

# Equity issuance and share price performance on the Johannesburg Stock Exchange

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## Abstract

Listed companies can acquire capital through a rights issue where existing shareholders have a preference in buying additional shares at a discounted rate, in proportion to their existing holding. When implemented, share prices tend to react to the announcement and the realization thereof. Covering the period 2005-2022, an event study was implemented to determine the effect of a rights issue and its announcement for companies listed on the Johannesburg Stock Exchange. Depicting the results in terms of the Cumulative Average Abnormal Returns (CAARs), our findings indicate that share prices typically drop below the 5<sup>th</sup> percentile after a rights issue announcement and remain low for 30 days. Once implemented, share prices tend to increase beyond the 95<sup>th</sup> percentile and remain high. The research also indicates that the relative size of the rights issue does not affect these findings. Finally, resource companies are more prone to rights issue activities when compared to non-resource companies, whilst growth (versus value) companies are more negatively influenced.

**Keywords:** announcement, equity issuance, event study, rights issue

## 1 Introduction

Public companies can raise additional capital by issuing new equity, in a process known as a rights offering or rights issue (Marsh, 1979; Hansen, 1988). A rights issue is a term used to describe the process of providing existing shareholders with a preferential

option to purchase new shares at a discounted rate, in proportion to their holding of existing shares. If shareholders do not want to purchase new shares, they can sell their rights to purchase through Nil-paid letters; thus, enabling other investors to buy the shares. However, if investors sell their right to purchase, they will be subject to share dilution, thus reducing their stake in a company (Marsh, 1979; Cotterell, 2011; Van der Merwe, 2016; Calomiris, Larrain, & Schmukler, 2021; Rijdsdijk, Nehring, Kizil, & Roosta, 2022).

To enable faster growth, companies could engage in a rights offering to raise additional capital (if unable to raise debt). That being said, companies are often reluctant to implement a rights issue for various reasons (Houston & Ryngaert, 1997). Amongst others, firms issuing new equity generally experience a reduction in their share price upon announcement of a rights issue, and continue to experience negative abnormal returns in the short term (Zhou, Armitage, & Michou, 2019; May & Ngandu, 2022). Further to this, Daniel and Titman (2006) hypothesized that companies might issue equity based on intangible information that is not known to the public, as opposed to tangible accounting-based measures, closely linked to the opposite of the efficient market hypothesis (EMH). They summarized the different reasons as follows:

- (1) Managers issue shares after realizing intangible information that may reduce the future value of the shares;
- (2) Similar to above, historic performance (based on intangible information) might indicate a foreseeable future growth or mispricing, but due to inaccurate market interpretation, stock values might decrease; and
- (3) Issuing shares will decrease the demand for shares, inferring that the trade price of those shares will decrease. Subsequently, it then enables the company to buy more shares at a reduced price through a share buyback.

A common thought is that companies, and in some instances the buyers, tend to withhold information when transactions occur under conditions of stress and that stakeholder transparency could be lacking (Winn, Parente, & Porter, 2016). Subsequently, share price reduction can be expected when announcements of a rights issue occur, especially in developed economies (Houston et al., 1997; Ong, Ooi, & Kawaguichi, 2011; Zhou et al., 2019). One such economy is South Africa, where a significant presence of capital-intensive resource-based industries, such as mining and energy, operate. Understanding equity issuance patterns and factors influencing fundraising decisions can provide insights into the financing dynamics of these industries; thus increasing economic development. Additionally, by examining the trends and determinants of equity issuance, factors such as investor confidence, capital market development, and the ease of raising funds can be identified within a South African context. In line with this, the availability and efficiency of the capital markets can be evaluated to support the financial needs of domestic businesses. This is even more pertinent considering that the South African economy has been subject to comparatively poor economic growth (Lewis & Gasealahwe, 2017; Salahuddin, Vink, Ralph, & Gow, 2020; Statista, 2022).

The limited South-African based research (Pascoe, Ward, & MacKenzie, 2005; Cotterell, 2011; Van Der Merwe, 2016) mostly dates back more than 10 years. Our research includes significantly more data and an improved methodology for estimating abnormal returns. Furthermore, South African financial markets are especially interesting for two main reasons; firstly, the Johannesburg Stock Exchange (JSE) is the best-performing equity market over the last 120 years (Dimson, Marsh, Staunton, 2023) and secondly, equity issuance in South Africa is via rights issues (as opposed to public offerings).

Analysing historic share returns and rights offerings on the JSE from the 1<sup>st</sup> of January 2005 to the 30<sup>th</sup> of September 2022 enables us to depict the effect thereof according to their Cumulative Average Abnormal Returns (CAARs). Statistical significance tests were conducted according to a bootstrap-style analysis methodology. Additionally, companies were categorized according to various control portfolios, namely the relative size of the rights issue (a function of the capital raised and the market cap of the company); their core business functionality (resource vs. non-resource); and value vs. growth companies (if applicable).

## **2 Literature review**

The underlying driver behind the implementation of a rights issue is a company's capital structure. Companies have the choice to fund their operations and acquisitions through a combination of debt and/or equity (Cotterell, 2011). The company objectives are set according to various trade-offs. For example, one benefit of debt is the associated tax deductibility of interest but can expose the company to potential bankruptcy and financial distress – higher levels of equity enable companies to reduce the risk of bankruptcy and financial distress. That being said, the cost of equity generally exceeds the cost of debt; meaning that firms may choose to mitigate the leverage risks but at increased capital costs (Fama & French, 1992, 1998, 2005). Companies can reduce their leverage by adding equity to their capital structure by foregoing the payment of dividends, or by issuing new shares, through a rights offering or equity issuance. Another reason why companies initiate a rights offering relates to signalling theory – if managers believe that their company is overvalued, they will issue equity first before debt. In both instances, investors don't react favourably to a rights offering as this is seen as the emergence of new information (Van Der Merwe, 2016; Yasar, Martin, & Kiessling, 2020).

The adverse effect on share returns of equity issuance is driven by two hypotheses. The first states that there is negative information associated with a rights offering. One of the first studies was conducted by White and Lusztig (1980) who attempted to identify the thoughts of investors when such an event occurs. They implemented a cross-section time-series model and found that share prices react either positively or negatively to the event. The second hypothesis relates to market efficiency. It states that capital markets are inefficient and assumes that "...management and investors' expectations differ and that investors require time to assimilate information" (Goet, 2021, p. 98).

In terms of the effect of rights offering on share prices, Lucas and McDonald (1990) made the observation that some companies are subject to an abnormal positive return on stock before the realization of the rights issue, while others experience a reduction in share price. In terms of the announcement (which generally occurs within a defined timeframe before its realization), they observed that share prices tend to reduce. To add to this, research by Asquith and Mullins (1986) indicates that the issue announcement results in a 3% reduction in the value of equity within the USA. Similarly, Hansen (1988) concluded that the average share price decreased by as much as 4% in the same country. They also concluded that rights offerings are not always the preferred method of raising equity as transaction costs can be significant. This was also found by Gustafson and Iliev (2017) who observed that by removing barriers, the ability to raise equity can be increased by as much as 49% when the deregulation of the market environment is seen. Furthermore, a reduction in equity issuance costs, increased investment, and a decrease in leverage can all promote the process of a rights issue. They concluded that a reduction in equity issuance barriers will benefit issuers in all markets, including highly developed ones (Gustafson and Iliev, 2017). In line with this, research by Ong, Ooi and Kawaguichi (2011) indicates that an increased level of equity issuance

is likely to enhance the likelihood of offerings, whilst McLean, Pontiff and Watanabe (2009) researched the returns of various companies after a rights issue had taken place. Their findings conclude that share issuance can predict cross-sectional returns for international countries and is related to the ease with which the companies can issue and then, subsequently, repurchase their shares.

