta_{i2} HML_t - \beta_{i3} SMB_t \quad \dots Equation 5$$

 β_{i_1} , β_{i_2} and β_{i_3} are found by regressing security i returns against excess returns on market returns for the estimation period

 HML_t is the high minus low book-to-market portfolio return for period t

 SMB_t is the small minus big size portfolio return for period t

Of all the models specified above, the Market Model was shown by Kothari & Warner (2007) to be the worst model in predicting abnormal performance. The evidence against the market model is based on share prices not being positively linear-related to the market given a market beta. Similarly the mean-adjusted model is discarded because share returns are not always in a linear pattern, and past performance is not always a good predictor of future performance (Smit, 2005).

Fama & French (1996) found that the CAPM model failed to account for various anomalies such as size, which explain security returns. Their model includes the excess return earned over the risk-free rate, while also including other explanatory factors in calculating abnormal share returns. However, the three-factor model by Fama & French (1993) does have a few of its own disadvantages. For example, with regard to long-horizon studies, the regression coefficients are assumed stable for the estimation period, which is not likely in equity capital markets (Mushidzi & Ward, 2004).

The research will use a control portfolio model by Ward & Muller (2010) which shares many characteristics with the model developed by Fama & French (1993). The control portfolio approach is supported in the literature, by Barber & Lyon (1997) and Kothari & Warner (2007) among others.

3. Research Objectives and Hypotheses

Research objectives for the study are as follows:

- d) Assess the impact of a rights offer on the share price in the long run.
- e) Investigate if the intended use of the proceeds from the rights issue has an impact on the share price in the long run.
- f) Assess the impact of a rights offer on the operating performance in the long run.

The literature has provided a platform upon which we can appropriately test the relationship between rights offers and performance at the share price and operational performance levels. The research was split into two dimensions; the share price essentially represents the external form of the business, and the operating performance represents the internal form. The share price is based actual and expected performance, which can be subjective (Firer, Ross, & Westerfield, 2012). The share price is also subject to other externalities which one can refer to as 'noise'. It is further acknowledged that this 'noise' makes it difficult to find a distinct association between share price performance and a rights offer as the horizon lengthens (Smit, 2005). The literature illustrates that the pre-eminent approach to testing the impact of rights issues, is by looking at abnormal share price returns. Asquith, Bruner, & Mullins (1983) advise that no set of hypotheses can account for all the factors that affect abnormal returns. However, when looking at abnormal share price returns, other important factors which have been shown to explain share returns, such as size and industry can be controlled for (Spiess & Grave, 1995).

This study aimed to progress the literature on rights issues further, by looking at the subsequent share price performance of different groups of rights issuers. These

groups include those that issue the funds raised in a rights issue to repay debt, those that use the funds to invest in expansion and those that were not clear about what they intended to do with issue proceeds (Autore, Bray, & Petersen, 2008).

The other dimension of this study examines operating financial performance. The dynamics for benchmarking are similar to the benchmarking process for abnormal share returns, as shown in McLaughlin, et al (1996). McLaughlin, et al (1996) found a matching firm by looking at size, industry and pre-rights issue performance.

The chosen method to look at operating performance was industry-adjusted cash flow return on total assets (IACFRA). The operating cash flow represents the net cash flow which is generated from core operations (Firer, Ross, & Westerfield, 2012).

Given the research objectives above, the following research hypotheses were tested:

Hypothesis 1

Cumulative average abnormal returns (CAARs) represent share price performance. The null hypothesis states that rights offers do not affect cumulative average abnormal returns positively or negatively. Informed by the literature in Chapter 2, the alternative hypothesis states that rights offers negatively affect cumulative average abnormal returns.

 $H_{1,0}$: CAAR_{FULL} = 0

 $H_{A,0}$: **CAAR**_{FULL} < 0

Hypothesis 2

The null hypothesis states that rights issued to repay debt do not affect cumulative average abnormal returns positively or negatively. The alternative hypothesis states that rights issued to repay debts negatively affect cumulative average abnormal returns.

 $H_{2,0}: \quad CAAR_{DEBT} = \mathbf{0}$

 $H_{2,A}: CAAR_{DEBT} < 0$

Hypothesis 3

The null hypothesis states that rights issued to invest do not affect cumulative average abnormal returns positively or negatively. The alternative hypothesis states that rights issued to invest negatively affect cumulative average abnormal returns.

 $H_{3.0:} \quad CAAR_{INVEST} = \mathbf{0}$

 $H_{3,A}$: CAAR_{INVEST} < 0

Hypothesis 4

The null hypothesis states that rights issued without a clear purpose do not affect cumulative average abnormal returns positively or negatively. The alternative hypothesis states that rights issued without a clear purpose negatively affect cumulative average abnormal returns.

 $H_{4,0:} \quad CAAR_{GENERAL} = 0$

 $H_{4,A}$: CAAR_{GENERAL} < 0

Hypothesis 5

The industry-adjusted cash flow return on assets (IACFRA) was chosen to represent operating financial performance. The null hypothesis states that industry adjusted cash flow return on assets before the rights issue and the industry adjusted cash flow return on assets after the rights issue are not statistically different. The alternative hypothesis states that the industry adjusted cash flow return on assets before the rights issue and the industry adjusted cash flow return on assets before the rights issue are statistically different.

 $H_{5.0}$: IACFRA_{POST} = IACFRA_{PRE}

 $H_{5,A}: IACFRA_{POST} \neq IACFRA_{PRE}$

4. Research Design and Methodology

This study conducted made use of secondary quantitative data and was causal in nature. The selected research method was that of an event study. Mackinlay (1997) says that "event studies are an established tool for measuring the impact of a specific event on share price data".

It should be noted that while the event study method is better suited to share price data, it can also be used for financial statement data as in Smit & Ward (2007), Bae, Jeong, & Tang (2002) and McLaughlin, Safieddine, Vasudevan, & Gopala (1996).

4.1 Unit of Analysis

The unit of analysis for the study was any company listed on the Johannesburg Stock Exchange (JSE) that announced a rights issue during the sample period. The sample period is from January 2002 to December 2011.

4.2 Population of relevance

The population for this study included all companies that issued equity on the JSE. This excluded initial public offerings (IPO). Listed companies are required to announce any material and/or price sensitive information to the market (Firer, Ross, & Westerfield, 2012). The population of relevance was collected from a JSE Archive on all rights issues on the JSE for the selected sample period.

4.3 Event study method

The event study method has emerged as the pre-eminent method for analysing the impact of corporate events on company performance when studying share price and operating financial performance. Therefore, this method was chosen for this study. The typical event study detailed in Mackinlay (1997) and Brown & Warner (1985) is as follows:

- 1. Define the event and event window: This is the rights issue announcement, specifically the date of declaration. The event window is the period in which it is expected that the event will affect the share price, or the operating financial performance of the company
- 2. Select companies for inclusion: Identify companies that will be included in the dataset for the event study, this will be discussed later in 4.5.
- 3. Calculate normal and abnormal returns on the company share price: This will be discussed in further detail later in 4.6.
- 4. Conduct statistical tests: The results of all statistical tests will be included in chapter 5
- 5. Interpret Results and draw inference: the interpretation of statistical tests and inferences made will be detailed in chapter 6 and 7

To accurately assess the excess or abnormal returns around a certain event, the event study method is underpinned by these assumptions (Mushidzi & Ward, 2004):

- Market efficiency: share price includes all available public information
- Unanticipated events: the market only becomes aware of an event once it has been announced
- Confounding effects: no other major event occur around the time of (one-two before, and one to two days after) the announcement

With reference to (1) in 4.3. above, the declaration date was selected as the event day because it is the first official announcement of the rights issue, through the official Stock Exchange News Service. It can be argued that this date is more important than the issue date/effective date for the rights issue, because it is at this point that the assumption of market efficiency would be critical. Looking at the effects of the rights issue on the issue date could potentially omit the immediate price reaction to the rights issue announcement.

Furthermore considering the impact on issue date also has the complication of price effects due to dilution, this is as a result of the increase in the total number of shares in issue becoming effective (Firer, Ross, & Westerfield, 2012).

If markets were not efficient, it would be difficult to isolate the effect of the announcement of a rights issue on the share price. Similarly, with unanticipated events, if participants in the market became aware of a rights issue prior to the announcement, then this would have a priori effect on the share price and it would be difficult to capture the full effect of the announcement on the share price. Confounding events that could potentially affect the share price around the time of the announcement are also avoided to ensure that most of the price movement can be attributed to the rights issue announcement. Other corporate events such as the completion of an acquisition or financial restructuring fall within the scope of our research objective and are to be included.

4.4 Data Collection

Data on rights issues on the JSE was sourced from the JSE and share data-portals. The corporate events office at the JSE was generous enough to provide an archive of rights issues going back as far as 2000. The JSE archive provided all relevant information, such as the company name and share code, declaration date, issue date and number of shares being issued.

All price-sensitive announcements are disseminated through the Stock Exchange News Service (SENS). SENS is an electronic notice board which ensures that information is available to investors, analysts and any other interested parties. All SENS announcements from share data sites Sharenet and Sharedata were scanned for specific information about rights issues for each issuing company during the sample period. The SENS announcements were used to identify the intended purpose for each rights issue. Sharenet and Sharedata were also used to verify the date of declaration of the rights issue in the JSE Archive.

For purposes of analysing operating financial performance, data was collected through a program provided by Mike Ward and Chris Muller from the Gordon Institute of Business Science. This program sources data from the McGregorBFA Database. Other company specific information such as the issuer's market capitalisation was sourced from a similar program which is sources data from the monthly bulletin which is published by the JSE.

