

**An evaluation of corporate actions as a shareholder wealth creation mechanism for
JSE-listed investment holding companies.**

A research report submitted by:

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Declaration

I, **Nicholas Schwenke**, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilments of the requirements for the degree of Master of Commerce in Accountancy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

N Schwenke

Signed at ...**Braamfontein, Johannesburg**

On the **30th** day of **August 2023**

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List of terms and meanings:

Term	Explanation	Reference
Abnormal return	The abnormal return for a period is the actual return less the expected return.	(Armitage, 1995)
Actual return	<p>The actual return is determined in line with Equation 3.</p> $R_{it} = \frac{P_{it} - P_{i(t-1)}}{P_{it}}$ <p>“The actual return (R_{it}) is the share price of company i in period t less the share price of company i in the immediately preceding period divided by the share price of company i in period t.” Returns are discrete.</p>	Equation 3
Average return	Estimation model utilised assuming each share earns the same return it does on average during the historic estimation period.	(Armitage, 1995) Average return model: Equation 4
CAPM	Capital Asset Pricing Model. A financial model used to calculate expected returns on a capital asset, usually company shares.	(Sharpe, 1964)
Expected return	Expected returns are the returns determined using the various estimation models. This study makes use of an Index model, average return model, CAPM and arbitrage pricing theory(“APT”) model. As there is more than one estimation model used each estimation model gives rise to an expected return.	(Armitage, 1995), Index model: Equation 2x Average return model: Equation 4 CAPM: Equation 5 Equation 5 APT: Equation 6
Intrinsic net asset value	A calculated combined value of all the stakes for an investment holding company at fair value including certain adjustments such as potential CGT charge and head-office costs. Intrinsic net asset value should represent a fundamental sum-of-the-parts valuation approach for an investment holding company.	(Chlomou & Demirakos, 2020; Rappaport, 2005)
Investment Holding Company	Institutions which manage a portfolio of stocks to control or influence the companies in which they hold a stake of the equity capital.	(Cherkes, Sagi, & Stanton, 2008; Daems, 2012; Dimson & Minio-Kozerski, 1999; Hanafizadeh & Moayer, 2008; Thomson, 1978)
Pricing	Act of market participants setting a price for a share	(Barr, 1990)

Term	Explanation	Reference
Shareholder wealth	As represented by the value of their shareholding in the listed investment holding company, including an appropriately long-term focus.	(Danielson, Heck, & Shaffer, 2008)
Unlocking shareholder wealth	In the context of this study, reducing the discount to intrinsic net asset value	(PSG Group, 2022; Visser, 2020)

Abstract

Background: Investment holding companies represent a category of company primarily focused on adding value by increasing the value of the stakes in the businesses they own. In South Africa there is a trend for Investment Holding companies to trade at a price lower than their reported intrinsic net asset value that is widely commented on by management teams and the financial press. It is also accepted that corporate actions are known to have an impact on share price and investor behaviour.

Purpose: The purpose of this research is first to quantify the discount to intrinsic net asset value across a sample of holding companies. This research will also determine if corporate actions pursued by holding companies have reduced any discounts which exist and, in the process, created value for shareholders. Finally, an assessment of which corporate actions is most effective in reducing the discount (if any) will be prepared.

Method: Discounts are quantified by comparing daily share prices to the reported intrinsic net asset value. The impact of corporate actions is evaluated using an event study methodology using multiple estimation models.

Results: The results showed that corporate actions resulted in no significant abnormal returns apart from in a six-month event window after the event announcement date. Statistically significant negative abnormal returns were noted in this event window. This indicates that corporate actions are not an effective way of reducing the discount to intrinsic net asset value.

Contribution: This research adds to the existing JSE event study literature by focusing on a specific subset of companies. The research makes a theoretical contribution by suggesting value creation strategies for businesses which may be fundamentally mispriced.

Key words: Event study, Investment holding company, JSE, value-creation

1. Introduction

1.1 Context of the study

1.1.1 Investment holding companies and their rise and fall.

The business of an investment holding company is substantially different from that of an operating company. Shareholder value in operating companies is primarily created through strong cash flows which can be achieved by increasing revenue, limiting costs, and looking for other areas of operational efficiencies. In the case of an investment holding company, no products and/or services are being sold. Rather, the value and performance of the underlying investments is the primary driver of value created by investment holding companies (Remgro, 2014). With this in mind, an investment holding company is defined as: a company which generates its profits primarily from the investments in the securities of the companies it owns (Hanafizadeh & Moayer, 2008).

The definition of an “investment holding company” can be expanded to include institutions managing a portfolio of stocks to control or influence the companies in which they hold an equity interest. Because of their nature as financial intermediaries, investment holding companies display similar characteristics to a closed mutual fund (Daems, 2012) or closed-end fund (Cherkes et al., 2008; Dimson & Minio-Kozerski, 1999; Thomson, 1978).

The Johannesburg Securities Exchange (“JSE”) has several listed Investment Holding Companies (see Appendix A), accounting for 3.6% of the market capitalisation of the JSE as of 1 July 2022 by the definitions above. Those responsible for the investment decisions at investment holding companies are informed investors. They gather and

process information about companies and use this to undertake profitable risk arbitrage. The more informed investors acting in this manner should lead to better capital allocation decisions by the entire stock market (Durnev, Li, Morck, & Yeung, 2003).

Investment holding companies are reliant on the companies they own and growing the value of their investments. This means that JSE-listed investment holding companies are required to publish information on the net asset value per share in line with the JSE Listings Requirements (s 3.4 (b)(vi)) when publishing trading statements and providing interim and annual financial statements. The net asset value per share should reflect the fair value of the ownership stakes within the holding company's stable (after considering debt) which should allow this value to be compared to the share price. Performing this analysis has led market participants to identify that the share prices of these investment holding companies typically trade at a discount to their intrinsic net asset value (as represented by the measure reported to the market) (Visser, 2020).

1.1.2 Why the persistent discount is a problem

The persistent existence of a discount to intrinsic net asset value represents a problem for investment holding companies as managers of these companies are primarily concerned with growing the intrinsic net asset value (as this is the metric they can control through their ability to allocate capital). As the discount persists, shareholders are not rewarded for what would be good operational performance by the investment holding company.