In terms of developing countries, Batista and Theuri (2017) researched the Nairobi Security Exchange and found that although share prices are subject to a reduction when a rights issue announcement occurs, the effect thereof is statistically insignificant. This was confirmed by Susanto, Banani and Laksana (2020) in Indonesia, who found no statistically significant effect on the share price after a rights offering announcement.

That being said, research by Malhotra, Thenmozhi and Gopalaswamy (2012) from India indicates that rights issue announcement effects vary according to industry. For example, they found that "...rights issue announcement yields a positive return in the case of textile, IT and finance sectors, whereas, in the case of the chemical sector, the rights issue announcement yields a negative reaction." (Malhotra et al., 2012, p. 11). Additionally, research conducted by Zhou, Armitage and Michou (2019) from the UK indicates that the share price effect is higher for small and midsize stocks, but comparatively low for large stocks.

In the South African context, research by Cotterell (2011) from 2004 to 2010 found a share price reduction (based on the CAARs) of between 2% to 4% on the announcement date, and continue to decrease between 5% and 6% over the following 5 days. Furthermore, companies that were categorized as "unhealthy" suffered CAARs of -9% over the same period (Cotterell, 2011). In addition, van der Merwe (2016) found that the CAARs of companies who made rights issue announcements experienced a 2.9% reduction in share price, while Setati (2013) observed a share price reduction of 12.79%

from 2005 to 2012. Not only is research lacking in terms of equity issuance within a developing country environment, or when companies are categorized according to market segment and their financial position, but the results are spread. Therefore, hypotheses were derived according to existing literature to guide the research.

### 3 Hypotheses

The research was driven by the overarching research question, which states: “What effect, both short-term and long-term, is present on the returns of listed companies on the JSE after those companies have issued equity”? To answer this question, different hypotheses were derived according to the control portfolios:

#### 3.1 Hypothesis 1

The first hypothesis seeks to determine the effect of a rights issue announcement on the CAARs of a company. The null hypothesis states that the announcement of a rights issue does not influence the share price of a company, whilst the alternative hypothesis states that rights issue announcements negatively influence the share price of companies. Concerning the Null hypothesis, research by Marisetty, Marsden and Veeraraghavan (2007); and Susanto, Banani and Luksana (2020) suggest that there is no significant effect on share price due to rights issue announcements. Conversely, research by Zhou, Armitage and Michou (2019) and Pascoe, Ward and Mackenzie (2005) suggests that share prices react negatively to rights issue announcements – a possible indicator of distress. The purpose of these hypotheses was therefore to determine which holds. The hypotheses can be represented by the following equations:

$$H_{01}: CAAR_{ARI} = 0, \quad (1)$$

$$H_{A1}: CAAR_{ARI} < 0, \quad (2)$$

### 3.2 Hypothesis 2

The second hypothesis aims to determine the effect of a rights issue realization on CAARs. The null hypothesis states that share prices remain unchanged (within the statistically insignificant values) after realizing the event, whereas the alternative hypothesis states that a rights issue event reduces the share price of a company. The foundation on which this hypothesis is created stems from research by Wang, Wei, and Pruitt (2006) who found that share prices remain largely unchanged due to a rights offering, or may in some cases increase over the long term. The reason why the null hypothesis can be challenged stems from research by Loughran and Ritter (1995), and Setati (2014) who found that share prices fall due to the inherent share dilution mechanics associated with it. These hypotheses can be represented by the following equations:

$$H_{02}: CAAR_{RI} = 0, \quad (3)$$

$$H_{A2}: CAAR_{RI} < 0, \quad (4)$$

### 3.3 Hypothesis 3

The third hypothesis seeks to determine if the relative size of the rights issue affects share prices. In other words, will the CAARs be influenced if the relative size of the rights issue is increased? Relative size was defined as a function of the capital raised and the company's market capitalisation. Fama and French (2008) were amongst the first to note that size (market capitalisation) influences the share returns, showing that smaller companies out-perform larger ones. We examine the relative size of the rights issue to determine whether investors balk at some point, as the proportion of new capital raised increases. The null hypothesis states that the effect on the CAARs is not affected by the relative size of the rights issue (as per the research from Zhou et al. (2019)) whilst, conversely, the alternative hypothesis states that the effect on CAARs increases as the



relative weight (which is categorized according to quintiles) increases. It is important to determine what effect the size of the rights issue has on share pricing as this can be used as a mechanism to determine the existence of underlying information. The hypotheses can be represented by the following equations:

$$H_{03}: CAAR_{1st\ qua} = CAAR_{2nd\ qua} = CAAR_{3rd\ qua} = CAAR_{4th\ qua} = CAAR_{5th\ qua}, \quad (5)$$

$$H_{A3}: CAAR_{1st\ qua} < CAAR_{2nd\ qua} < CAAR_{3rd\ qua} < CAAR_{4th\ qua} < CAAR_{5th\ qua}, \quad (6)$$

### 3.4 Hypothesis 4

The fourth hypothesis aims to determine the effect of a rights issue on resource versus non-resource companies. Although no research was found that focuses on these two metrics, research by Domowitz, Glen, and Madhavan (1997); Blundell-Wignall (2007); and Blanco, Garcia Lara and Tribo (2015) suggests that share pricing and various financial metrics are affected according to different market segments. Resource companies constitute a significant proportion of market capitalisation on the JSE. Since resource entities are typically capital-intensive and driven by commodity cycles, it is usual to segment the data into resource versus non-resource companies.

As above, the same foundational theory holds for hypotheses 1 and 2 to determine the effect of rights issue announcements and the realization thereof. Accordingly, the first set of hypotheses focuses on the announcement of a rights issue where the null hypothesis states that the announcement of a rights issue equally influences the share price of resource and non-resource companies, whilst the alternative hypothesis states that the announcement of a rights issue does not equally influence resource and non-resource companies. The equations of these hypotheses are depicted as follows:

$$H_{04CA}: \quad CAAR_{RC} = CAAR_{NRC}, \quad (7)$$

$$H_{1A4CA}: \quad CAAR_{ARC4C} \neq CAAR_{ANRC4C}, \quad (8)$$

The second set of hypotheses focuses on the realization of a rights issue where the null hypothesis states that the rights issue equally influences the share price of resource and non-resource companies, whilst the alternative hypothesis states that resource and non-resource companies are affected differently. The equations of these hypotheses are depicted as follows:

$$H_{04CRI}: \quad CAAR_{RC} = CAAR_{NRC}, \quad (9)$$

$$H_{1A4CRI}: \quad CAAR_{RC4C} \neq CAAR_{NRC4C}, \quad (10)$$

### 3.5 Hypothesis 5

The fifth hypothesis aims to determine the effect of a rights issue on value versus growth companies. The reason why this metric was analysed relates to the financial position of the company at the time of issuing shares. Companies that issue shares do so primarily to access capital for internal investment (Hansen, 1988; Marsh, 1979). However, research by Hillier, Linn and McColgan (2005) suggests that various companies initiate a rights issue because they are performing poorly, and require equity capital to continue operations. An appropriate metric to categorise value companies (i.e., those performing poorly) versus growth companies is earnings yield. For a company to be classified as a value, its earnings yield must be lower than the median earnings yield, whilst growth companies show a higher-than-median earnings yield at the time of the rights issue announcement; with a condition that only positive earnings yields were included within the scope (Penman & Reggiani, 2018).