4.4.1 Share Price Performance – Event Window

The period over which data collection and analysis was conducted, is known as the event window. For this study, the selected event window was from 60 trading days before the rights issue event day to 220 trading days after the event day.

4.4.2 Operating Financial Performance – Event Window

To consider the long-run impact with regard to operating financial performance, the event window was from two years before the event, to two years after the event. The discrete nature of the operating financial performance data necessitates having a relatively long event window when compared to the share price performance which is based on continuous data.

4.5 Sampling Method and Size

The sample for both share price performance and operating performance was JSElisted companies that announced seasoned equity offers or rights offers during the selected period (Jan 2002 – Dec 2011).

Screening of the sample

As in Cotterell (2011), following on from Mackinlay (1997) and Pascoe, Ward, & Mackenzie (2005), the criteria for inclusion of companies in the sample, when conducting an event study, are found below:

- The sample is to be restricted to ordinary shares (Pascoe, Ward, & Mackenzie, 2005)
- The sample is restricted to ZAR-denominated shares (Pascoe, Ward, & Mackenzie, 2005)
- Rights issue announcements expected prior to the actual announcement on SENS are to be excluded (Pascoe, Ward, & Mackenzie, 2005)
- Rights issuing companies that have shares which have no trading data during the event window either because the company has been suspended or for any other reason ,have no trading days during the event window will be excluded (Pascoe, Ward, & Mackenzie, 2005)

Lack of Data

Based on the conditions for exclusion listed above, the first criterion was based on companies that did not have enough data to warrant inclusion in the sample. Analysis requires continuous share data for 60 trading days before, and at least 220 trading days after the rights issue. The companies excluded on this basis are listed in the table (5) below:

| COMPAN | Y | | CODE | DATE |
|----------|---------------|----------|-----------|-----------|
| PRISM HC | DLDINGS LIMIT | ED | PIM | 28-Jan-02 |
| ZELTIS H | OLDINGS LIMIT | ZLT | 25-Feb-02 | |
| CYCAD | FINANCIAL | HOLDINGS | CYD | 4-Mar-02 |

| | Table 5: | Companies | excluded | due to a | a lack of | data |
|--|----------|------------------|----------|----------|-----------|------|
|--|----------|------------------|----------|----------|-----------|------|

| LIMITED | | |
|-----------------------------|-----|-----------|
| ISCOR LIMITED | ISC | 11-Mar-02 |
| MILLIONAIR CHARTER LIMITED | MLL | 20-May-02 |
| GLODINA HOLDINGS LIMITED | GDA | 12-Aug-02 |
| RELYANT RETAIL LIMITED | RLY | 12-Aug-02 |
| CASEY INVESTMENT HOLDINGS | | |
| LIMITED | CSY | 18-Nov-02 |
| AST GROUP LIMITED | AAA | 8-Sep-03 |
| MESSINA LIMITED | MES | 15-Sep-03 |
| IMR INVESTMENTS LIMITED | IMR | 19-Sep-03 |
| KOLOSUS HOLDINGS LIMITED | KOS | 24-Nov-03 |
| AVASA HOLDINGS LIMITED | AVA | 24-Dec-04 |
| AST GROUP LIMITED | AAA | 4-Apr-05 |
| SOVEREIGN FOODS LTD | SOV | 7-Mar-11 |
| MURRAY AND ROBERTS LTD | MUR | 16-Apr-12 |
| ALERT STEEL HOLDINGS LTD | AET | 25-Jun-12 |
| ERBACON INVESTMENT HOLDINGS | | |
| LTD | ERB | 20-Aug-12 |
| CAPITEC BANK HOLDINGS LTD | CPI | 5-Nov-12 |
| PAN AFRICAN RESOURCE LTD | PAN | 7-Jan-13 |
| RAINBOW CHICKEN LITD | RBW | 25-Feb-13 |
| CURRO HOLDINGS LTD | СОН | 6-May-13 |

Unrelated financial instrument

The study looked only at listed equity, specifically ordinary shares of companies listed on the JSE. Differing financial instruments have idiosyncratic characteristics with regard to risk, economic benefits and so forth. For consistency, other listed instruments - such as preference shares, debentures and linked units were excluded from the sample. Preference shares have both debt and equity characteristics which make them unsuitable for this study (Bodi, Kane, & Marcus, 2005). Debentures are debt instruments and were excluded. Linked units are listed by property companies and have a debt and equity element JSE (2013), and were not included. Below are the companies which were excluded due to having an irrelevant financial instrument:
| | COD | DECLARATIO | |
|------------------------------|-----|------------|-------------|
| FULL COMPANY NAME | Е | N | INSTRUMENT |
| DECILLION LIMITED | DEC | 12-Aug-02 | DEBENTURE |
| EXCELLERATE HOLDINGS LIMITED | EXL | 19-Dec-02 | DEBENTURE |
| PALABORA MINING COMPANY | | | |
| LIMITED | PAM | 18-Aug-03 | DEBENTURE |
| GLOBAL TECHNOLOGY LIMITED | GLT | 8-Mar-04 | CONVERTIBLE |
| ARNOLD PROPERTY FUND | ARP | 19-Mar-04 | LinkedUnits |
| ANGLO AMERICAN PLATINUM | | | |
| CORP LD | AMS | 3-May-04 | PREF SHARES |
| HYPROP INVESTMENTS LIMITED | HYP | 19-Jul-04 | LinkedUnits |
| SIYATHENGA PROPERTY FUND | | | |
| LIMITED | SYA | 31-Aug-05 | LinkedUnits |
| PSG FINANCIAL SERVICES | | | |
| LIMITED | PSG | 31-Oct-05 | PrefShare |
| REDEFINE INCOME FUND LIMITED | RDF | 31-May-06 | LinkedUnits |
| MONYETLA PROPERTY FUND LTD | MYT | 25-Jun-07 | LinkedUnits |
| HOSPITALITY PROP FUND B | HPB | 22-Oct-07 | LinkedUnits |
| HOSPITALITY PROP FUND A | HPA | 22-Oct-07 | LinkedUnits |
| GROWTHPOINT PROPERTIES | | | |
| LIMITED | GRT | 3-Dec-07 | LinkedUnits |
| GROWTHPOINT PROP LTD | GRT | 26-Jan-09 | LinkedUnits |
| ALEX FORBES PF SHARES INV | AFP | 23-Nov-09 | PrefShare |
| HOSPITALITY PROP FUND A | HPA | 8-Nov-10 | LinkedUnits |
| HOSPITALITY PROP FUND B | HPB | 8-Nov-10 | LinkedUnits |
| PREMIUM PROPERTIES LTD | PMM | 21-Feb-11 | LinkedUnits |
| FOUNTAINHEAD PROPERTY | FPT | 4-Apr-11 | LinkedUnits |

Table 6: Companies excluded due to being an unrelated financial instrument

| TRUST | | | |
|---------------------------|-----|-----------|-------------|
| HOSPITALITY PROP FUND A | HPA | 11-Jun-12 | LinkedUnits |
| HOSPITALITY PROP FUND B | HPB | 11-Jun-12 | LinkedUnits |
| CURRO HOLDINGS LIMITED | СОН | 25-Jun-12 | LinkedUnits |
| PALLINGHURST RES LTD | PGL | 16-Jul-12 | LinkedUnits |
| OCTODEC INVEST LTD | OCT | 13-Aug-12 | LinkedUnits |
| NEW EUROPE PROP INV PLC | NEP | 12-Nov-12 | LinkedUnits |
| REBOSIS PROPERTY FUND LTD | REB | 28-Jan-13 | LinkedUnits |
| DELTA PROPERTY FUND LTD | DLT | 26-Apr-13 | LinkedUnits |
| SYCOM PROPERTY FUND | SYC | 20-May-13 | LinkedUnits |
| VIVIDEND INCOME FUND LTD | VIF | 27-May-13 | LinkedUnits |

Second Rights Issue

For companies that had had more than one rights issue in the sample period, it was decided to include the relatively larger rights issue by nominal value. The following rights issues were excluded on this basis:

Table 7: Companies excluded due to a prior rights issue in the same period

| | | DECLARATION |
|--------------------------|------|-------------|
| COMPANY NAME | CODE | DATE |
| NEDCOR LIMITED | NED | 4-Jul-02 |
| PSG GROUP LIMITED | PSG | 31-Oct-06 |
| YORK TIMBER ORG | YRK | 20-Aug-07 |
| METOREX LTD | MTX | 19-Jan-09 |
| MEDI-CLINIC CORP LTD ORD | MDC | 2-Aug-10 |

Issue Size

The sample included rights issues that were greater than R100mm. R100mm was selected as the minimum issue size to avoid some of the data issues that are experienced for the 'smallcaps' on the JSE e.g. lack of liquidity, missing data. The