The discount, therefore, indicates an area where the investment holding companies' value creation efforts are not fully appreciated by the market.

1.2 Purpose of the study

The goal of this study is to evaluate the extent to which JSE-listed investment holding companies trade at a discount to their intrinsic net asset value and determine if corporate actions are an effective way to reduce this discount.

1.3 Significance of the study

The study aims to address investment holding company discounts by first quantifying the discounts and, secondly, measuring the impact which certain corporate actions initiated by management have on the discount. The impact of corporate actions is empirically tested using an event study which utilises more than one estimation model. The approach adopted provides an extra component to event study research which historically uses only one estimation model. The study further adds to the event study literature completed on the JSE but focuses on a specific subset of companies.

While investment holding company discounts are noted in the financial press and among institutional investors, the study represents an important update to the academic literature investigating these discounts and builds on work prepared by Barr and Kantor (2000) which was expanded by Kantor (2001). Both studies contain relevant insights which are incorporated into an updated view of South African investment holding companies in this study.

Understanding how certain corporate actions impact the share prices of these holding companies will enable managers to make decisions which should maximise investment holding companies' access to capital. Greater access to capital, given the investment strategies implemented by these investment holding companies can

enable these companies to play an important role in how countries develop and industrialise (Mondliwa, Nhundu, Paelo, Thosago, & Vilakazi, 2017).

This study will allow investment holding companies a better understanding of what actions reduce the discount and unlock shareholder value and how to communicate their intentions to the broader market. Actions taken by investment holding companies with the specific intention of reducing the discount have been documented in the financial press by Visser (2021) who outlines the steps taken by Naspers Limited to address the discount to the value of Naspers' underlying investments and accordingly unlock/create value for shareholders. These actions undertaken by management are practically demonstrated by Naspers and PSG most notably (for their size and the explicit mention of reducing discounts and accordingly unlocking value). Naspers have unbundled several businesses including Novus and Multichoice and have now engaged in a large share buyback process. PSG have also unbundled their interests (or portions thereof) in Capitec, Zeder and Curro and have more recently implemented a large restructuring where their listed businesses will be unbundled and then all outstanding shares will be repurchased from shareholders who wish to dispose of their shareholding. Included in Appendix C is further commentary on how Naspers and PSG have responded to the challenge of reducing the discount. In this context, and the context of the study, unlocking/creating value is understood to mean a reduction in the discount to intrinsic net asset value so that the share price more closely approximates the fundamental value of the firm.

Investors will be able to use this research to understand what actions taken by management teams make a meaningful impact and to incorporate this into their investing approach. It may also allow advisors and sponsors to provide their clients with valuable advice.

1.4 Research questions

The research questions for this study are as follows:

Research question 1: What is the discount to intrinsic net asset value of investment holding companies listed on the JSE?

Research question 2: Do corporate actions reduce discounts to intrinsic net asset value for a sample of JSE listed Investment holding companies?

Research question 3: What corporate actions, if any, are most effective at reducing the discount to intrinsic net asset value?

1.5 Assumptions, limitations, and delimitations

The study utilises an event study methodology to investigate share price reactions to the corporate action. Event studies rely on the assumption of an efficient market, demonstrating semi-strong characteristics (Fama, 1970). This assumption is not valid in many situations but is appropriate for the JSE. (Refer to section 2.2 for a detailed discussion relating to the efficiency of the JSE). Additionally, the share price may incorporate more information than just the market's response to the corporate action. An event study approach may be sensitive to changes in research design. Changes in the estimation periods may have caused different results to what would have otherwise been obtained.

The period of the study includes share price data from March 2020 where the JSE was affected with a large decline associated with the Covid-19 pandemic. The declines in share price and subsequent recovery in share prices may have affected the abnormal returns calculated.

Event studies are typically conducted over short time horizons to capture the true impact of the event on the share price. This study incorporated longer time periods relying on the assumption that longer periods are more appropriate to evaluate if long-term value creation (and accordingly increases in shareholder wealth) can be linked to any of the corporate actions.

The companies included in the sample range from small capitalisation companies to constituents of the JSE top 40 companies by market capitalisation. Differences in market capitalisation affect the trading in various shares with some companies experiencing low traded volumes. Low liquidity among certain companies in the sample may have skewed the findings.

To the extent that an intrinsic net asset value disclosure is not explicitly provided it has been assumed that net asset value will be an appropriate proxy.

Because of the nature of the research completed, there are many variables which have not been included in the analysis. This complexity is controlled to draw conclusions. It is further assumed that the SENS announcements are complete in terms of corporate actions and the share price data collected is accurate and complete.

Corporate actions investigated are limited to the actions conducted by the companies in the sample set, found using a search function on McGregor Bureau for Financial Analysis (BFA) database.

Confounding events were assumed to be corporate actions for the purposes of this study. Other market announcements that may convey information to the market were assumed to be captured using multiple estimation models for the event study.

Delimitations

The study is not concerned with identifying the reason that investment holding companies can trade at a price which represents a discount to intrinsic net asset value. Rather, the study aims to understand the impact subsequent actions of management have on the underlying discount. Analysing actions taken, given the existence of the discount, can allow for the identification of effective actions to be considered by relevant stakeholders.

Underlying data for investment holding companies between 2003 and June 2022 will be used for analysis purposes. This represents a period during which the JSE has been identified as a well-established capital market in an emerging economy which allows for better risk sharing and a more efficient allocation of capital between market participants (Laeven, 2014) than less developed capital markets and should represent sustainable levels of capital flows.

2. Theoretical framework:

2.1 Value creation for investment holding companies.

Visser (2020) identifies that a major factor put forward as a benefit of investment holding companies in South Africa is that, in addition to allocating capital, a holding company can provide strategic, financial, and managerial services support, as well as creating an environment for corporate deals. The capital allocation ability of the managers at investment holding companies has often been presented as another benefit of investing in them. These holding companies also offer an interesting opportunity, to the extent that they own investments in private companies as this enables investors to participate in the economic gains associated with that private company by investing in a listed share.