Their classification equations can be depicted as follows:

$$\text{Value companies:} \quad EY < \tilde{x}_{EY: All-share} \quad (11)$$

$$\text{Growth companies: } EY \geq \tilde{x}_{EY: All-share} \quad (12)$$

where:

- $EY$  = Earnings yield (%) > 0
- $\tilde{x}_{EY: All-share}$  = Median EY on All Share Index (%)

The null hypothesis states that the announcement of a rights issue equally influences the share price of value and growth companies, whilst the alternative hypothesis states that the occurrence of a rights issue announcement does not have the same effect. The equations of these hypotheses are depicted as follows:

$$H_{05CA}: CAAR_{VC} = CAAR_{GC}, \quad (13)$$

$$H_{1A4CA}: CAAR_{AVC5C} \neq CAAR_{AGC5C}, \quad (14)$$

The following set of hypotheses will focus on comparing value and growth companies according to the realization of the rights issue. The null hypothesis states that the rights issue equally influences the share price of value and growth companies, whilst the alternative states that the effect of a rights issue is not the same for both categories. The hypotheses are depicted as follows:

$$H_{05CRI}: CAAR_{VC} = CAAR_{GC}, \quad (15)$$

$$H_{1A5CRI}: CAAR_{VC5C} \neq CAAR_{GC5C}, \quad (16)$$

#### 4 Methodology

The descripto-explanatory process was used to describe a relationship between equity issuance and the share price of companies, whilst a secondary data analysis approach was utilized to reject or accept the various hypotheses.

Spanning from the 1<sup>st</sup> of January 2005 to the 30<sup>th</sup> of September 2022, 229 rights offering announcements were captured from the JSE bulletin (before 2005, share pricing

information is discontinuous around the event date and cannot be used). Only the largest 150 JSE-listed companies (in terms of market capitalisation) were included, as the remaining smaller companies represent less than 3% of the JSE's market capitalisation and are infrequently traded. To avoid illiquidity issues, we exclude these very small companies.

The analysis was conducted according to an event study. While there is no unique structure according to which an event study can be conducted, MacKinlay (1997) motivates why a selection criterion must be applied when selecting companies. Pascoe, Ward and MacKenzie (2005) presented an acceptance criteria for selecting companies on which a rights issue analysis must be conducted:

- (1) Only ordinary shares were included.
- (2) Only rights for shares in the issuing company were considered.
- (3) Only companies where data in the JSE Bulletin are available were utilized.
- (4) Announcements with less than 80 daily returns in their estimation period (the period used to create the bootstrap analysis) were discounted.
- (5) Announcements, where data of less than 40 and 80 days before and after the announcement occurred are not available, were excluded.
- (6) Rights issues with less than 80 daily returns in their estimation period (the period used to create the bootstrap analysis) were discounted.
- (7) Only Rand-denominated shares were utilized.

Finally, the results were depicted as a function of CAARs (Cumulative Average Abnormal Returns) on account of the information in the event (Ward & Muller, 2010). Daily equal-weighted indices were constructed for each of the control portfolios using logarithmic functions:

$$R_{it} = \log[P_{it}/P_{it-1}], \quad (17)$$

where:

$R_{it}$  = the total weighted share return for portfolio  $i$  for day  $t$ ; and

$P_{it}$  = the equal-weighted share value of portfolio  $i$  at the end of day  $t$ .

The estimation of CAARs is a crucial factor in event studies, and in this instance, we followed Ward & Muller (2010) using their 12-factor model to estimate abnormal returns:

- The market capitalisation of the company was used to rank companies according to quantiles in ascending order;
- Companies were classified into resource and non-resource based on their JSE sector. Mining, energy and agriculture were classified as resource, whilst the rest are non-resource; and
- The price-to-earnings ratio was used to classify firms into value or growth, with value being below the median price-to-earnings, and growth being above. A condition is that companies must have a P/E ratio above zero.

The control portfolio model measures the expected return of share  $i$  in period  $t$  as the sum of the sensitivity of share  $i$  to the returns on the twelve control portfolios and a calculated alpha estimate in period  $t$ , as shown in Equation 18 (Ward et al., 2010):

$$\begin{aligned} E(R_{it}) = & \alpha_{i,t} + \beta_{i,1}SGN_t + \beta_{i,2}SGR_t + \beta_{i,3}SVN_t + \beta_{i,4}SVR_t \\ & + \beta_{i,5}MGN_t + \beta_{i,6}MGR_t + \beta_{i,7}MVN_t + \beta_{i,8}MVR_t + \beta_{i,9}LGN_t + \beta_{i,10}LGR_t + \\ & \beta_{i,11}LVN_t + \beta_{i,12}LVR_t \end{aligned} \quad (18)$$

where:

$E(R_{it})$  = the expected return on security  $i$  on day  $t$ ;

$\alpha_{i,t}$  = the alpha intercept term of security  $i$  on day  $t$ ;

$\beta_{i,1} \dots \beta_{i,12}$  = the beta coefficients on each control portfolio return; and

$SGN_t \dots LVR_t$  = the log-function share price returns on each of the twelve control portfolios on day  $t$ .<sup>i</sup>

The daily Abnormal Returns (ARs) were then calculated in line with Equation 18, and then averaged across the sample for the event analysis (Ward et al., 2010):

$$AR_{it} = R_{it} - E(R_{it}) \quad (19)$$

where:

$AR_{it}$  = the abnormal return of stock  $i$  in period  $t$ ;

$E(R_{it})$  = the expected share price return of stock  $i$  in period  $t$  in terms of equation (18); and

$R_{it}$  = the actual return of stock  $i$  in period  $t$ .