'smallcaps' are those companies that have a relatively small market capitalisation. The following rights issues were excluded on this basis:

| COMPANY | CODE | DATE | CAPITAL RAISED |
|------------------------------|------|-----------|-------------------|
| AFRICAN BRICK CENTRE LTD | ABK | 13-Sep-10 | 20,139,348 |
| ABSOLUTE HOLDINGS LTD | ABO | 6-Oct-08 | 12,840,485 |
| AFROCENTRIC CORP INVESTMENTS | ACT | 31-Aug-06 | 84,600,000 |
| AFRICAN DAWN CAPITAL LTD | ADW | 24-Oct-11 | 25,000,000 |
| ALERT STEEL HOLDINGS LTD | AET | 3-Oct-11 | 50,000,000 |
| ALL JOY FOODS LTD | ALJ | 4-Aug-08 | 15,000,000 |
| AVASA HOLDINGS LTD | AVA | 31-Jan-05 | 4,400,000 |
| BEIGE HOLDINGS LTD | BEG | 12-Aug-02 | 37,480 |
| BEIGE HODINGS LTD | BEG | 31-Dec-05 | 11,415,292 |
| BEIGE HOLDINGS LTD | BEG | 9-May-11 | 25,000,000 |
| BIOSCIENCE LTD | BIO | 19-Jan-09 | 31,822,101 |
| DIGICORE HOLDINGS LTD | DGC | 14-Feb-11 | 90,000,000 |
| DRDGOLD LTD | DRD | 31-Jul-05 | 86,922,638 |
| FINBOND GROUP LTD | FGL | 5-Mar-12 | 20,000,000 |
| FARITEC HOLDINGS LTD | FRT | 6-Jul-09 | 20,000,000 |
| GLOBAL TECHNOLOGY LTD | GLT | 15-Apr-02 | 37,361 |
| JOHN DANIEL HOLDINGS LTD | JDH | 10-Oct-11 | 15,000,000 |
| LIBERTY INTERNATIONAL PLC | LBT | 15-May-09 | 951,616 |
| MILKWORX LTD | МКХ | 25-May-09 | 4,674,662 |
| MATHOMO GROUP LTD | МТО | 11-Mar-02 | 37,326 |
| ONELOGIX GROUP LTD | OLG | 17-Apr-03 | 37,728 |
| PURPLE CAPITAL LTD | PPE | 25-Jun-07 | |

Table 8: Companies excluded due to a small issue size

| | | | 44,555,892 |
|---------------------------------|------|------------|------------|
| RACEC GROUP LTD | RAC | 5-Jul-10 | 10,000,003 |
| ROCKWELL DIAMONDS INC | RDI | 15-Mar-10 | 32,448,768 |
| SALLIES LTD | SAL | 24-Dec-03 | 37,979 |
| SALLIES LTD | SAL | 30-Jun-06 | 65,023,252 |
| SALLIES LTD | SAL | 25-Jun-07 | 74,950,195 |
| SALLIED LTD CD | SAL | 31-Mav-08 | 75.741.679 |
| SABLE HOLDINGS LTD | SBL | 4-May-09 | 34.995.378 |
| SECURE DATA HOLDINGS LTD | SDH | 14-Jul-08 | 15.770.001 |
| SA FRENCH I TD | SEH | 27lun-11 | 20,000,000 |
| SEKUNJALO INVESTMENT HOLDINGS | SKJ | 24-Dec-03 | 37 979 |
| | SKW | 26-Oct-09 | 6 888 373 |
| | OT A | 18 Nov 02 | 27 579 |
| | STA | 18-INOV-02 | 37,576 |
| SIZAFIKA INVESMENT HOLDINGS LTD | SZA | 31-Aug-06 | 6,887,500 |
| TAWANA RESOURCES LTD | TAW | 20-Mar-08 | 13,166,641 |
| TOP FIX HOLDINGS | TFX | 11-Feb-08 | 40,000,000 |

4.6 Data Analysis Approach

In line with the different hypotheses detailed in chapter three, the approach to data analysis was split into two sections. The first approach of data analysis was relevant to hypotheses numbered one to four, which were related to the investigation of the impact of rights issues at a share price performance level. The second approach was relevant to hypothesis five which was based on the investigation of the impact of rights issues at an operating financial performance level.

The first approach adopted the step process which was outlined in section 4.3. With the test sample now selected, the next parts in sub-section 4.6.1.will explain the measurement of abnormal returns. Sub-section 4.6.3. is an explanation of the

bootstrapped method which was used for testing statistical significance and inference.

Similarly the analysis in 4.6.4 is related to the last hypothesis and provides the method utilised for the measurement of abnormal operating financial performance. This will be followed by an explanation of the paired sample t-test for statistical significance and inference in 4.6.5. All tests will be performed at the 5% significance level.

4.6.1. Measuring Abnormal Returns

In measuring long run returns, it was prudent to be aware of the inherent biases that some tests may have. These biases will be explained later in the chapter, as part of the research limitations.

The two most prevalent methods of calculating abnormal returns in the long run were cumulated abnormal returns (CAR) and buy-and-hold abnormal returns (BHAR). With CAR, the monthly excess returns are cumulated for the selected period of analysis (Mushidzi & Ward, 2004). The difference between these two returns is compounding, CARs are simple while BHARs include compounding. The BHAR method is able to provide a clearer distinction between portfolios (Mushidzi & Ward, 2004). However, if in calculating CARs we use log price returns and add them then those, then CARs and BHARs will give a similar result. The log price return is shown in (6) below:

$$R_{it} = \log [P_{it}/P_{it-1}]$$
 ... Equation 6

 $R_{it} \, is the log return for company i on day t$

P_{it} is the share price for company i on day t.

The formula for the simple abnormal return is below (7):

$$[AR]_{it} = R_{it} - [[E(R)]]_{it} \quad \dots \text{Equation 7}$$

Where:

AR_{it} is the abnormal return for company i on day t

R_{it} is the daily log-return for company i on day t from (6)

E(R_{it}) is the expected return on day t for company i,:

For measurement across time, during a selected event window, the accumulated abnormal returns form cumulative abnormal returns is shown below in (8):

$$CAR_{i\gamma} = \sum_{t=1}^{\gamma} [AR]_{it}$$

....Equation 8

Where:

 CAR_{iy} is the cumulative abnormal return for company i from day 1 to day Y

 $[AR]_{it}$ is the simple abnormal return for company i on day t shown in (7) above

For purposes of this study, the abnormal returns were weighted using three different methods. The first weighting is the equal weighting which gives the same weighting to each cumulative average abnormal return. The second weighting is the log-issue weighting which applies a log function to each cumulative average abnormal weighted by issue size, the larger the rights issue the higher the weighting. The relative issue weighting applies a weighting by taking the issue size relative to the market capitalisation. Those rights issues which were relatively large issue size were given a larger weighting.

The other instance of the CARs was to give equal weighting to each rights issue in (9):

$$CAAR_{ky} = \frac{1}{n} \sum_{t=1}^{\gamma} CAR_{iy}$$
 ...Equation 9

Where:

 $CAAR_{ir}$ is the cumulative average abnormal return for portfolio k from day 1 to day r CAR_{ir} is the cumulative abnormal return for company i from day 1 to day r, from (8) The effect of compounding, which is the point of difference between CARs and BHARs, can be seen in the formula (10) below:

$$BHAR_{i\gamma} = \prod_{t=1}^{\gamma} [\mathbf{1} + R_{it}] - \prod_{t=1}^{\gamma} [([\mathbf{1} + [E(R))]]_{it}]] \qquad \dots \text{Equation 10}$$

Where:

 $BHAR_{i\gamma}$ is the buy-and-hold return for company i from day 1 to day γ

 $[[E(R)]]_{it}$ is the expected return for company I from day 1 to day γ

R_{it} is the daily simple return for company i on day t

As mentioned earlier in chapter three, there are a few ways in which the normal expected, or benchmark return can be calculated. These benchmarked returns were used to find the abnormal return as seen above in equation (7).

A stylised version of the three-factor model by Fama & French, (1993) was used to construct control portfolios to calculate the benchmark return. The stylised version appears in Ward & Muller (2010), Smit & Ward (2007) and Mordant & Muller (2003). The benchmark return was the critical element in the calculation of abnormal returns.

It is important to consider the choice of benchmark in event studies that investigate abnormal returns (Ward & Muller, 2010). This study used the control portfolio approach by Ward & Muller (2010) because it effectively removed biases associated with rebalancing and skewness (Barber & Lyon, 1996).

Eckbo, Masulis, & Norli (2000) proposed that the matched-firm technique, that was found in previous studies such as Loughran & Ritter (1995), did not adequately account for risk. Further to this, using an alternative such as a market index as a benchmark, produced test statistics with significant biases (Barber & Lyon, 1997).

Similar to Ward & Muller (2010), a twelve parameter 'style' model was used to estimate benchmark returns. The twelve 'control' portfolios of shares, representing factors such as size, growth/value and resources/non-resources, were created. The factors of 'size' and 'value/growth' used in the 'style' engine model from Ward & Muller (2010) have been a mainstay in stock return factor-analysis going back to Fama & French (1993, 1996). This was due to their reliability in predicting stock returns.

The 'resource/nonresource' factor is particularly relevant to the JSE given the large number of resource companies listed on the main board; with many stocks on the JSE being particularly sensitive to resource prices (Gilbertson & Goldberg, 1981).

Each company's size was measured by market capitalisation. All companies listed on the JSE were ranked in descending order of market capitalisation. Three 'size' portfolios were constructed – small, medium and large (Ward & Muller, 2010).

Companies were then classified as either 'growth' or 'value' by looking at the priceearnings ratio. The price-earnings (PE) ratio for the benchmark companies was calculated and ranked. Companies with PE ratios above the median were included in the 'growth' portfolio, while those with PE ratios below the median were included in the 'value' portfolio (Ward & Muller, 2010).

All resource companies were included in the 'resource' control portfolio, with all other companies being included in the 'non-resource' portfolio. The control portfolios were rebalanced every quarter so that any relevant changes in share characteristics such as price-earnings, market capitalisation and new listings/de-listings were taken into account.

Daily equal-weighted indices were calculated using log returns:

\dot{R}_{it} = log [P_{it}/P_{it-1}] ...Equation 11

 \dot{R}_{it} is the equal weighted share return for portfolio i and day t; P_{it} is the equal weighted share value of portfolio i and at the end of day t.

As per Ward & Muller (2010), the beta coefficients were calculated for each share in the sample by regressing each share's log-function share price return for 36 months against the monthly returns of each control portfolio for the matching period. Alphas

and Betas were updated on a rolling monthly basis. It was assumed that each month has 20 trading days.