To the extent that these are investments in micro, small and medium-sized enterprises (MSME) the exposure to private companies represents an opportunity to participate in a sector which contributes approximately 34% to South Africa's GDP (International Finance Corporation, 2018). The exposure to private companies comes with an added risk of information asymmetry as management will inherently possess more information than the investors do which can give rise to differences regarding appropriate valuations of these private entities. Management of the holding companies have access to information by virtue of their stake in the private company while the disclosure provided to investors, in financial statements and other management commentary released to the market may be limited. Risks associated with information asymmetry are heightened by the fact that private companies are not subject to the same disclosure requirements as listed entities. The difference in disclosure requirements limits the amount of information investors will typically have access to regarding the private entities which some holding companies are invested in.

Over time, the popularity of investment holding companies has waned as the structure has become less popular with investors as the benefits of their size and the diversification benefits have been eroded as capital markets have developed (Visser, 2020). The decline in popularity is potentially explained by access to finance and portfolio construction considerations. Holding companies often provided capital to their investee companies: this source of capital has become less valuable as bank's abilities to provide bespoke finance has improved. Additionally, the appeal of the single-entry point into a portfolio has declined as that means the owner of the investment holding company's shares are subject to investment weightings determined by another investment manager. Utilising investment holding companies to gain exposure to underlying investments has portfolio weighting and risk management implications for

the ultimate shareholders (be they institutional funds or individual investors)(Visser, 2020). The additional risk associated with these portfolio weighting and risk management considerations, is no longer considered attractive particularly when some of the underlying portfolio companies are separately listed and can be invested in directly.

Listed investment holding companies' share prices often trade at a discount of their reported intrinsic net asset value (Visser, 2020). This has also been the subject of some academic research, most notably by Barr and Kantor (2000) and further investigated by Kantor (2001). Trading at a discount can be attributed to a wide variety of issues ranging from market efficiency (Bhana, 1994; Fama, 1970), information asymmetry (Krishnaswami & Subramaniam, 1999), and various other factors which affect share prices in listed markets.

At the heart of this issue is a fundamental disconnect between the share price of the listed investment holding company and the intrinsic value of the entire company determined by management that is disclosed to the market in interim and annual financial statements. Following a theoretical sum-of-the-parts valuation methodology, the intrinsic value of the entire company is calculated as the sum of the value of the underlying companies. Applying a sum-of-the-parts methodology is appropriate because each investee company is subject to different profitability and growth characteristics (Chlomou & Demirakos, 2020). This is the typical basis for how intrinsic net asset values of JSE-listed investment holding companies are disclosed. The portfolios of the investment holding companies consist of investments in other listed entities and investments in private entities. The intrinsic net asset value is, therefore, calculated as the intrinsic value of each of their equity stakes (either calculated using

widely accepted valuation approaches or relying on the share prices) less the central net assets and a potential Capital Gains Tax (CGT) liability.

Kantor (2001) describes the market value of an investment holding company as a function of four variables. This function states that the market value is the sum of the market value of its listed assets (ML) and the market value of its unlisted assets (MU) and the market value of the head office operations (MH) which provide services (and charge fees) to the subsidiary companies and the net present value of all the projects the management of the holding company is expected to undertake in the future (MP).

The function can be written as:

$$MV = ML + MU + MH + MP$$

Firstly, ML should be based on observable market prices and is unlikely to result in a material difference between management and market participants. MU may be subject to slightly different views with the influence of information asymmetry potentially playing a role. MH should not result in a material difference between parties. MP then becomes a critical variable as it reflects the value of the investment decision including whether management can discontinue value-reducing investments or convert them into value-increasing investments. MP represents the market's estimate of the value which can be added by the current management team. Accordingly, if investors are pessimistic about the value of the future investment program, this is likely to result in a persistently large discount. A high degree of market scepticism would require the convincing adoption by management of a more disciplined process for undertaking investments (Kantor, 2001).

Kantor (2001) further theorises that the opportunity for the investment holding company to exercise shareholder control over the management of a listed or unlisted

subsidiary may add value to those subsidiaries. He goes on to say that this is a justification for the holding company, that it provides the means for superior managers to exercise shareholder, rather than management, control over companies in the group structure. This argument assumes that the holding companies can overcome traditional agency theory difficulties while exercising shareholder control.

2.1.1 Possible reasons for the discount

While the reasons for the disconnect itself are not the focus of the paper, potential contributing factors, as identified in prior academic literature and by practitioners, are discussed.

The structural pricing trend of discounts to intrinsic net asset value affecting investment holding companies can also be compared to pricing affecting closed-end investment funds. Closed-end funds are publicly traded firms which earn their income from owning and managing a portfolio of financial securities issued by other corporations and entities. These funds trade at a discount when the market value of its outstanding stock is less than the market value of its portfolio holdings less short-term liabilities (Cherkes et al., 2008; Dimson & Minio-Kozerski, 1999; Thomson, 1978). Thomson (1978) suggests five possible explanations for the discounts that have been further studied by Lee, Shleifer and Thaler (1991) and Pontiff (1995):

1. discrepancies between the true market value of the assets and liabilities held by the fund and their quoted net asset value (i.e., accounting problems);
2. personal income taxes and capital gains tax liabilities;
3. transaction costs and the demand for diversification by small investors;
4. productivity of fund management and their ability to generate expenses;
5. naïve capital market information inefficiency.

These five explanations, expanded on below, go some way towards understanding the discrepancy noted between investment holding share prices and intrinsic values per share.

Discrepancies between the quoted net asset value and the true market value arise because of accounting methodology which does not result in a measurement at fair value in line with how market participants would value the net asset value. Key accounting problems can arise around contingent liabilities and the valuation of illiquid securities (Thomson, 1978). The theory around accounting problems suggests that a discount to net asset value only exists because the point of comparison (NAV determined using accounting principles) is not correct.

Tax effects may distort a relationship between share prices and intrinsic net asset value from the investor's perspective and from the company's perspective. The investor's perspective relates to the implications of owning the specific share, including tax considerations upon disposal. Tax consequences have been noted as an important factor influencing investment decisions for investors (Nagy & Obenberger, 1994). From the company's perspective, the investments they own may have specific tax consequences, including capital gains tax implications.