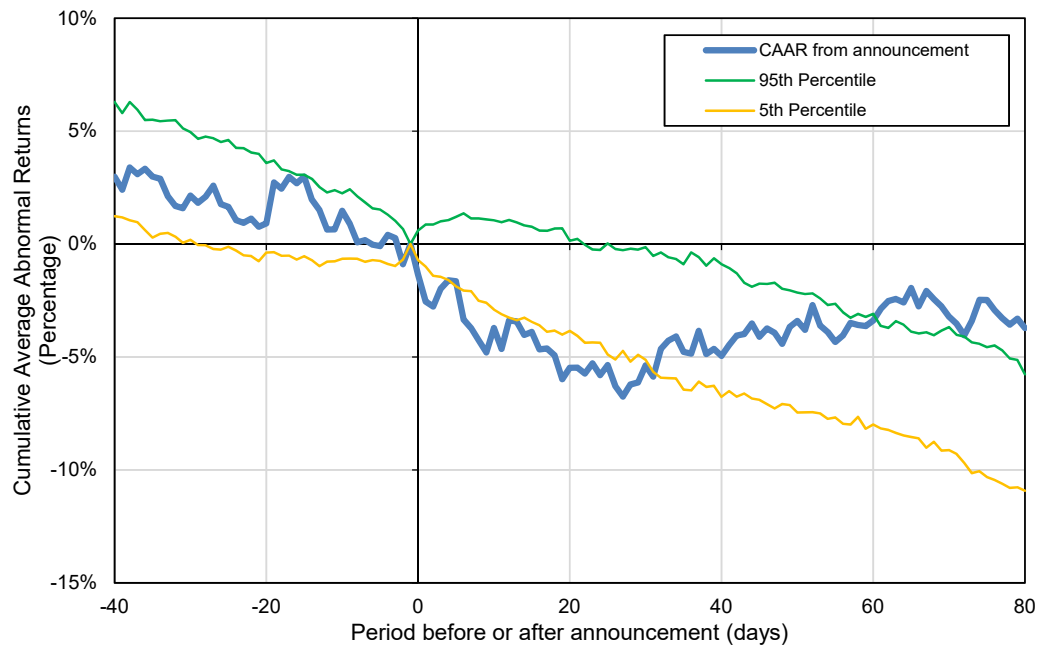
To determine the performance over an extended period, Cumulative Abnormal Returns (CARs) were determined by cumulating the average abnormal returns for each share over the event window period (120 days – 40 days before and 80 days after). Finally, traditional parametric statistics are not appropriate since the data is unlikely to be normally distributed once cumulated. Consequently, a bootstrap distribution approach was applied to estimate the 5% and 95% cumulative confidence limits utilising random sampling of event dates before the announcement or realization of the rights issue. This allows for the abnormal returns over the event period to be tested against this distribution for significance (Ward et al., 2010).

## 5 Results and discussion

### 5.1 Hypothesis 1: Effect due to announcement

The first hypothesis examines the CAARs before and after the announcement date. The average period between the announcement date and the rights issue was 30 days, whilst the median was 24 days. This disparity is due to 16 outliers whose period (between the

announcement and the realization thereof) was more than 50 days. Figure 1 depicts the CAARs for all the companies that made rights offering announcements.



**Figure 1.** CAARs of all the companies according to the announcement date

As can be seen, the portfolio of abnormal returns declines by about 3% in the 40 days before the announcement of the rights issue. This is within the 5% and 95% significance limits. Immediately following the announcement (day 0) the CAARs breach the 5% confidence limit, and continue to drop for approximately 25 trading days; resulting in a cumulative abnormal return of -7%. Thereafter the CAARs improve slightly, showing a cumulative abnormal loss in value of around 4% by day 80.

Interestingly, an abnormal decline in share price was seen from 14 to 11 days before the announcement date, spanning from the borders of the 95<sup>th</sup> percentile to the 5<sup>th</sup> percentile. The pre-announcement decline is most likely due to some level of market expectation and can even include an element of signalling where investors are aware of

the imminent announcement. Additionally, it could also be seen as an indicator that the companies were in financial distress and that investors were simply selling shares.

Concerning the results, our observations are in line with those of Pascoe, Ward and Mackenzie (2005), Cotterell (2011) and Setati (2014) who found that CAARs can reduce by between 1% to 3% and between 1% and 7% before and after the announcement is made, respectively. The null hypothesis was challenged by research from Marisetty, Marsden and Veeraraghavan (2007), and Susanto, Banani and Luksana (2020). One possible reason for the latter disparity may be due to market environments. Marisetty, Marsden and Veeraraghavan (2007) conducted research in India, whereas Susanto, Banani and Luksana (2020) conducted their research in Indonesia; both of which are differentiated as developing countries, but with differing economic and Gross Domestic Product (GDP) activities compared to South Africa.

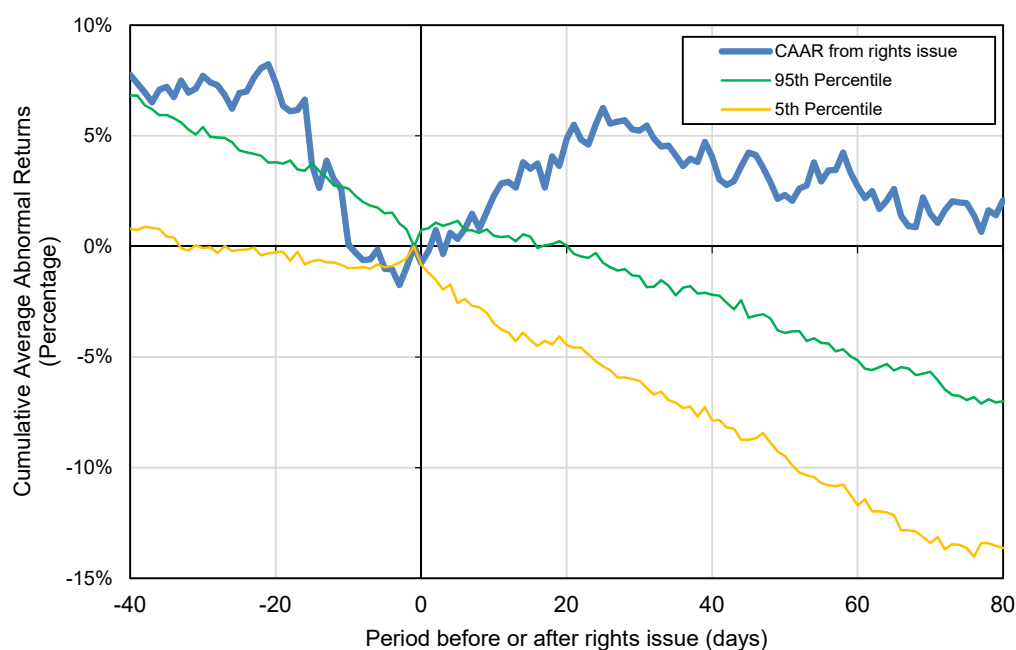
Subsequently, a conclusion can be made that the null hypothesis is rejected, while the alternative hypothesis is accepted – rights issue announcements are found to negatively impact the share price of a company, both before and after the announcement.

## ***5.2 Hypothesis 2: Effect due to rights issue***

The second hypothesis focuses on how the rights issue realization influences the share price companies. Within the scope of the study, an average amount of R1.196b was raised, ranging from just below R1m to R13.488b. Interestingly, approximately 40% of companies had engaged in a rights offering on multiple occasions, indicating that these will most likely have implemented the mechanism to raise capital for investment purposes, as opposed to supporting operational activities. By default, companies that raise capital to support operational activities will most likely not be able to engage in the activity multiple times, as investors won't allow it without repercussions. Figure 2



depicts the CAARs of the sample according to the rights issue realization.