This control portfolio model measured the expected return of share i in period t. This will be the sum of sensitivity to the returns on the twelve portfolios and a calculated alpha estimate in period t (Ward & Muller, 2010).

 $[E([R)]]_{it} = \alpha_{i,t} + \beta_{i,1}SGN_t + \beta_{i,2}SGR_t + \beta_{i,3}SVR_t + \beta_{i,4}SVN_t + \dots$ Equation 12

Where:

 $[E([R)]]_{tt}$ is the expected return on security i, on day t

at is the alpha intercept term of security i on day t

 β_{11} ... β_{112} are the beta coefficients on each control portfolio return

 $SGN_t \dots SGR_t$ is the log function share price returns on each of the twelve control portfolios

4.6.2 Classifying Intended Use of Proceeds

The second part of the study (which covers hypotheses two to four) aimed to investigate the performance of companies that were specific about how they intended to use the proceeds of the rights issue. This required the sample to be split up into sub-samples based on specified categories. The same procedure which applied to the initial sample was repeated at a category level. Three classifications or categories were identified in the sample. Similar to Autore, Bray, & Petersen (2008), the categories were: investment, debt-repayment and general corporate purposes.

In line with the literature, it was posited that any rights issuer fell into one of these categories above. The investment category included those issuers that explicitly mentioned that the purpose of the rights issue was for investment. Investment in that regard included a number of scenarios. The 'investment' scenarios were any activities which could potentially generate economic benefits which were directly related to operations or the expansion thereof. These scenarios included acquisitions, capital expenditures and working capital. For example, Omnia Holdings Ltd. (FTSE/JSE ShareCode: OMN) were specific in their SENS announcement dated

21 June 2013, clearly stating that the capital raised in the rights issue would be used for investment in the construction of a new facility.

The 'debt-repayment' category included any rights issuing companies that intended to recapitalize their business. The debt repayment scenarios included instances where the company makes a straight cash payment to reduce outstanding liabilities, but also any conversion of debt to equity. This is because the conversion would have the same effect of reducing the debt book.

The 'general' category included those companies that had not been specific about the purpose for the rights offer in their announcement. Some companies were ambiguous in that they stated that the rights issue would be used for repaying debt and for investment purposes, without giving an indication of which was more important. In such a case, that company was included in the general category.

The categories were also subjected to the same bootstrapping statistical analysis, similar to that done for hypothesis one.

4.6.3 Bootstrapping Analysis

With the data now modelled appropriately in terms of measurement of abnormal returns and calculation of CAARs, the penultimate stage in the study was to statistically analyse the data. This was done in order to make inferences about the broader population based on the selected sample. Bootstrapping was used for hypotheses one to four in this study.

The bootstrapping method is a computer-intensive statistical procedure which can be used to estimate the sampling distribution of an estimator - which is the CAAR or average abnormal return (AAR) in this study. The bootstrap method can be used in both parametric and nonparametric instances (Rochowicz, 2011). The bootstrapping method is particularly useful when looking at nonparametric distributions where no assumption has been made about the data or its parameters (Rochowicz, 2011).

The bootstrap method uses the sample as the population; randomly drawing a large number of 'resamples' of size n from this original sample (of size n also) with replacement. Also, the process compels a practitioner to use many observations which means that any inferences made are based on large sample sizes (Rochowicz, 2011).

For the purposes of this research, the bootstrapping process for hypothesis testing was as follows:

- Calculate the actual CAAR for selected event windows
- Generate simulated CAARs for the same portfolio of companies by using random dates within a two year period prior to the rights issue
- The random dates are generated for each rights issue in the sample
- The simulated CAARs for each event day can be referred to as the sampling distribution (minimum 300 observations) from above
- Calculate the critical value in each sampling distribution according to a predetermined significance level e.g. 1%, 5% or 10%
- Reject or Fail to reject null hypotheses based on whether each actual CAAR falls in the rejection region
- Repeat procedure for other event windows in the period of analysis
- Make inferences about the population based on results

4.6.4 Measuring Abnormal Operating Performance

With reference to hypothesis six, the study examined the operating financial performance of rights issuing companies around the announcement date. The main measure of firm operating performance is Operating Cash-Flow (OCF) as used in Andrikopoulos (2009).

OCF is defined as net sales, minus cost of sales, minus selling and administrative costs, before deductions for depreciation and amortization (Firer, Ross, & Westerfield, 2012). The book value of total assets is the sum of total liabilities and total equity (Firer, Ross, & Westerfield, 2012). This study used the measure 'Cashflow from operating activities' as a representation of the operating cash flow (OCF) of each company. The OCF for this study was calculated in (13) below:

$OCF_{iT} = CRC_{iT} - CPS_{iT} - IP_{iT} - ITP_{iT}$... Equation 13

Where:

 OCF_{iT} is the operating cash flow for company i for financial year T

CRC_{tT} is the cash receipts for company i for financial year T

*IP*_{*tT*} is the interest paid for company i for financial year T

*ITP*_{*iT*} is the income tax paid for company i for financial year T

The benefit of using this measure is that it is considered by McLaughlin, et al (1996) to be a 'clean' measure of operating performance because:

- Earnings can include elements like interest expense, and special items which can equivocate operating financial performance
- Operating cash flows represent the economic benefits to the firm
- OCF is not affected by changes in tax status and/or tax structure

To be able to compare different companies, we will scale the OCF in (9) by assets, shown in (14) below:

$$CFRA_{iT} = \frac{OCF_{iT}}{TA_{iT}}$$
 ...Equation 14

Where:

CFRA_{iT} is the cash flow return on assets of company i for financial year T

 OCF_{tT} is the operating cash flow of company i for financial year T from (9) above

TA_{it} is the book value of total assets of company i for financial year T

The operating cash flow was scaled by the book value of total assets to allow for comparison across companies and industries, similar to Smit & Ward (2007), Loughran & Ritter (1997) and Spiess & Grave (1995). Total assets was calculated as the sum of total equity and total liabilities (Firer, Ross, & Westerfield, 2012).

However, it is acknowledged that this CFRA measure is susceptible to downward bias, given that asset values would be expected to increase after a seasoned equity offer (Andrikopoulos, 2009) and (McLaughlin, Safieddine, Vasudevan, & Gopala, 1996). However, by looking at performance up to 24 months after the event – it was expected that those assets would have enough time to be productive (Andrikopoulos, 2009).

Similar to the method for calculating abnormal returns, each issuer's abnormal operating financial performance was measured before and after the rights issue announcement for selected event windows.

The abnormal operating financial performance was calculated using the matchedcompany principle, based on size (market capitalisation) and sector (nature of business), which is similar to Spiess & Grave's (1995) approach. It was important to note that this size and nature of business was based on the period in which the declaration announcement was made, to make for a more accurate and up-to-date comparison. The formula for this industry-adjusted cash flow return is shown below:

$IACFRA_{iT} = CFRA_{iT} - CFRA_{jT}$... Equation 15

Where:

*IACFRA*_{iT} is the industry-adjusted cash flow return on assets for company i for financial year T

CFRA_{iT} is the cash flow return on assets for company i for the financial year T

CFRA_{jT} is the cash flow for matching company j for financial year T

4.6.5 T-test Analysis

A two-sample paired t-test was used to compare the industry-adjusted cash flow return on assets for the years before and after the rights issue. The research design was similar to that of Smit & Ward (2007) and Healy & Palepu (1992). This t-test was relevant to hypothesis five, and provided the opportunity to explore the effects of a rights issue at the operating financial performance level.

The t-test statistic was based on both median and average industry-adjusted cash flow returns on assets. The use of the median was to control for the effect of outliers. This was important given that there was the potential for high variability in the industry-adjusted cash flow returns at a company level. The aim was to determine if the pre-event mean IACFRA t-statistic, and the post-event IACFRA t-statistic were significantly different from each other, following Smit & Ward (2007) and Healy &

Palepu (1992). The t-statistics for the average IACFRA before and after the rights issue event was calculated as the mean IACFRA divided by the cross-sectional standard error (Healy & Palepu, 1992). Similarly, the median IACFRA was calculated as the median IACFRA divided by the cross-sectional standard error (Healy & Palepu, 1992).

4.7 Research Limitations

The study only considered companies listed on the JSE, which is subject to its own idiosyncrisies as a market (Cotterell, 2011) and (Smit, 2005). This means that the findings of this study cannot be generalized to rights issues on other stock exchanges.

The sampling method purposely excluded smaller rights issue to focus on the larger rights issues. Thus the findings of this study cannot be applied to small rights issues that are less than R100mm in nominal size. The avoidance of smaller rights issues was to minimize the data integrity problems that arise in analysing small companies listed on the JSE.

While the chosen event study methodology is the most prevalent form of analysis in the field of finance, the research does have its limitations. These limitations are due to the different aspects in the research process. These aspects include the method of statistical analysis, the time horizon, and biases found in the data and the measurement thereof. Event studies can also be seen as a joint test, one test for the CARs' statistical significance, and the other test for the assumptions or approach for constructing the abnormal returns (Kothari & Warner, 2007). This joint test has the effect of reducing the power of the test.

Another issue related to event studies and calculating stock returns is that long-run abnormal returns are positively skewed, the longer the horizon the larger the extent of the bias (Barber & Lyon, 1997). The use of control firms assisted in mitigating the 'skewness' bias because both the sample and control firms are subject to the same skewing factors. Barber & Lyon (1997) have also shown that CARs are biased estimators of BHARs and are subject to measurment bias. Looking at long-run event windows means that abnormal returns are likely to have other material transactions

or announcements priced in at some point during the period of analysis. This is unavoidable, and to remove companies based on these confounding events would mean the study would have no sample at all (Kothari & Warner, 2007).