The theory related to a demand for diversification implies that poorly diversified funds will sell at discounts to compensate small investors (through higher returns) (Thomson, 1978). Abnormal returns noted in Thomson's study might represent compensation for transaction costs in funds with higher bid-ask spreads (Pontiff, 1995).

The productivity of fund management (as either a productive or non-productive asset) is a value/cost that is not incorporated in NAV but may be considered by the market

on the basis of applying unbiased expectations. Productivity of management can be grouped with the accounting problems theory as any discount/premium noted from these explanations would not give rise to a profitably trading strategy (Thomson, 1978). This is built on by Lee et al. (1991) where they explain how agency costs can influence the discount if management fees are too high or if future portfolio performance is expected to be below average.

Finally, any capital market inefficiency would stem from biased expectations of management's ability to influence the fund's future performance or an avoidance of closed-end funds by institutional investors.

2.2 Market efficiency: traditional theoretical view of market efficiency

Market efficiency is relevant to this study for two reasons: firstly, intrinsic value information is reported to market participants by the investment holding companies in the sample. Despite this information being available, the trend of investment holding companies' share prices trading at levels below the reported intrinsic value continues. It is important to note that the intrinsic value information which is periodically reported may not have sufficient informational content for market participants to consider or it may already inform their opinion. Secondly, undertaking a corporate action equates to a response by management which will accordingly become public information when reported to the market. A semi-strong market efficiency (as discussed further below) implies that the expected price impact of the public announcement will accordingly become incorporated into the share price of the company in question.

A market in which prices reflect available information is called efficient (Fama, 1970). The empirical tests used to test capital markets are the weak form, semi-strong form and the strong form tests of market efficiency (Fama, 1970). Weak form tests of

efficiency are aimed at identifying if historical prices are the only information set considered. Semi-strong tests are performed to identify if prices efficiently adjust to other public information such as announcements of earnings or other corporate actions. Strong form tests are performed to identify whether all available information is reflected in share prices in the sense that no individual can benefit through access to information not yet public (Fama, 1970).

Studies investigating the characteristics of stock exchanges to identify the efficiency of an exchange have been popular since the introduction of the efficient market hypothesis (EMH), highlighted by an early review of the empirical work performed around the EMH by Fama (1970), which is still the basis for many studies today. The JSE is no different, with several academic studies on the efficiency of the JSE.

Gilbertson and Roux (1977) first investigated this phenomenon on the JSE. Making use of trading rule simulations on share price sequences they found evidence to support the efficiency of the JSE. Strebel (1977) noted shortly after that the JSE is efficient when considering shares listed on the exchange which have an average annual trading volume greater than a quarter million. Philpott and Firer (1994) found that anomalies exist for both highly liquid (large volume traded) and illiquid (low volume traded) shares but notes that there are pockets of efficiency in the market. Smith, Jefferis and Ryoo (2002), Magnusson and Wydick (2002) and Hoffman (2012) all found evidence that the JSE exhibits characteristics of weak form efficiency.

Bhana has found several ways to analyse empirically the efficiency of the JSE across his numerous articles on the topic. Initially focusing on investment recommendations made by professional investment analysts, Bhana (1990a) finds that investment recommendations provide real value and add further efficiency to the market through

the publishing of their findings. In a follow-up to this article, Bhana (1990b) finds that recommendations released to a small group of investors are not immediately and fully reflected in the share price but rather that the widespread dissemination has a significant impact on the market price. This indicates that the semi-strong form is more likely to be appropriate than a strong form of market efficiency. While exploring trading rules relating to closed-end investment trusts and the efficiency conclusions which can be drawn from this subset of the JSE, Bhana (1993) found evidence of market inefficiency over a period from 1979 to 1988. This finding is interesting for two reasons: firstly, this is only relevant to a subset of the JSE. Secondly, closed-end investment trusts have several similarities with the investment holding companies which are the subject of this research.

A later study performed a review of the efficiency using a scale from perfectly efficient to outright inefficiency, and noted that the only group of investors who are able to consistently outperform the market are company officers who trade on inside information (Bhana, 1994). This finding implies, at least, a semi-strong form of efficiency and is consistent with the research relating to investment recommendations which outlined that the recommendations may be influenced by the level of access to which the investment professionals are privy to which have some of the characteristics of insider information. In a study of the Botswana Stock Exchange (BSE), Zimbabwe Stock Exchange (ZSE) and JSE, Okeahalam and Jefferis (1999) find evidence that the JSE conforms to the semi-strong form while the BSE and ZSE are not semi-strong form efficient.

The efficiency among different indices can be distinguished from that of the All-Share index. Smaller indices are found to be less efficient, allowing investors to profit from informational inefficiencies in the market (Heymans & Santana, 2018). This may also

imply that smaller companies included in the sample for the purposes of this study may be less efficient, leading to more significant abnormal returns. This finding may reinforce the perception that belief in the capital allocation ability of individuals/teams running investment holding companies could allow investment holding companies to benefit and generate outperformance or alpha¹.

The purpose of the above discussion is to highlight that the exact level of market efficiency the JSE exhibits has not been definitively determined. Sufficient evidence exists that the JSE is informationally efficient to the extent that the research design conducted in this report is appropriate. The research design is appropriate to the extent that evidence has been found that the JSE is at least semi-strong efficient, which is the finding in several studies focusing on the JSE (Bhana, 1993, 1994; Glass & Smit, 1995; Magnusson & Wydick, 2002; Okeahalam & Jefferis, 1999).

2.2.1 Corporate actions and subsequent share performance in efficient markets

A “corporate action” is:

“An action taken by an issuer or other entity or third party which affects the holders of securities in terms of entitlements or notifications” (JSE Limited, 2004, p. 10).

Corporate actions may contain price sensitive information or may affect holders of securities and are required to be announced by the JSE, using their Stock Exchange News Service (“SENS”) announcements (JSE Limited, 2004). The required content of the SENS announcements is regulated by the JSE and is incorporated in the JSE listing regulations.

¹ Alpha is a measurement of performance relative to a benchmark. It is often referred to as the amount by which an investment has “beaten” the market.

These announcements have informational content which is digested by investors and market participants. The reaction of stock prices to information was noted by Fama, stating that markets are efficient with respect to an information set if the stock price reflects that information set (Fama, 1970).