**Figure 2.** CAARs of all the companies according to rights issue date

The first interesting observation relates to the relative stability of the returns from 40 to 23 days before the realization of the rights issue. This period most likely falls before the announcement of a rights issue and, as such, pricing remains relatively stable. Once the announcement is made (as per the median period of 24 days), the CAARs show a statistically significant drop of around 10%. The likely reason for this is the effect of the dilution process through the mechanics of a rights issue; or secondly, it could be a market reaction to the rights issue announcement. Another point of interest relates to a correction of the market 3 days before the rights offering where share prices increase from -1.75% to 0% on the day of the rights issue.

From day 0 onwards, the market continues to correct where CAARs progressively increase beyond the 95<sup>th</sup> percentile range on day 7 and continue to increase to eventually reach a maximum of 6.26% on day 25. The reason for this could be due to investor

sentiment, where they perceive the uncertainty to be over and prices to recover, or it could be due to an improved gearing ratio.

Once at a maximum, the CAARs gradually decrease to approximately 1.42% on day 80, albeit above the 95<sup>th</sup> percentile – inferring statistical significance. This is in line with the research conducted by Cotterell (2011) who found that equity issuance yields a CAAR higher than the 95<sup>th</sup> percentile after day 20. The 13-day disparity can be attributed to two reasons: firstly, due to different economic environments and activity, rights issue behaviours may be affected; and secondly, the sample size is larger in this study as compared to their research. Although the share price continues to decrease, it is also worth noting that the rate of decrease is less than the 95<sup>th</sup> percentile boundaries, especially near day 80. Since the 95<sup>th</sup> percentile boundary was created from randomized data a certain period before the event, this lower rate of decrease could be due to increased investor sentiment. The underlying reason for this could be that investors are associating positive information concerning the realization of the rights issue. Although statistically insignificant, this is in line with the results from Wang, Wei, and Pruitt (2006) which indicate that the issuance of shares tends to yield positive long-term returns.

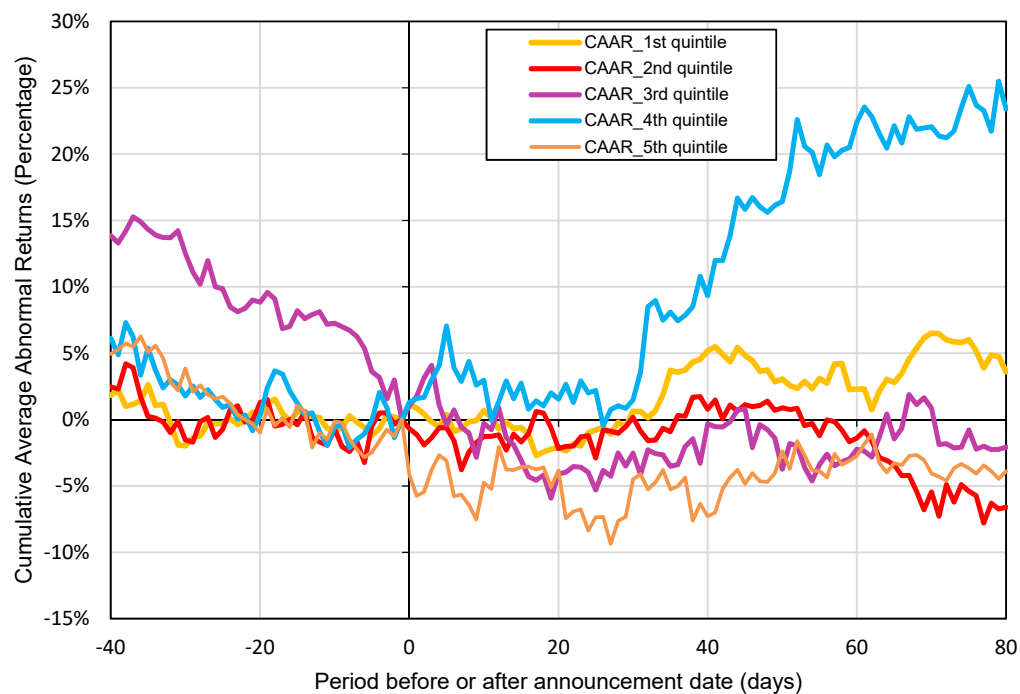
The statistical results from Figure 2 indicate that there is a statistically significant increase in the share price of companies according to a rights issue. Accordingly, the alternative hypothesis holds for this section.

### ***5.3 Hypothesis 3: Relative size of rights issue***

Hypothesis 3 seeks to determine the effect of the relative size of equity issuance on the share price of companies that 1) announced equity issuance and 2) realized the rights issue. As such, the results will be ranked according to the relative size and categorized into quintiles. The relative size was defined as a function of the market capitalisation at the time of the rights issue. The average weight was 70% whilst the median was 27%,

ranging from a minimum of 4% to a maximum of 1667%, with a standard deviation of 166%. Upon further analysis, nine companies issued equity that equates to 200% or more of their market cap at the time, rendering them outliers. These outliers relate to the market cap of those companies. For example, AG Industries had a market cap of R215.90m during the month of the rights issue. Going back one month to the announcement, their market cap was R12.33m. This results in a factor of more than 10. Although these companies were included in conducting the statistical tests, notice must be made of these outliers.

Figure 3 depicts the results of the CAARs by quintile according to the announcement date, with each quintile spanning 20% (from the lowest to the highest percentage),



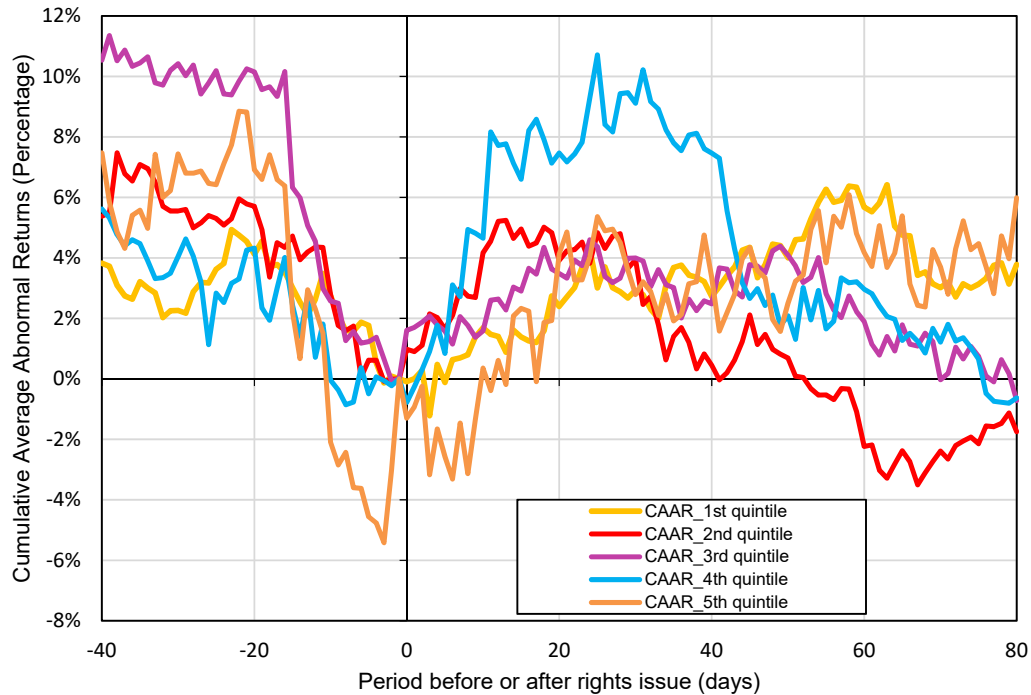
**Figure 3.** CAARs according to the weight on the announcement date

Concerning Figure 3, it can be seen that the 3<sup>rd</sup> quintile yields the highest value of 10.07% near a period of 40 days before the announcement. At the same time (t-40), quintiles 5, 4, 2 and 1 all yield a CAAR of between 4.08% and 1.92%, respectively. As the time decreases toward the announcement date, so does the CAAR of each quintile.