The bootstrapping method has some disadvantages. These include the need for a powerful computer and the need for large samples size in data generation. An unavoidable limitation in calculating operating performance is the use of accounting measured data. Accounting measured data is subject to varying accounting assumptions, this is mitigated by using operating cash flows when looking at operating performance.

5. Results

The chapter commences by providing a brief description of the sample. This is followed by graphical plots of the abnormal returns for the selected periods. The key section in this chapter is the statistical analysis used to test hypotheses one to five.

5.1 Description of Sample

The sample consists of rights issues from a population of 175 rights issues from January 2002 to December 2011. The rights issues were selected based on the criteria described in 4.5 above, to form the full sample of 50 rights issues. The key criterion for consideration was the availability of data concerning both the rights issues and the purpose of the rights issue. Other criteria are further described in 4.5 above. These criteria became relevant with respect to the sampling for the operating performance group. The initial sample of 50 rights issues was reduced to 33 for the operating performance sample due to issues with data collection.

For the purposes of further analysing share price performance, the sampling process included the selection of sub-samples based on specific details concerning each rights issue as mentioned in 4.6.3 above. The three sub-samples created consist of the debt-repayment sample of 27 rights issues, the investment sample of 15 rights issues and the general sample of 8 rights issues. The bulk of the rights issues selected were within the last 5 years, with the rights issue having a median issue size of 500million rand, and average issue size of 100million rand. The size of the issue was scaled by the average market capitalisation of the issuing company to give a relative issue size. In terms of the relative issue size, the full sample had a median value of 14.09% and a mean value of 46.13%.

| Population Size | 175 |
|---|----------|
| | 110 |
| Full Sample Size | 50 |
| Debt-Repayment Sample Size | 27 |
| Investment Sample Size | 15 |
| General Sample Size | 8 |
| | |
| Operating Financial Performance | |
| Full Sample Size | 33 |
| | |
| | |
| Frequency of Year Occurrence (based on full sample) | |
| 2002 | 2 |
| 2003 | 1 |
| 2004 | 2 |
| 2005 | 5 |
| 2006 | 3 |
| 2007 | 1 |
| 2008 | 0 |
| 2009 | 12 |
| 2010 | 5 |
| 2011 | 5 |
| Size of Rights Issue (nominal R' million) | |
| | |
| Maximum | 13,477 |
| Minimum | 100 |
| | 100 |
| Mean | 1,449 |
| Median | 500 |
| | |
| Relative Size of Rights Issue (relative to market | |
| capitalisation of issuing company) | 400.000/ |
| | 120.32% |
| Moon | 1.03% |
| Modian | 40.1370 |
| | 14.03/0 |
| | |

Table 9: Summary of rights issues announced between 2002 and 2011 based onchosen sampling criteria

Descriptive statistics were calculated for each sample according to the three weightings. These statistics provide insight into the differences in the CAARs that are due to the selected weighting. These statistics are shown in Table 10 below.

| Table 10: Descriptive Statistics for cumulative average abnorn | nal returr | ns based on |
|--|------------|-------------|
| three weightings across all samples for the full event window | [-40, 220] | days |

| | | | | Std. | | |
|----------------------|------------------------------|-------------|-------------|-----------|---------|---------|
| Full Samp | ole (n = 50) | Mean | Median | Deviation | Minimum | Maximum |
| Equal-weighted CAAR | | -6.97% | -6.37% | 3.73% | -12.93% | 0.37% |
| CAAR Relative | issue-weighted | -3.66% | -3.28% | 2.88% | -9.66% | 1.67% |
| CAAR | Issue-weighted | -5.25% | -5.95% | 3.11% | -10.23% | 1.55% |
| Debt-Repa n = 27) | ayers Sample (| | | | | |
| Equal-weig | ghted CAAR issue-weighted | -5.82% | -5.17% | 4.34% | -13.61% | 3.35% |
| | ioouo woightad | -0.80% | -1.18% | 3.66% | -7.01% | 6.45% |
| CAAR | | -9.24% | - 10.41% | 6.37% | -19.10% | 5.06% |
| Investmer 15) | nt Sample (n = | | | | | |
| Equal-weig | ghted CAAR | -6.72% | -6.48% | 3.92% | -16.89% | 2.93% |
| CAAR | issue weighted | -5.53% | -5.18% | 3.26% | -13.73% | 2.91% |
| CAAR | issue-weighted | - 23.00% | - 25.71% | 11.22% | -46.54% | 9.34% |
| General S | ample (n = 8) | | | | | |
| | | - | - | | | |
| Equal-weig (Ln) | ghted CAAR issue-weighted | 11.22% - | 11.52% - | 5.73% | -26.48% | 1.94% |
| ČAÁR Bolativo | issuo-woightad | 13.10% | 13.88% | 4.29% | -23.24% | -0.55% |
| CAAR | issue-weighted | - 10.15% | -9.65% | 7.32% | -27.40% | 7.38% |

5.2 Performance of CAARs

The aim of the study was to assess the impact of rights issues on share price performance. Cumulative average abnormal returns (CAARs) were used as the proxy variable for share price performance. The CAARs are based on cumulative average abnormal returns for each event day over a chosen event window.

The average abnormal returns are calculated by finding a weighted average of the abnormal returns according to the chosen weighting (equal, relative-issue, log-issue).

The research objectives of this study are premised on statistical analysis of cumulative average abnormal returns (CAARs). The average abnormal returns are the accumulated to make CAARs, and looking at them may give some insight into underlying patterns in the CAARs. Figure 1 below is a plot of the average abnormal returns.





The graph in figure tw6 below depicts the different weighted average abnormal returns that were accumulated during the event window. There were three weightings that were calculated for analysis, namely the equal-weighting, logarithmic issue-weighting and weighting by relative size of issue. The equal-weighting gives the same level of importance to each rights issue.

The logarithmic issue-weighting attaches more importance to the larger the rights issues, however this is scaled down by using a log-function. The relative issue-weighting gave more importance to right issues that were larger when compared to the market capitalisation of the rights issuer.





The data was analysed using a bootstrapped distribution, which was also used for hypothesis testing. With relevance to hypothesis one, the analysis was conducted on the full sample of rights issues based on three weightings briefly described above in 5.1. The event windows selected for analysis were based on figure 2, within the context of the research objective of assessing performance in the long run. At most, 3 event windows were selected across variable (CAAR), sample (full, invest, debtrepaying, general) and weighting (issue or equal weighting. Each event window began at day 0, to assess the subsequent impact of the rights issue on share price

performance. All hypothesis testing was undertaken at the 5% significance level. Test results in the output Table 11 below are all one-sided.

| Full Sample | n = 50 | | |
|---------------------------|---------------|----------------------|-----------------------|
| (Ln) Issue-Weighted CAARs | | | |
| Event Day Window | Daily CAAR | Bootstrap (Value | Cutoff Significant |
| [0, 32] | -6.51% | -5.82% | Y |
| [0, 82] | -8.82% | -7.89% | Y |
| [0, 112] | -9.17% | -10.08% | N * |
| Equal-Weighted CAARs | | | |
| [0, 33] | -12.79% | -3.99% | Y |
| [0, 73] | -12.19% | -4.58% | Y |
| [0, 115] | -12.74% | -4.34% | Y |
| Relative Issue-Weighted | | | |
| [0, 26] | -11.31% | -6.57% | Y |
| [0, 77] | -11.25% | -11.87% | N * |
| [0, 108] | -13.84% | -14.39% | N * |

Table 11: Analysis of Cumulative Average Abnormal Returns (CAARs) of thefull Sample for selected event windows

* - this indicates statistical significance at the 10% level

The full sample was further categorised into the three groups (Debt-Repaying, Investment and General) explained in 4.6.3. The three categories allowed for testing related to hypotheses two to hypothesis five, which aimed to assess the impact of the rights issue on the share price performance of the specific group. Figure 3 is a graphical plot of the performance of the equal weighted CAARs for the sub-samples for the full event window.



Figure 3: Equal-weighted cumulative average abnormal returns (CAARs) by sub- sample for the full event window [-40,220] in trading days

Figure 4 below is a plot of the log-issue-weighted CAARs for the sub-samples over the for the full event window.



Figure 4: (Ln) issue-weighted cumulative average abnormal returns (CAARs) by sub-sample for the full event window [-40,220] in trading days

Figure 5 below depicts the relative issue-weighted CAARs for the three sub-samples for the full event window.





Following from the graphical representation of the share price performance after the rights issue, the study conducted bootstrapping and hypothesis testing at the category level. This was completed in order to ensure a more rigorous analysis of the subsequent impact of the issue on share price. Each category (Debt-Repaying, Investment, General) was tested based on equally-weighted and issue-weighted CAARs. Similar to Hypothesis 1, a few key event windows were identified and tested for statistical significance at the 5% level. The issue-weighted 'general' sample was not tested due to the small sample size. Table 13 below shows the category results of the one-sided tests.