Under the assumption of semi-strong efficient markets, announcements of corporate actions are signals delivered by the management of the company (Ferreira, Mohlamme, Van Vuuren, Dickason, & McMillan, 2019).

The notion that corporate actions have strong implications for share prices and investor behaviour is generally accepted by practitioners (Oxera, 2006). Several studies have been performed on the subsequent share price performance after corporate actions in South Africa. These studies range from reactions to unbundling transactions to reactions to mergers and acquisition announcements (Bethlehem, 1997; Bhana, 1998, 2004, 2007; Biger & Page, 1992; Blount & Davidson, 1996; Cross & Firer, 1986; Jordan, 2012; Krige, 2012; Mgilane, 2019; Nichols, Rosenberg, Majoni, & Mukanjari, 2014; Nkongho & Makina, 2020; Smit & Ward, 2007; Wimberley & Negash, 2004; Youds, Firer, & Ward, 1993).

Below is a brief review of each of the corporate actions noted in the sample.

Capitalisation issues

The JSE Limited (2004) defines a "capitalisation issue" as:

an issue of fully paid shares capitalised from a company's share premium, capital redemption reserve fund or reserves, or from a combination thereof, to existing shareholders of the company in proportion to their existing shareholdings at a specific date (JSE Limited, 2004, p. 8).

Capitalisation issues have no effect on shareholder's proportional ownership of stocks or the capital structure and financial position of the company. Since capitalisation issues do not result in changes to earnings power, capital structure or any reductions in expenses, the total market value of the firms should remain the same in the absence of information asymmetries (Mishra, 2005). Applying that theory should mean that no abnormal returns are noted when a company announces a capitalisation issue.

A capitalisation issue can be pursued as a dividend payout method resulting in additional shares being issued to shareholders. Using it as a dividend pay-out method is different to a scrip dividend as the shareholders will not be provided the option to elect cash rather than shares (Nel & Wesson, 2021). Biger and Page (1992) found evidence of statistically significant positive abnormal returns related to the announcement of the capitalisation issues on the JSE. They note that capitalisation issues are very favourably perceived by the market around the announcement date and not the listing date (date the additional shares are listed, following the announcement of a capitalisation issue). They also measured the beta coefficients in the sample prior and following the announcement and noted that the positive abnormal returns may be biased upwards as the beta coefficients had risen following the announcement. The increase in beta coefficients noted is given as a potential explanation for the abnormal returns as the abnormal returns are measured using the lower, historical beta coefficients. Bhana (1997), examined the abnormal returns associated with companies issuing scrip dividends with no cash alternative over the period from 1986-1995. He found a significant increase in the share price at announcement and attributed this to the signalling effect. Similar thinking is applied to stock splits where large excess returns were found in the month of the share split (Cross & Firer, 1986). Despite the immediate excess returns, no long-term favourable

effects on share price were found as splits appeared to be a reaction to a sustained period of above-average returns, rather than the cause of such returns.

Rights/claw back offer

The JSE Limited (2004) defines a “rights offer” as:

an offer by an issuer to existing holders of securities to subscribe for further securities in the issuer in proportion to their existing holdings by means of the issue of (i) a renounceable right that is traded as either “fully paid” or “nil paid” rights for the period before payment for the securities is due as detailed in the “Renounceable Rights offer/Claw back offer” corporate action timetable or (ii) a non-renounceable right as detailed in the “Non-Renounceable Rights offer” corporate action timetable. (JSE Limited, 2004, p. 16)

Bhana (1988), defines these transactions as a mechanism by which a company can sell securities by offering them to the existing shareholders first without offering the shares to the public. The distinction between a rights offer and a capitalisation issue (explained earlier) or scrip dividend is that the rights offer raises funds for the company and increases the net assets of company while a capitalisation issue does not.

Youds et al. (1993) examined the effects of rights offer announcements on share prices. They found that there is a statistically significant drop in share price in the first ten days immediately after the first announcement of a rights issue. The drop in share price immediately after the announcement is consistent with the expected share response as shares are normally offered to the existing shareholders at a discount (Armitage, 2007).

Alston and Uliana (1999) found that the market for rights offers is inefficient. They utilised a Black-Scholes model to compare theoretical prices based on the model to actual prices of rights issues. Their findings indicate that rights issues tend to be overpriced, indicating a level of market inefficiency relating to rights offers.

Scrip dividend

The JSE Limited (2004) defines a scrip dividend as: “a cash dividend incorporating an election on the part of shareholders to receive either capitalisation shares or cash, with the default election being either shares or cash” (JSE Limited, 2004, p. 17).

Unlike cash dividends and other capital structure decisions, scrip dividends do not directly affect the future cash flows of the firm. However, in markets where managers have information about current and future earnings which is unavailable to investors, share dividends may provide a low-cost signalling device which a manager can use to share their assessment of a firm’s prospects to investors (Bethlehem, 1997). When examining the impact of announcement of scrip dividends on share prices, it was found that there is a significant increase in share prices at announcement which could not be attributed to contemporaneous announcements. These findings provide strong evidence that share dividends are interpreted by investors as a signalling device utilised by management. Findings that larger share dividends are associated with larger announcement day returns indicates that larger share dividends convey more information to investors (Bethlehem, 1997). Because of the positive nature of the returns, it was found that share dividends act as a signalling device which can be interpreted positively by the market.

Share buybacks/repurchases

Share buybacks are not explicitly defined in the JSE listing requirements. The JSE listing requirements follow Section 48 of the Companies Act which deals with a “Company or subsidiary acquiring company’s shares”. The JSE regulates a specific share buyback in terms of section 5.69 of the listing requirements which outline the “Requirements for specific authority to repurchase securities”. These transactions include option transactions where companies may be obliged to repurchase securities in future or specific offers to security holders who are specifically named.

According to signalling theory, managers use share repurchases to signal their optimism regarding the company's prospects to the market (Krige, 2012). Therefore, managers can use share repurchases to send these signals to the market. Grullon and Ikenberry (2000) find that repurchases add value in two main ways: firstly, they provide a tax-efficient way to return excess capital to shareholders and, secondly, they allow managers to signal that their firms are undervalued. This signalling can take place in one of two different ways. The first is used to convey managers’ expectations of future increases in earnings or cash flow not reflected in the share price. The second way allows managers to express their disagreement on how the market is currently pricing their performance.