Once the announcement has occurred, all quintiles tend to decrease for the first 20 to 30 days. Quintile 4 attained the highest CAARs with a value of 23.35%, whilst the lowest is found for the 2<sup>nd</sup> quintile at -6.83%. It is important to recognise that the position of each quintile varies according to time and that there is no specific order in which they are categorized. Therefore, a conclusion can be made that neither one of the hypotheses holds. This is interesting because an argument can be made that if companies required more capital, their share price would inversely decrease, and vice versa. However, this could be indicative that investors are more concerned about the presence of a rights offering, as opposed to the amount of capital being raised.

The next phase involves an analysis of the effect of different quintiles based on the realization of the rights issue. Figure 4 depicts the results of the CAARs according to the different quintiles and the rights issue.

Concerning Figure 4, similar behaviour is exhibited for each quintile once the rights issue occurred. CAARs varied according to time and a positive return was seen for 40 days after. Unlike the research from Zhou et al, (2019), the results from Figure 4 indicate that the CAARs for different quintiles vary according to time and that there is no relationship between the relative size of the rights issue and the CAARs. This disparity could be due to market environments. That being said, both hypotheses are invalid.

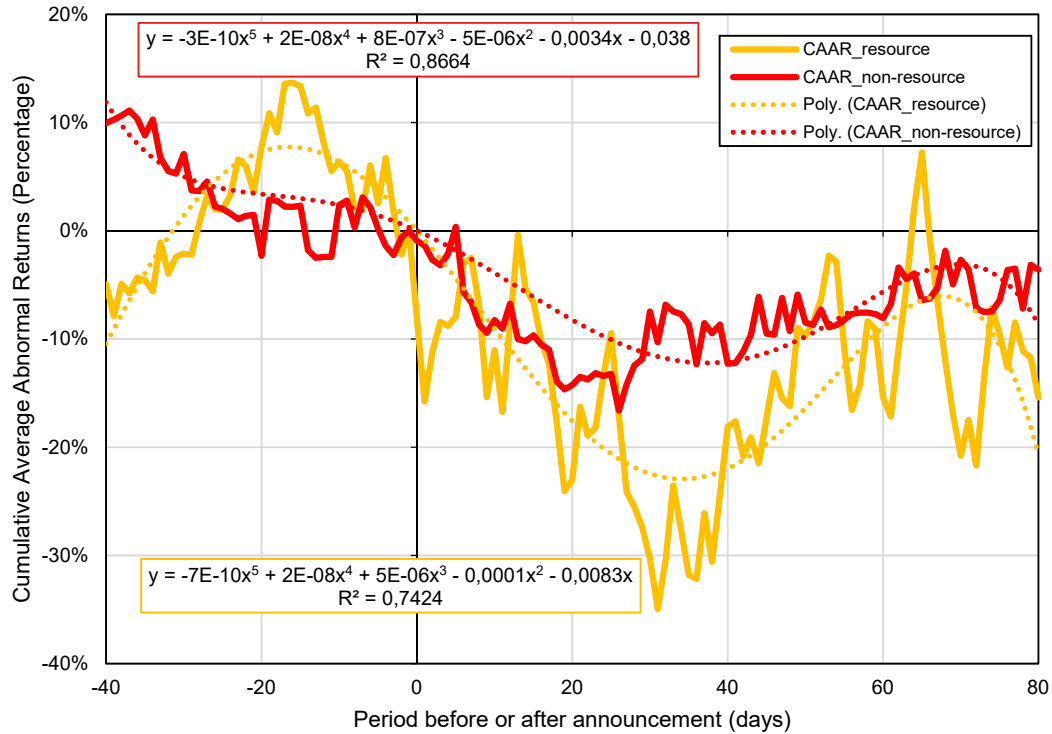


**Figure 4.** CAARs according to the weight of the rights issue date

#### **5.4 Hypothesis 4: Resource vs. non-resource companies**

Hypothesis 4 focuses on the effect of equity issuance on companies that either focus on resource or non-resource activities. The effect on these two categories is of importance since South Africa's economy is well diversified amongst both categories, whilst a large percentage of companies on the JSE is reliant on resource supply. Although an estimated 9% of South Africa's GDP is driven by mining exports (Statista, 2022), approximately 19.91% of all the companies that issued equity were resource dependent. Blanco, Garcia Lara and Tribo (2015) have indicated that by disclosing segments in which companies operate, factors such as cost of capital will reduce; inferring that certain companies could be more reliant on public funding as opposed to debt. It also exposes the shareholder in that market shock will be more pronounced to equity issuance.

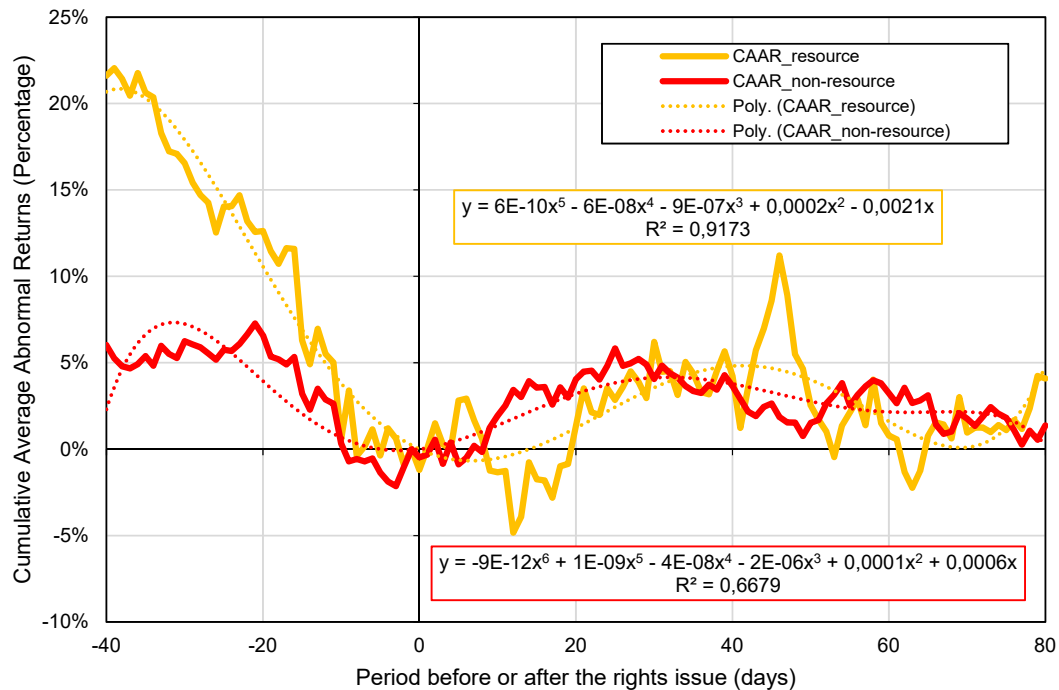
This section is divided into two sections: firstly, the effect based on the announcement date; and secondly, the effect based on the realization of equity issuance. Figure 5 illustrates the difference between resource and non-resource company CAARs according to the announcement date.