Table 12: Analysis of cumulative average abnormal returns of sub-samples for selected event windows

| Debt-Repayme | nt Sample | n = 27 Deilw | Poststran | Cutoff | |
|----------------------|----------------|-----------------|-----------|--------|-------------|
| Event Day Win | dow | CAAR | Value | Cuton | Significant |
| (Ln) Issue-weig | hted CAARs | 0/0/07 | Valuo | | eiginiteant |
| [0, 33] | | -5.87% | -9.92% | | Ν |
| [0, 121] | | -7.01% | -20.86% | | Ν |
| Equal-weighted | CAARs | | | | |
| [0, 28] | | -10.17% | -8.20% | | Υ |
| [0, 73] | | -12.11% | -13.69% | | N * |
| [0, 112] | | -13.52% | -18.77% | | Ν |
| Relative | issue-weighted | | | | |
| | | 47.000/ | 10.00% | | X |
| [0, 26] | | -17.30% | -10.98% | | Y N |
| [0, 73] | | -16.99% | -22.94% | | IN N |
| [0, 108] | | -19.10% | -25.94% | | N |
| Investment Sal | | n = 15 | | | |
| (Ln) Issue-weigr | nted CAARS | 12 5 6 9 (| 10, 40/ | | V |
| [0, 03] | | -13.50% | -10.4% | | ř V |
| [U, 108] | | -13.09% | -11.8% | | ř |
| | CAARS | -16 80% | -16 20% | | V |
| [0, 00] | | -13 13% | -70.20% | | I N |
| [0, 93] | | -11.05% | -20.40% | | N |
| Relative | issue-weighted | 11.0070 | 01.0070 | | |
| CAARs | leese neightee | | | | |
| [0, 67] | | -32.31% | -36.10% | | N * |
| [0, 93] | | -30.27% | -43.80% | | Ν |
| [0, 126] | | -21.42% | -50.00% | | Ν |
| General Sampl | е | n = 8 | | | |
| (Ln) Issue-weigl | hted CAARs | | | | |
| [0, 28] | | -17.82% | -13.32% | | N * |
| [0, 131] | | -14.94% | -39.04% | | Ν |
| Equal-weighted | CAARs | | | | |
| [0, 31] | | -24.82% | -22.24% | | Y |
| [0, 67] | | -10.40% | -19.30% | | N |
| [0, 127] | | -16.05% | -21.50% | | Ν |
| Relative | issue-weighted | | | | |
| | | 20.469/ | 10.01% | | N |
| [∪, ∠o] | | -39.10% | -19.91% | | IN |
| [0, 77] | | -23.50% | -35.10% | | Ν |
| [0, 127] | | -13.91% | -40.98% | | Ν |

* - indicates statistical significance at the 10% level

5.3 Operating Financial Performance

The study measured operating financial performance by performing t-tests on Industry-Adjusted Cash Flow Return on Total Assets (IACFRA). Both the operating cash flow and asset values were taken from the financial statements of each rights issuing company. In this study, the total assets were based on book value, which was similar to McLaughlin et al (1996). The tests were conducted to test hypothesis five. The approach included looking at one-sample t-tests for each financial year in consideration. A two-sample paired t-test was conducted between paired financial years to assess performance before and after the rights issue. The paired periods were analysed starting from two years before the issue, ending at two years after the issue. The tests looked at both the median and mean of the operating cash flow return on assets, which had been adjusted by matched-firm cash flow returns on assets (IACFRA).

The mean t-stat was calculated as the mean IACFRA for that year divided by the standard error for the sample for the same period. Similarly, the median t-stat was calculated as the median for that year divided by the standard error for the same period. The standard deviation is also included below. All tests for statistical significance were conducted at the 5% level.

| Year relative to rights issue | No. Observations | Std. Deviation | Median IACFRA | Median T-Stat | Mean IACFRA | Mean T- Stat | Significant |
|-------------------------------------|---------------------|-------------------|------------------|------------------|----------------|-----------------|-------------|
| -2 | 32 | 13.76% | -0.54% | -0.22 | 0.32% | 0.13 | Ν |
| -1 | 33 | 16.77% | -1.22% | -0.42 | 3.21% | 1.10 | Ν |
| 1 | 33 | 10.07% | -2.73% | -1.56 | -2.80% | -1.60 | Ν |
| 2 | 29 | 9.93% | 1.73% | 0.94 | 2.41% | 1.31 | N |

Table 13: Industry-Adjusted Cash flow Return on Assets (IACFRA) before and after a rights issue

The paired mean t-stat IACFRA is calculated as the difference of each IACFRA for the same company, for a selected year before and after the rights issue, divided by the cross-sectional standard error.

Similarly, the median IACFRA was calculated as the difference of each industryadjusted cash flow return on assets for the same company for a selected year before and after the rights issue, divided by the cross-sectional standard error. The standard deviation is included below in table 14. All statistical tests were conducted at the 5% significance level.

 Table 14: Paired Industry-Adjusted Cash Flow Return on Assets (IACFRA) before and after a rights issue

| Event Window | No. Observations | Std. Deviation | Mean diff. IACFRA | Mean T- Stat for pair | Significant | Median diff. IACFRA | Median T-Stat for pair | Significant |
|-----------------|---------------------|-------------------|-------------------------|-----------------------------------|-------------|---------------------------|------------------------------|-------------|
| [-2,1] | 31 | 19.64% | -3.10% | -0.88 | Ν | -2.14% | -0.61 | Ν |
| [-2,2] | 27 | 19.31% | 2.00% | 0.54 | Ν | 2.48% | 0.67 | Ν |
| [-1,1] | 32 | 19.22% | -6.67% | -1.96 | Y | -1.95% | -0.57 | Ν |
| [-1,2] | 28 | 18.46% | -2.08% | -0.60 | Ν | 2.41% | 0.69 | Ν |

6. Discussion of Results

This chapter will provide a synthesis of the results presented in chapter five. The results will be broken down according to the research objectives and hypotheses set out in chapter three, and interpret these results with the scope of the literature review in mind. Hypotheses one to four cover the assessment of the long run impact of rights issues with respect to share price performance. Hypothesis five is related to same research objective with respect to operating performance. Given that the research objectives are all within the time-context of the long run, only those results that were statistically significant or close to statistical significance were included in the analysis. In order to be more comprehensive, the study also analysed returns based on different weightings after seeing the effects of different weightings on the results.

6.1 Share price performance

The average abnormal returns in figure one do not exhibit any discernible pattern. The 95% confidence interval is included. The mean equal weighted AAR of -0.01% was tested using a normal distribution, and was not significant at the 5% error level.

6.1.1. Cumulative average abnormal returns for full sample

The cumulative average abnormal returns (CAARs) were calculated for the full sample and three sub-samples. Figure 2 from 5.2 shows the CAARs for the full event window, according to three different weightings. The graph depicts the noticeable effect that weighting can have on the results. The study therefore aimed to be circumspective by performing tests for all three weightings of CAARs, those being the log issue-weighted, equal-weighted and relative issue-weighted CAARs.

With particular reference to the full sample, the descriptive statistics detailed in Table 10 show that the weighting with the least volatility in abnormal returns was the log issue-weighted CAAR, with a standard deviation of 2.88%. The mean CAAR for each

weighting for the full sample ranged from -3.66% for the log issue-weighted CAARs to -6.97% for the equal-weighted CAARs.

The graph in figure 2 shows the full sample CAARs, which steeply fall over the first 50 trading days after the declaration of a rights issue, with the equal-weighted CAAR dropping to -12.79% for day 33, and log issue-weighted CAARs at -7.02% for day 31 and relative issue-weighted CAAR at -8.33% at day 26. The equal-weighted CAARs have an approximate range of 5% between -6.03% and -11.37% from day 19 to around day 132. Similarly, the log issue-weighted CAARs are within a range of approximately 4.1%, with returns between -4.84% and -8.95% from day 23 to day 116. The relative issue weighted CAARs are within a range of 2% between -7.01% day 22 and -9.10% at day 121. All CAARs rapidly increase in the last 100 days of the event window, with the log issue-weighted returns levelling out at levels closer to zero in the last 60 days.

A number of event windows were tested for significance, with the event windows that displayed the most observably negative CAARs garnering the most interest. All selected event windows were identified and tested using simulated distributions for hypothesis testing. The results for the full sample are detailed in table 10. The event windows ending at day 32 and day 82 had log issue-weighted daily CAARs of - 6.51% and -8.82% respectively. Both of these CAARs were found to be significant at the 5% level. The event window ending at day 112 had a log issue-weighted CAAR of -9.17% which was not significant at the 5% level.

Remaining within the full sample, the equal-weighted CAARs were more pronounced with CAARs of -12.79%, -12.19% and -12.74% for days 33, 73 and 115 respectively. All three equal-weighted CAARs were found to be significant at the 5% error level.

The relative issue-weighted CAARs for the full sample were bootstrapped and tested for event windows ending at day 26, day 77 and day 108. The day 26 CAAR was found to be statistically significant at the 5% level. All three different weightings for the CAARs have produced results which support the expectation of poor share price performance after a rights issue. There are a number of studies that have explored the relationship between rights issues and share price performance.

Locally, the last published paper was that from Bhana (1998) which looked at the cumulative abnormal returns (CARs) using regression analysis. This research report looks at a -40 to 220 day event window, while Bhana (1998) examined a shorter window of -40 day to 40 day event window. Due to different methods of analysis and event windows, this paper is not directly comparable to Bhana (1998). However, both studies have similar CARs between days 30 and 40, with the 31 day issue-weighted CAR of -7.01% in this study, against a CAR of -5.22% at day 40 in Bhana (1998).

The study's findings are consistent with those of Spiess & Grave (1995) whose study had a 24-month CAR of -12.83% which was significant at the 5% level. The long run study by Autore, Bray, & Petersen (2008) looked at buy-and-hold returns (BHARs) over three years and found a mean BHAR of -11.15% to be significant at the 5% level. The findings from table 9 show the subsequent underperformance of JSE listed companies up to a year after an equity issue, which is in line with the literature.

The findings appear to support market timing theories from Myers & Majluf (1984) and Loughran & Ritter (1995). Where Myers & Majluf (1984) explained it through their asymmetric information model and Loughran & Ritter (1995) explained it through their 'window of opportunity' model. In both instances, management is of the knowledge that the company's share price is overvalued.

6.1.2. Hypothesis testing of CAARs for full sample

The first hypothesis was tested, where:

 $H_{1,0}$: **CAAR**_{FULL} = **0**

 $H_{1,A}$: CAAR_{FULL} < 0

Based on the results found in table 11 and the discussion from 6.1.1., the null hypothesis is rejected for six out of nine selected event windows.