Bhana (2007) finds that the market reaction to share repurchases is in line with evidence obtained for share repurchases in the United States. He found that there was evidence of significant abnormal returns for a period of up to three years. The findings also seem to support the signalling theory. Krige (2012) confirms the findings made by

Bhana (2007). The substantial abnormal returns realised suggest that the JSE appears to be inefficient in reacting to announcements of share repurchases.

Special dividend

Special dividends are not explicitly defined in the JSE listing requirements. Rather, the JSE listing requirements follow that the special dividend must comply with all the requirements of the Companies Act.

Bhana (1998) investigated the reaction of JSE share prices to announcements of special dividends. He found that share prices react positively to the announcements. The finding of positive share price reactions further suggests that special dividends convey value-increasing information and that the gains from this information accrue to shareholders. Another interesting finding in his study indicates that share price reactions are negatively related to dividend declaration frequency. The link between share price reaction and declaration frequency implies that frequent declarations of special dividends convey less information to the market than infrequent or genuinely special dividends.

Unbundling transaction

The JSE Limited (2004) defines an “unbundling transaction” as: “shall bear the meaning ascribed thereto in the Income Tax Act, 1962 (Act No. 58 of 1962)” (JSE Limited, 2004, p. 18)

The Income Tax Act, 1962 (Act no 58 of 1962) defines an unbundling transaction in section 46 as:

46. Unbundling transactions.—

(1) For the purposes of this section, ‘unbundling transaction’ means any transaction—

(a) (i) in terms of which the equity shares in a company (hereinafter referred to as the “unbundled company”), which is a resident that are held by a company (hereinafter referred to as the “unbundling company”), which is a resident, are all distributed by that unbundling company to any shareholder of that unbundling company in accordance with the effective interest of the shareholders in the shares of that unbundling company, and if—

(aa) all of the equity shares of the unbundled company are listed shares or will become listed shares within 12 months after that distribution;

(bb) that shareholder to which that distribution is made by that unbundling company forms part of the same group of companies as that unbundling company; or

(cc) that distribution is made pursuant to an order in terms of the Competition Act, 1998 (Act No. 89 of 1998), made by the Competition Tribunal or the Competition Appeal Court;

Unbundling operations, broadly understood as the parent company’s disposal and sale of subsidiaries, business units or divisions through a number of different mechanisms is a central topic in a number of fields including strategic management, finance and organisational behaviour (Moschieri & Mair, 2005).

The terms “divestiture” and “divestment” are often used interchangeably to describe unbundling. The distinction is important because a divestiture implies the creation of a new entity which is able to operate autonomously to some degree while a divestment

is thought of as a sale of parts of a company (either assets, divisions or product lines) (Moschieri & Mair, 2005).

Divestitures include sell-offs, spin-offs, spin-outs, carve-outs, split-offs, split-ups, leveraged buy-outs, and management buy-outs. The majority of studies conducted of JSE-listed companies focus on the impact of sell-offs and spin-offs. A sell-off typically entails the disposal of a subsidiary or division to another firm in exchange for cash. A spin-off is generally considered to be a mechanism where the subsidiary becomes an independent company, with the shares distributed to the parent's shareholders (Moschieri & Mair, 2005). The important distinction being that a spin-off does not yield any cash flow to the parent company.

Research conducted in South Africa using event studies has yielded mixed results. Blount and Davidson (1996) found that the market responded to corporate unbundling announcements with negative abnormal returns. Jordan (2012) noted findings which confirmed these results. Bhana (2004) found that a spin-off offered significantly positive abnormal returns for up to three years beyond the spin-off announcement date. He also found that the operating performance of the spin-off improves after the divestiture. Nichols et al. (2014) found, based on spin-offs and sell-offs, significantly negative abnormal returns for the parent firms over 250 and 500 days after the announcement date. They found the same result even after adjusting for the impact of the 2008 financial crisis. Nichols et al. (2014) noted that the significant difference in their finding from Bhana's study may be attributed to the time periods used in each study. Bhana's study focused on data from 1988-1999 while the Nichols et al. (2014) study focused on a democratic South Africa. Lastly, Nkongho and Makina (2020) noted that abnormal returns are significantly positive for spin-offs, parents spin-offs and sell-offs within one to four years after unbundling. The researchers conclude that these

transactions unlock shareholders' wealth for up to 4 years. The Nkongho and Makina (2020) study complements the work performed by Bhana by providing a longer time horizon in investigating the performance of spin-offs and sell-offs on the JSE.

Nichols et al. (2014) find that the nature of the unbundling is significant. They find that spin-offs lead to a greater destruction of shareholder wealth than sell-offs. This finding implies that the financing hypothesis (reducing debt with the proceeds from a divestiture) surpasses the wealth transfer and information asymmetry hypothesis which is more closely linked to spin-offs.

Mergers and acquisitions

Even though there are no merger and acquisition announcements included in the sample, in the interest of completeness research into mergers and acquisitions was also investigated to understand the effects noted in a South African context. The brief analysis of the effects of mergers and acquisitions literature yields interesting results. Wimberley and Negash (2004) noted that the abnormal return for the 36 months after the announcement is significantly negative. They advise that shareholders should not be long-term investors in firms actively engaging in mergers and acquisitions. Smit and Ward (2007) found that shareholders of acquiring companies do not earn significant positive or negative returns around the announcement date. They conclude that, based on operating financial performance, acquisitions tend to result in zero net present value investments for acquiring companies. The researchers note that the zero net present value implied by operating performance of acquirees calls into question whether reasons cited for mergers and acquisitions, such as growth and the benefit of synergies, are valid. Mgilane (2019) found that among mergers and acquisitions conducted on the JSE from a period between 2011 and 2016, those

involving the acquisition of a private company resulted in statistically significant positive returns to the shareholders of the acquiring company while the acquisition of public companies did not add value.