**Figure 5.** CAARs of resource and non-resource companies according to the announcement date

Concerning Figure 5, it can be seen that non-resource companies are less susceptible to CAAR variations. The maximum CAAR of 10% was calculated 40 days before the announcement occurred, whereas resource companies yielded a CAAR of -4.95% for the same day. Thereafter, non-resource companies progressively decreased toward the 0% mark on the announcement day. Conversely, resource companies first increased to reach a maximum of 14% on day -16, and then decreased to 0% on the announcement day.

Once the announcement had been made, resource companies yield the greatest reduction to reach a minimum of -35% on day 31. Similarly, non-resource companies yield a negative CAAR of -12% on day 36. In both instances, the CAAR then increased to initiate a cyclic behaviour. Both portfolios are susceptible to announcements concerning equity issuance. However, based on the amplitude of each function (an average of approximately 8% for resource companies and an average of 6% for non-resource companies), a conclusion can be made that resource companies are more susceptible to announcements concerning equity issuance. Figure 6 depicts the CAARs for resource and non-resource companies according to the realization of a rights offering.



**Figure 6.** CAARs of resource and non-resource companies according to the rights issue

Referring to Figure 6, a similar behaviour is exhibited as for hypothesis 2 – the dilution effect of a rights offering and market reaction to the rights offering reduces share prices. It is worth noting that resource companies are more susceptible to a rights offering, whereas the effect is comparatively low for non-resource companies. The

discount reduction of 20% could be indicative of multiple factors: firstly, because the industry is capital intensive, where high upfront costs are associated with operational activities (acquiring mineral rights, building infrastructure and operating machinery), resource companies could engage in a rights offering at higher discounts rates in an attempt to make it more attractive for investors. Secondly, due to the inherently volatile nature of the market, companies are highly exposed to price fluctuations – the inference being that companies could engage in a rights offering for the sake of continuing operations as opposed to expanding; thus acting as a deterrent for investors. This volatile nature was observed in the results, where three noticeable outliers are seen on days 13, 46 and 63. Lastly, due to the cyclic nature of the industry, resource companies could engage in a rights offering in periods of prosperity, and seize the opportunity to expand their operations and acquire assets. The underlying implication is that these companies use the rights offering as a financing tool during favourable market conditions, whilst investors don't perceive the same. Although no definitive reason can be given for this large reduction, we suspect it could be a combination of all of the above. However, once the rights offering is realized, both resource and non-resource companies exhibit similar CAARs.

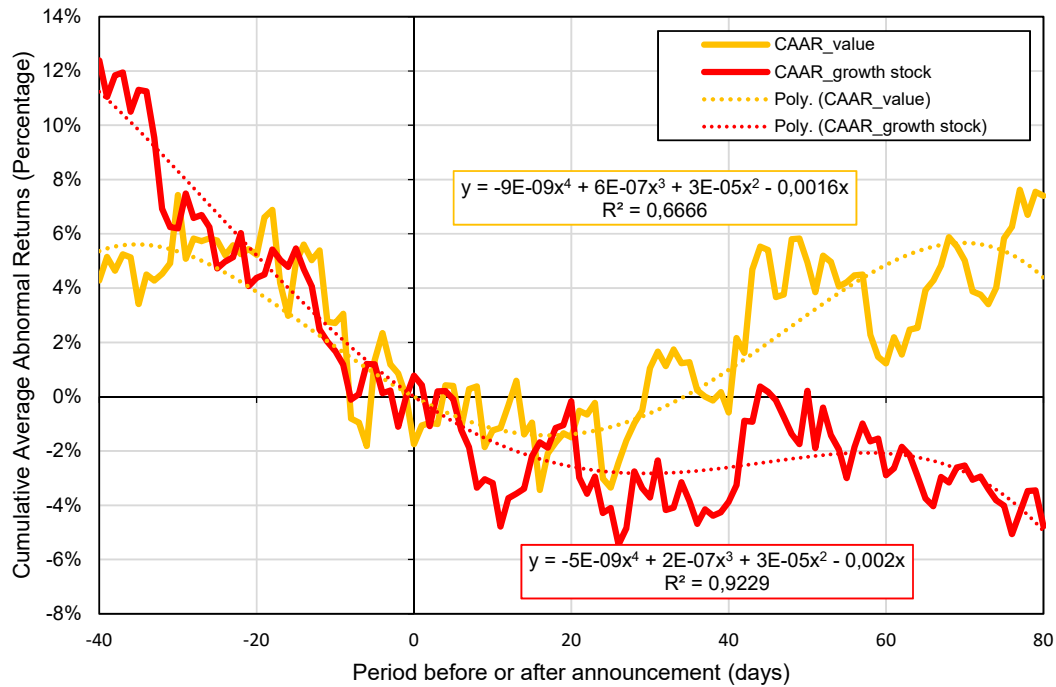
### ***5.5 Hypothesis 5: Value vs. Growth Companies***

Hypothesis 5 focuses on the effect of equity issuance on value and growth companies. Each company was categorized by utilizing the earnings yield of the company on the date of the announcement, followed by comparing that to the median earnings yield of all companies on the All-Share Index. These portfolios were selected according to research that suggests growth companies tend to outperform value companies (Basu, 1977; Oppenheimer, 1984; Woolridge & Snow, 1990; Petrie, 2007). Driven by this, the



following question can be raised for example: is the inverse true when equity issuance is initiated for both companies?

As stated earlier, earnings yield ratios must be above 0. Accordingly, only 118 announcements adhered to this requirement, of which 50 companies were categorized as value and the remaining 68 as growth. Figure 7 illustrates the effect of CAARs according to equity issuance announcements on growth and value companies.