6.1.3. Cumulative average abnormal returns of sub-samples

The cumulative average abnormal returns were also calculated at a category level. Table 12 shows the sub-sample CAARs for the debt-repayment sample, investment sample and general sample. Table 12 also shows the CAARs calculated and tested for each different weighting namely the equal weighting, log issue weighting and relative issue weighting. Hypothesis tests were conducted using bootstrapped distributions at the five percent significance level.

Figures two to four illustrate the CAARs for the three samples, according to different weightings that were used in the study. The equal-weighted CAARs in figure two are positive for a few days after the announcement, before quickly falling for all three sub-samples. This lagged response to the rights issue could be a follow-through of the upward momentum that is seen in the days prior to the rights issue. The delayed response may also suggest that there is some inefficiency in the JSE equity market. In figure two, the 'general' sample clearly displays the largest negative reaction to the rights issue announcement, falling as low as -26.48% around day 33, as seen in Table 10. The study acknowledges that the small sample size of the 'general' group may undermine the reliability of the results. This sampling bias is mitigated during hypothesis testing through the use of simulated distributions explained in 4.6.3. There is no discernible difference between the categories' performance after day 60.

Figure three shows the log issue-weighted CAARs for the three samples. In this instance, the 'debt-repayment' sample exhibits the least negative reaction to the rights issue announcement for the full event window, with a mean CAAR of -0.80% (see table 10) across the entire window. The plot in figure three shows that the 'general' sample is again the poorest performer during the full event window, with a mean CAAR of -13.10% for the full event window.

Figure four is a plot of the relative issue-weighted CAARs for the three samples for the full event window. The study points to the increased noise in the CAARs for all three samples as seen in the larger standard deviations, when compared to the standard deviations of the differently weighted CAARs previously discussed in paragraph 6.1.4. It is noted that the remarkably lower mean and median CAARs (see table 10) for the debt repayment and investment sample.

Due to these factors, the 'general' sample shows the least negative reaction to the rights issue announcement for the full event window.

Debt Repayment Sample

The CAARs for the debt repayment sample for all three weightings are shown in Table 12. For the log issue-weighted CAARs, the selected event windows ended at days 33 and 121, with daily CAARs of -5.87% and -7.01% respectively – none of these CAARs were found to be significant at the 5% error level.

The equal weighted CAARs for selected event windows ending at day 28, day 73 and day 112 are shown in table 12. The equal weighted daily CAARs for the event windows mentioned above are -10.17%, -12.11% and -13.52% respectively. The daily CAAR for the 28 day event window was found to be significant at the 5% error level. The daily CAARs for the 73 day and 112 day windows were not statistically significant at the 5% error level.

The relative issue-weighted CAARs for event windows ending at day 26, day 73 and day 108 were tested at the 5% error level and are shown in table 12. The 26 day window had a daily CAAR of -17.30% which was found to be significant at the 5% level. The 73 day and 108 day windows were tested, and neither was found to be statistically significant at the 5% error level.

The findings with regard to the debt repayment sample did not show a statistically significant share price reaction to the rights issue announcement. However, the plots found in figures two to four show an observably poor share price performance subsequent to a rights issue for the full event window. These findings are in contrast to those of Autore, Bray, & Petersen (2008) who found that share price underperformance is stronger when debt repayment is the intended purpose for the rights issue. Further to this, the plot in figure three suggests that companies that use the rights issues to repay debt, have less negative post-issue performance when compared to companies that issue equity for investment or general purposes.

The poor performance observed for the debt-repaying companies after the rights issues can be explained by the signaling hypothesis from Myers (1984), where investors consider an equity issue as a signal from company insiders that the share is overvalued. Eckbo, Masulis, & Norli (2000) also showed that companies that reduce their leverage will have the market adjust its share returns in line with the lower risk exposure to interest rates and inflation. This qualifies the observed underperformance of the CAARs of the debt-repayment sample after the equity issue.

6.1.4. Hypothesis testing of CAARs for debt-repayment sample

The second hypothesis to be tested is as follows:

 $H_{2.0}: \quad CAAR_{DEBT} = \mathbf{0}$

 $H_{2,A}$: CAAR_{DEBT} < 0

Based on the results in table 12, figures two to four, and the discussion in paragraph 6.1.3., the research rejected the null hypothesis for two out of eight selected event windows at the 5% level

Investment sample

The daily log issue-weighted CAARs were tested for the 83 and 108 day event windows and are found in table 12. The 83 day event window had a CAAR of - 13.56% which was found to be statistically significant at the 5% level. The 108 day event window had a CAAR of -13.09% which was found to be statistically significant at the 5% level.

The equal weighted CAARs with respect to the investment sample, for three selected event windows were tested at the 5% significance level. The CAAR of -16.89% for the 68 day event window was found to be significant. The other selected event windows ended at 93 days and 107 days, and had CAARs of -13.13% and -11.05%

respectively. The 93 day and 107 day event windows were not found to be significant at the 5% level.

The third type of weighting with regard to the investment sample CAARs was the relative issue-weighting.

Hypothesis testing was conducted for the 67 day, 93 day and 126 day event windows. None of the relative issue-weighted CAARs were found to be significant at the 5% significance level.

The findings displayed in table 12 and figures two to four show that there is a negative share price response in the CAARs for the investment group. This negative response is evident in the first eight to ten days after the rights issue, and continues throughout the event window. The results from this study are compared to those of of Autore, Bray, & Petersen (2008). Autore, Bray, & Petersen(2008) found that the investment group delivered superior share price performance to the general group after an equity issue – this study exhibits the same result or premium earned by the investment group over the general group . The difference is that unlike Autore, Bray, & Petersen (2008), this study did not find any evidence that the investment group showed superior post-issue performance to the debt-repayment group.

The findings from this study and Autore, Bray, & Petersen (2008) are in line with Jensen's (1986) agency theory, which states that management act as bad agents and use excess cash to invest in value-eroding projects. In this context, the excess cash would come from the proceeds raised in the rights issue, and would result in management investing in negative net present value projects. There also remains a case for the the poor post-issue performance to also be explained by the information model of Myers & Majluf (1984). Management are most likely to have inside information about the business that is not known to the market, and thus the market 'corrects' the share price after a rights issue based on the expectation of poor performance.

6.1.5. Hypothesis testing for investment sample

The third hypothesis was tested, where:

 $H_{3.0:} \quad CAAR_{INVEST} = \mathbf{0}$

 $H_{3,A}: CAAR_{INVEST} < 0$

The results from table 12, figures two to four and the discussion found three out of eight selected event windows to be significant at the 5% error level, and therefore rejected the null hypothesis in these cases.

General sample

The log issue-weighted CAARs were calculated and tested using a bootstrapped distribution. The simulated distribution was particularly helpful given that the 'general' sample has only eight rights issues. The 28 day event window had a log issue-weighted CAAR of -17.82%, and the 131 day event window had a log issue-weighted CAAR of 14.94%. Both of these event windows were tested, and neither was found to be significant at the 5% error level.

The equal weighted CAARs for the 31 day, 67 day and 127 day event windows were tested, with CAARs of -24.82%, -10.40%, and -16.05% respectively. The 31 day event window was found to be significant at the 5% level. The CAARs for the 67 day and 127 day event windows were not significant at the 5% level.

Three event windows were selected for testing of relative issue-weighted CAARs. These selected event windows ended at 28 days, 77 days and 127 days, with CAARs of -
39.16%, -23.50% and -13.91% respectively. None of the three selected event windows for the relative issue-weighted CAARs were found to be significant at the 5% error level.

The plots in figures two to four give a perceptible view of the poor post-issue performance for the general sample.

The paper has indicated concerns with the small sample size of the general sample. However, all three weightings of CAARs have resulted in the general sample having greater underperformance - when compared to the other categories. This is in line with the findings of Autore, Bray, & Petersen (2008) who found that companies that issue equity without being specific about what motivated the decision to raise capital through an equity issue, experienced poor performance after the equity issue.

While other purposes for rights issue include having to pay back debt, or looking to invest in projects, some rights issues do not seem to have a clearly defined purpose from management. This could be explained in part by Jensen's (1986) theory which said that management sitting with the excess capital may end up investing in negative NPV projects. The lack of purpose for the rights issue could mean that management was purely motivated by opportunity to issue equity at a relatively high price; which brings back the perennial information model of Myers & Majluf (1984).

6.1.6. Hypothesis testing for general sample

Hypothesis four is shown below:

- $H_{4,0:} \quad CAAR_{GENERAL} = \mathbf{0}$
- $H_{4,A}$: CAAR_{GENERAL} < 0

Based on the results in Ttble 12, figures two to four, and the discussion the paragraph 6.1.5. above, only in one out of eight hypotheses did the study reject the null hypothesis at the 5% error level.

6.2. Operating financial performance

The study sets out the analysis operating financial performance in tables 13 and 14. Table 13 shows results of the one-sample t-tests that were performed on the industry-adjusted cash flow return on assets (IACFRA). These were from two years before the rights issue to two years after the rights issue.

The IACFRA tests the abnormal operating performance for rights issuing companies, and follows a similar methodology to Smit & Ward (2007) and Healy & Palepu (1992). Both studies considered the operating cash flow return on assets, however, Healy & Palepu (1992) looked at the market value of assets, while this study and Smit & Ward (2007) looked at the book value of assets in calculating the IACFRA.

In table 13, the mean and median IACFRA were tested for each year using the student's t-test. The study included the median IACFRA to mitigate the effects of outliers on the sample and subsequent statistical inferences. The standard deviation shows that the variation within each sample decreases from -13.76% two years before the rights issue to 9.93% two years after the rights issue.