A summary of the findings across the various corporate actions are provided in Table 1 below:

Table 1: Summary of JSE event study literature by corporate action

Corporate action type	Studies cited	Abnormal returns findings
Capitalisation issue	(Bhana, 1997; Biger & Page, 1992; Cross & Firer, 1986)	Significant positive abnormal returns noted around announcement date.
Rights/ Claw Back offer	(Youds et al., 1993)	Significant negative abnormal returns immediately after the announcement.
Scrip dividend	(Bethlehem, 1997)	Significant positive abnormal returns noted around announcement date.
Share buybacks	(Bhana, 2007; Krige, 2012)	Significant positive abnormal returns noted for up to 3 years post announcement.
Special dividend	(Bhana, 1998)	Significant positive abnormal returns noted around announcement date.
Unbundling	(Blount & Davidson, 1996)	Significant negative abnormal returns.
	(Jordan, 2012)	Significant negative abnormal returns.
	(Nichols et al., 2014)	Significant negative abnormal returns.
	(Bhana, 2004)	Significant positive abnormal returns noted for up to 3 years post announcement.
	(Nkongho & Makina, 2020)	Significant positive abnormal returns noted within one to four years after unbundling
Mergers and acquisitions	(Wimberley & Negash, 2004)	Significant negative abnormal return for 36 months after the announcement of the acquisition.
	(Smit & Ward, 2007)	No significant returns noted.
	(Mgilane, 2019)	Significant positive returns for the acquiring company when the target is a private company.

2.3 Research questions

The persistent discount to reported intrinsic net asset value has left market participants and management teams wondering what an appropriate discount may be and what action can be taken to reduce the discount. Shareholders who initially saw an opportunity (by purchasing assets which purport to be worth R100 for R80) are left frustrated as no obvious catalyst for the narrowing of the discount has been found by the management teams responsible for the holding companies.

The efficient markets hypothesis was criticised by researchers who were beginning to uncover behavioural biases which are common in human decision-making under conditions of uncertainty (Shiller, 2003). Upon layering in the nuance of human psychology and how that influences decision making, the field of behavioural finance now makes a distinction between informational efficiency and fundamental efficiency which is the traditional framework put forward by EMH. The traditional framework states that a security's price equals its "fundamental value". In the context of the investment holding companies which make up the subject of this research, the fundamental value *should* be the intrinsic net asset value. The fundamental value (and intrinsic value) is the discounted sum of expected future cash flows based on investors correctly processing all available information and applying an appropriate discount rate. Applying this framework of fundamental value implies that share prices are "right". Informational efficiency, on the other hand, implies that there is no free lunch (opportunity to profit from obvious mispricing in the market) as share prices reflect all relevant information (Barberis & Thaler, 2003). As a result, in cases of informational efficiency the share prices do not reflect fundamental value but there are not any excess risk-adjusted average returns which can be made in exploiting the difference.

The implication of informational efficiency to the study may mean that investment holding companies trade at a persistent discount. The distinction between fundamental and informational efficiency is useful to understand because many arguments are made using the inability of portfolio managers to beat the market over long periods to provide evidence of market efficiency. In these cases the inability to outperform the market provides evidence of informational efficiency (Rappaport, 2005).

This study will adopt a view of market efficiency more closely aligned with information efficiency as it hopes to identify how the introduction of new information affects subsequent returns.

Finance theories which have the Efficient Market Hypothesis as a foundation were developed under the assumption of symmetric information for all market participants. Increasingly, it has become clear that there is a need to consider the different quality of information available to specific groups in the market, most notably managers of the firm and market participants. Information asymmetry is accordingly defined as the difference in information between the managers of the firm and the market (Dierkens, 1991).

Portfolio diversification may also explain some of the trend resulting in larger discounts for investment-holding companies. These businesses once offered a direct investment into an already diversified portfolio. This may have lost appeal to investors as access to financial products and capital markets have improved.

This context leads to the development of the first research question:

Research Question 1: What is the discount to intrinsic net asset value of investment holding companies listed on the JSE?

The growing dissatisfaction with the discounts to intrinsic net asset value and the subsequent drag on shareholder wealth can be compared to the criticism faced by large conglomerate corporations in South Africa in the 1990s. These large conglomerates came under pressure as critics pointed out the existence of a discount of the quoted share price to the “so-called” net asset value of the parent companies (Barr & Kantor, 1994). These entities have been reinvented through a series of transactions and many large, listed companies today were once part of those conglomerates. Some notable examples include Anglo American PLC, Anglo American Platinum Limited, Billiton (now BHP Billiton), Remgro Limited, Compagnie Financière Richemont S.A.(commonly known as Richemont) and AVI Limited. Barr and Kantor (1994) claimed that these conglomerates represented over 70% of the total market capitalisation of the JSE in 1993. The researchers’ own calculations indicate that the investment holding companies included in the sample of this study account for 3.6%² of the total market capitalisation of the JSE on the 1st of July 2022 (the first day after the period for which data were collected for this study). It must be noted that the large conglomerates mentioned by Barr and Kantor (1994) formed a much larger part of the total market capitalisation of the Johannesburg Stock Exchange than investment holding companies do today.

The pressure faced by the large conglomerates and their subsequent transformation leads to the second research question of this study. This aims to identify if deliberate actions undertaken by management, in a similar manner to deliberate actions taken by large conglomerates in the 1990s, may be the key to generating shareholder wealth. The deliberate actions amount to corporate actions which are required to be

² JSE market capitalisation obtained from the JSE. Available online: <https://www.jse.co.za/services/market-data/market-statistics>. Market capitalisation for the holding companies in the sample obtained from EquityRT.

disclosed to the market and therefore contain informational content which would be reacted to in the semi-strong market efficiency which forms the context of the study.

Information differences across investors have been a concern to regulators and these concerns form the response followed by market regulators to try and promote consistent disclosure levels (Lambert, Leuz, & Verrecchia, 2012). In South Africa, disclosure of information by listed companies is regulated through the JSE listing requirements.

Information asymmetry is relevant to investment holding companies as management will typically have access to more information with which they can formulate the valuations which affect the intrinsic net asset value. In practice this means that investors' valuations of some of the holding company's assets will be different from management's valuations and less accurate as they do not have sufficient information. This is likely to be the case for unlisted assets. In addition to this, the corporate actions finally undertaken by management may signal information which reduces levels of information asymmetry.