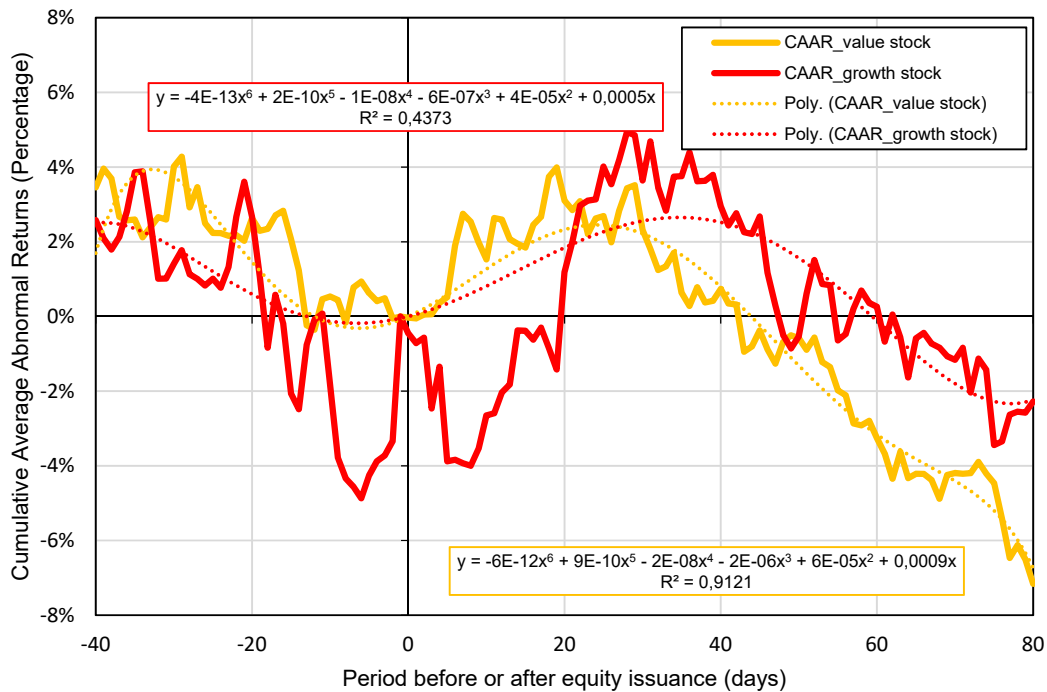
**Figure 7.** CAARs of value and growth companies according to the announcement date

Similar to research by Damodaran (2012), and Penman and Reggiani (2018) that suggests growth stock tends to outperform value stock, it can be seen that the CAARs for growth stock are 12% higher 40 days before the announcement, whilst value stock is only 4% higher during the same time. However, the effect of the announcement date is pronounced and becomes less evident as the time approaches the announcement date to eventually merge 30 days before the announcement date. Thereafter, both portfolios of

companies progressively decrease at the same rate toward the announcement date. It is worth noting that both companies experience a price reduction before the announcement; indicating that investors expect a rights offering announcement is imminent.

Once the announcement occurred, both portfolios are subject to decreasing share price. That being said, seeing that growth companies comprised earnings yield higher than the median earnings yield of the all-share index, an assumption can be made that most companies would issue equity for further investment, as opposed to supporting operational activities (Wang et al., 2006; Dittmar & Thakor, 2007; Goet, 2021). Subsequently, investors should associate positive information with the rights offering, such as raising capital for expansion or attaining additional assets. However, the results seem to indicate that investors associate negative information with the rights offering, which could indicate that shares were overvalued and in line with signalling theory. Conversely, value companies tend to recover 16 days after the announcement has occurred and continue to recover to eventually surpass 0% on day 37 (the latter period would overlap with the realization of the rights offering), whereafter share prices continue to increase.

Growth stocks would continue to decline and only recover after 31 days. The value then remains stable from day 31 until day 60, whereafter it gradually decreases to attain a minimum on day 80. This is a contradiction to the literature and suggests that value stock is more resistant to announcements of rights offerings. To determine the effect of the realization of a rights offering, Figure 8 depicts the CAAR of both portfolios of companies.



**Figure 8:** CAAR of value and growth companies according to the equity issuance date

Concerning Figure 8, value stock outperforms growth stock. Unlike growth stock, value stock constantly remains above 0% until the rights offering occurs; inferring that although the dilution effect is present, investors would engage in buying additional shares – thus increasing share price. Conversely, growth stock starts at a similar position (approximately 3%) to value stock, but then progressively decreases to below 0% – most likely due to the dilution effect.

Once the rights offering occurs, both value and growth shares increase. Value shares reach a maximum of 4% on day 22, whilst growth shares only reach a maximum of 4.9% on day 37. However, value stock then progressively decreases from its maximum to a minimum of -7.16% on day 80, while growth shares only decrease to -2.58% on day 80 (very similar to before the announcement where growth shares outperformed value shares). Unlike the announcement date, this indicates that growth stock is more resistant to equity issuance and is in line with literature (Damodaran, 2012; Penman & Reggiani,

2018) that suggests growth stock outperforms value stock. That being said, the effect seems to fluctuate according to time and only becomes pronounced further into the future.

## **6 Conclusion and recommendations**

This research presents the results obtained by analysing the share price of companies that implemented a rights offering on the JSE. Utilizing different hypotheses, it was found that rights offering announcements negatively impact the share price of a company, whilst having a positive statistically significant effect on the share price of companies according to the realization of a rights issue. Additionally, the result from the research indicates that the relative size of the rights issue does not categorically change the effect of a rights issue – in essence, the order continuously changed as a function of time for both the announcement and realization of a rights offering.

The last part of the research focussed on categorizing the companies according to different portfolios, namely resource vs. non-resource companies; and value vs. growth companies. The research indicates that resource companies are more prone to a rights issue announcement whilst there is no statistical difference between resource and non-resource companies according to the realization of the rights issue. Concerning value vs. growth companies, the results indicate that growth companies are more prone to a rights issue announcement as opposed to value companies. However, once the rights issue occurs, growth companies tend to recover and surpass the CAARs of value companies.

Concerning future research, it is advised that share buybacks be investigated and compared. In theory, this will conclude the process of a rights issue seeing that the companies would want to repurchase the shares issued during the rights offering. Additionally, trading costs, such as brokerage costs, were not integrated into this research. This means that the cost of the rights offering is higher compared with the result obtained.

Accordingly, future research could include integrating crude proxies for trading costs. Lastly, price fluctuations around a rights offering announcement and its realization could be due to multiple factors (as was discussed in the document). We suggest that detailed tests be conducted against each factor to determine the effect thereof.

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<sup>i</sup> Ward & Muller (2010) used a twelve parameter ‘style’ model to estimate benchmark returns in the study. Subsequently, the ‘control portfolios’ of shares representing the cross-sectional factors of size (size was categorized according to small, medium and large), growth/value, and resource/non-resource were created as shown in Table 1:

**Table 1:** Control portfolios from Ward & Muller (2010)

Beta coefficient	Control Portfolio	Resource or non-resource company	Value or growth company	Company size
$\beta_{i,1}$	SGN	Non-resource	Growth	Small
$\beta_{i,2}$	SGR	Resource	Growth	Small
$\beta_{i,3}$	SVN	Non-resource	Value	Small
$\beta_{i,4}$	SVR	Resource	Value	Small
$\beta_{i,5}$	MGN	Non-resource	Growth	Medium
$\beta_{i,6}$	MGR	Resource	Growth	Medium
$\beta_{i,7}$	MVN	Non-resource	Value	Medium
$\beta_{i,8}$	MVR	Resource	Value	Medium
$\beta_{i,9}$	LGN	Non-resource	Growth	Large

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$\beta_{i,10}$	LGR	Resource	Growth	Large
$\beta_{i,11}$	LVN	Non-resource	Value	Large
$\beta_{i,12}$	LVR	Resource	Value	Large

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