The median IACFRA deteriorates from -0.54% two years before the rights issue, to - 2.73% the first year after the rights issue. Thereafter, the median IACFRA improves to 1.73% in the second year after the rights issue. Similarly, the mean IACFRA deteriorates from 0.32% two years before the rights issue to -2.80% one year after the rights issue. The mean IACFRA then improves to 2.41% in the second year after the rights issue.

The t-stats were calculated for each year under consideration. The median t-stat for year (-2) of -0.22 was not significant at the 5% error level. Similarly for year (-1), the median t-stat of -0.42 was not found to be significant at the 5% error level. The median t-stats for the first year and second year after the rights issue of -2.73% and 1.73% respectively, were not significant at the 5% error level.

The mean t-stats for each year under consideration are shown in table 13. All of the mean t-stats for each year, starting from two years before to two years after the rights issue, were not significant at the 5% level. Thus, it appears that there is negative

operating financial performance soon after the rights issue. This will be further analysed later in this paragraph.

The paired test for IACFRA looked at the difference of the mean and median IACFRAs across periods. This was to see if the IACFRAs were statistically different from each before and after the rights issue.

It should be noted that the cross-sectional standard deviation is larger than the single year variance. The large variation across sample periods highlights the need to consider both mean and median IACFRAs.

The study points to the subsequent drop in the mean IACFRA from the second year before, to the first year after, the rights issue to -3.10% in Table 15. The mean t-stat for the paired period [-2,1] of 0.88 was not significant at the 5% error level. Similarly, the median IACFRA for the same paired period [-2, 1] at -2.14% was not significant at the 5% level. However, the paired period [-2, 2], saw a positive mean IACFRA of 2%; the related t-stat was not significant at the 5% error level. By comparison, the median IACFRA of 2.48% for the paired period [-2, 2] was also positive and not significant at the 5% error level.

Therefore, the results suggest that operating performance is negative for the initial financial period after the rights issue, and then starts to improve thereafter. With reference to table 14, the mean IACFRA for the first year before and first year after the rights issue was -6.67%, this is compared to a median IACFRA of -1.95%. The mean IACFRA was significant at the 5% error level, while the median IACFRA was not significant. The study considers the significant result for the paired period [-1,1] to potentially be a false positive given the large difference between the mean and median IACFRA for the same period.

The final paired period under consideration was from the first year before the rights issue to the second year after the rights issue. The mean IACFRA for the [-1,2] paired period of -2.08% was not significant at the 5% error level. Interestingly, the median IACFRA for the same period was positive at 2.41%, and not significant at the 5% error level.

The study on operating performance, is to some extent consistent with findings of McLaughlin, et al (1996), in that both studies saw negative operating performance after the equity issue. However, McLaughlin, Safieddine, Vasudevan, & Gopala's (1996) results were significant, while those in this study were not. Autore, Bray, & Petersen (2008) tested a slightly different measure of operating performance (median operating income divided by total assets) and found negative post-issue operating performance.

The observed negative performance in the first year after the rights issue appears to be somewhat congruent with the signalling hypothesis from Myers & Majluf(1984) first discussed in 2.2. However, the poor operating performance may be due to the equity issue weighing down the IACFRA measure by increasing total assets. The second year after the equity issue had a median IACFRA which was positive, which suggests that the information asymmetry theory does not hold in the long run.

6.2.1 Hypothesis testing of operating performance sample

Hypothesis five was tested for statistical significance, where:

 $H_{5.0}$: IACFRA_{POST} = IACFRA_{PRE}

$H_{5,A}$: IACFRAPOST \neq IACFRAPRE

Based on the findings in table 13 to 14 and the discussion in 6.2, the study fails to reject the null hypothesis at the 5% level. The study thus concludes that the industry-adjusted cash flow return on total assets before a rights issue is not statistically different from the industry-adjusted cash flow return on total assets after the rights issue.

7. Conclusion

The study set out by outlining research objectives in chapter two. The first objective was to assess the impact of a rights issue on share price performance in the long run. This study was conducted in the context of the South African listed equity market, known as the Johannesburg Stock Exchange. With regard to the first objective, the study found conclusive evidence of a negative share price reaction to a rights issue announcement. The study acknowledges the inherent bias that comes with long run analysis; however, it found poor share price performance within the first trading year of the rights issue announcement. Other local studies such as Cotterell (2011) and Bhana (1998) had looked at the immediate post-issue performance for JSE listed companies. This study adds to the literature by looking at a longer horizon. The long run analysis has important implications for investors and business. This implication is justified by the long-term nature of some investment and business decisions; therefore this study can assist long run decision making concerning rights issues and share price performance.

The study found a negative share price reaction to a rights issue announcement. These findings show support for the model by Myers & Majluf (1984). Myers & Majluf's (1984) information model which is based on the signaling hypothesis, found that corporate actions such as the issuance of equity convey information about the company to the market. In this case, the rights issue was the corporate action which appeared to signal that the share was overvalued to the market.

The findings of this paper with regard to the first research objective are consistent with those of Spiess & Grave (1995), Loughran & Ritter (1995) and more recently Mathew (2002), Bayless & Jay (2008) and Autore, Bray, & Petersen (2008).

The second objective was to look at the rights issue and share price performance at a category level, specifically whether specifying the purpose of the rights issue in a SENS announcement had any significant effect on subsequent share price performance. This study found that all three categories tested in this study exhibited poor share price performance after the rights issue. The general category showed more underperformance than the investment and debt-repayment groups.

In contrast to the findings of Autore, Bray, & Petersen (2008), this study found significantly negative CAARs for selected event windows for companies which announced that the rights issue proceeds would be used to invest in operations. This underperformance could mean that company management invested in projects that didn't yield the expected benefit to the company. These findings are consistent with the free cash flow agency theory of Jensen (1986), who posited that management act as bad agents on behalf of shareholders by investing in value-eroding projects. The study recommendeds that further research is conducted on a larger investment sample.

The study found evidence that companies which state that the rights issue was intended for recapitalization purposes, exhibited share price underperformance after the rights issue. This was in line with a similar study undertaken by Autore, Bray, & Petersen (2008). The last category included those that were vague about what the purpose of the rights issue was in their rights issue announcement. This category was the smallest by sample size, and had the worst share price performance of all groups. This brings into question the idea of focus, and whether a lack of focus leads company management to make sub-optimal decisions, particularly when considering a corporate action like an equity issue. This part of the study links with Jensen (1986); are managers without focus wasting capital raised in an equity issue on sub-optimal projects? An alternative conjecture is that managers see a relatively high share price as the window of opportunity, as mentioned by Loughran & Ritter (1995). In such a case, management would not have an acceptable motivation to include in their rights issue announcement; and their announcement would thus appear vague.

The last objective for the study was to analyze prior and subsequent operating performance around a rights issue. The study did not find any statistically significant

evidence of poor operating performance after a rights issue. However, there was a noticeable decrease in the industry adjusted cash flow return on total assets in the first year after the rights issue. This suggests that the lower relative cash flow could be due to the increased asset base from the equity issue, or due to invesment decisions that have yet to yield economic benefits for the company or a combination of both.

The industry adjusted cash flow return on assets improved in the second year after the rights issue, possibly due to increased returns from projects which received capital from the rights issue. However, there is no clear indication of the direction of the subsequent operating financial performance. While inconclusive, the cash flow returns suggest that the information asymmetry model Myers & Majluf (1984) only holds for the first year after the rights issue.

The study assessed both share price performance and operating performance after a rights issue. Both instances showed an immediate drop in performance after the rights issue, which gives support to the idea that management, as insiders, have knowledge about the negative future performance of the business. As a result, management see a rights issue as an opportunity to maximise gain from a relatively high share price.

Seasoned investors already seem to have developed an understanding of the expected post-event share price performance. This expectation of poor performance would explain the significant drop in the price the moment the rights issue is announced. However for long term contrarian investors, the rights issue announcement could be used as an opportunity to purchase shares of companies that they have long coveted.

This study has found that management needs to be circumspect when deciding on whether to issue equity. The findings of this study also may assist in decision making around capital structure in deciding on whether to finance through debt or equity. Often the decisions around capital structure tend to be based largely on cost of capital, but this study also brings in the timing dimension which would also need to be considered when deciding on whether to fund through debt or equity.

It is crucial that management is aware what message is being conveyed by their rights issue announcement, and more specifically how the contents of the announcement itself may affect the share price in the long run. Those managers who genuinely need capital, and can no longer look at debt financing should anticipate negative reaction to the equity issuance decision.

Suggestions for future research

The findings on share price performance were useful in seeing how rights issues affect performance at a category level. To assess this, the study used various weightings to calculate the cumulative average abnormal returns which gave visibly different results. This visible difference could be investigated as part of a wider study on buy-and-hold returns and cumulative abnormal returns. It is also recommended by that the benchmarking problem which is mentioned by Barber & Lyon (1996) is studied further. Many studies have looked at share price price reactions to rights issues, but not many have considered the 'bad model' issues highlighted by Barber & Lyon (1996) and Kothari & Warner(1997) in different contexts.

By comparison, the samples which have been used in the international studies of rights issues have far larger samples which give depth and breadth to any statistical results gleaned from them. It is recommended that this is applied to local studies.

When analysing the long run operating performance before and after a rights issue, it is recommended that other metrics around leverage, and return on capital, are considered in addition to the return on assets measure used in this study. A study of that nature would assist in developing further insight into other factors that affect operating performance before and after the rights issue.

The study also recommends looking at a longer subsequent period when analyzing operating performance. Operating performance is specifically related to assets, with fixed assets being predominantly long term in terms of production, thus to lengthen the period of analysis would be justified.

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