The informational content or signalling effect of special dividends and scrip dividends have been noted. For special dividends it was noted that they convey value-increasing information and that the gains from this information accrue to shareholders (Bhana, 1998). Scrip dividends were found to provide a low-cost signalling device that a manager can use to share their assessment of a firm's prospects to investors (Bethlehem, 1997). Share repurchases also provide a significant communication outlet with them being a noted way for management to signal that they believe their company is undervalued (Grullon & Ikenberry, 2000).

With regards to spin-offs there is an interesting link to information asymmetry. Krishnaswami and Subramaniam (1999) propose that the reason that spin-offs are favoured as a corporate action that is seen to be value accretive is because of the popularly held belief of informational benefits which will be enjoyed by shareholders. To understand the informational benefits, it is important to remember that spin-offs are different from other forms of divestitures as there is no cash inflow to the parent company. They go on to find that gains are higher for firms with higher levels of information asymmetry. Bhana (2004) also theorises that positive share price responses noted in his study may be because information asymmetry reductions. These reductions are possible because investors can analyse the spin-off company separately (which now has more information available) and are able to assign an appropriate value to this company. This highlights that there is some credibility to the theory relating to mitigating information problems.

This context leads to the development of the second research question.

Research question 2: Do corporate actions reduce discounts to intrinsic net asset value for a sample of JSE listed Investment holding companies?

The second research question will be tested empirically using an event study in which the main hypothesis will be that corporate actions (see section 2.2.1) have no impact on abnormal returns and are not able to generate shareholder wealth by reducing discounts.

Research question 3: What corporate actions, if any, are most effective at reducing the discount to intrinsic net asset value?

The main hypothesis will be that there is no difference in the level of effectiveness of reducing the discount across the various categories of corporate action.

The goal of the study and answering the research questions is threefold: to estimate the discounts to intrinsic net asset value for each company in the sample; to test empirically the impact that corporate actions have on shareholder wealth for investment holding companies; to determine which corporate action is most effective at increasing shareholder wealth.

The results of the first part of the study give an indication of the level of the discount which exists among the sample companies. The results of the second part of the study consist of abnormal returns. These were analysed to determine if the corporate actions result in positive abnormal returns that are statistically significant. If statistically significant positive abnormal returns exist, the null hypothesis will be rejected and lend evidence to the fact that corporate actions may act as a shareholder wealth creation mechanism as positive abnormal returns are expected to reduce any discount to intrinsic net asset value. Finally, each category of corporate action is investigated to determine which category may be the most effective shareholder wealth creation mechanism.

3. Methodology

The relationship between corporate actions and the share price and corresponding discount to intrinsic net asset value is the focus of this study. An event study was deemed appropriate to identify and measure abnormal returns over a defined period. To identify which corporate actions are the most effective, the cumulative average abnormal returns for all corporate actions will be compared to the average abnormal returns for each specific category of corporate action.

An analysis of covariance (ANCOVA) has been performed as a sensitivity test to determine whether the abnormal returns post the announcement of the corporate action change significantly after controlling for firm size effects.

The main hypothesis tested in the event study is that corporate actions have no impact on abnormal returns.

$$H_n = f(R|CA) - f(R) = 0 \text{ for all CA}$$

$$H_a = f(R|CA) - f(R) \neq 0 \text{ for at least one CA}$$

Where:

- R is the expected return on investment holding company over a period of interest
- CA is an individual announcement of corporate action by an investment holding company from the JSE SENS.
- $f(R|CA)$ is the distribution of returns conditional on the information signal from CA and $f(R)$ is the marginal distribution.

Research question 1 and 3 have been addressed through analysis of share price data for the sample and using the abnormal returns determined in the event study.

Event study methodology

The event study methodology was introduced by Ball and Brown (1968) and Fama, Fisher, Jensen and Roll (FFJR) (1969) with these papers considered the seminal papers relating to event studies (Binder, 1998). The event study methodology has become the standard approach when measuring security price reaction to some announcement or event (Binder, 1998).

The event study methodology requires an estimation of expected returns, any differences between the expected return and the actual return is the abnormal return. The expected returns can be determined using several models. The simplest model is to assume that the share in question will earn a return equal to the market rate of return. Utilising a naming convention consistent with Armitage (1995), this model has been defined as the *index model*.

Another simple model is to assume that the share in question will earn a return equal to the average return that it has earned during an estimation period before or around the test period. This model is defined as the *average return model*.

The most common approach is to estimate the relationship between a share's returns and returns on the market using an ordinary least squares (OLS) regression and use this relationship to estimate expected returns. This model has been defined as the *market model*. The market model is a regression model that can be viewed as a version of the capital asset pricing model (CAPM) (Sharpe, 1964). The period over which the relationship for the market model is determined is known as the estimation

period. Armitage (1995) notes that the estimation periods vary but the use of an estimation period of over 100 days should provide a robust relationship.

In reviews analysing the effectiveness of these models performed across a number of studies (Armitage, 1995; Brown & Warner, 1985; Dyckman, Philbrick, & Stephan, 1984) it was noted that the different models produce similar but not identical results and that generally utilising the market model is the most reliable as it tends to perform as well as the next best alternative.

Event studies require several assumptions underlying the identification of abnormal returns to be the case for them to provide robust findings (McWilliams & Siegel, 1997). These assumptions are market efficiency, unanticipated events, and confounding events.

With regards to market efficiency (see Section 2.2) an event amounts to anything which results in new relevant information. This new information has an impact on stock prices and the event study enables us to measure this impact by defining a period, known as an event window, over which the impact of the event will be measured (McWilliams & Siegel, 1997). McWilliams and Siegel (1997) state that it is difficult to reconcile the idea of market efficiency with a long event window and when the design incorporates a long event window the researcher must explain why. The explanation of the long event window used in this study is because to measure effectively the ability of corporate actions to create shareholder wealth (an inherently long-term measure) among investment holding companies, a long-term effect needs to be evaluated.

The next assumption relates to an idea that the event is announced. It is this announcement which has informational content that the market reacts to. It is possible for an event to be anticipated or information leaked in advance of a formal

announcement (McWilliams & Siegel, 1997). To identify any anticipation or information leakage, this study makes use of an anticipation window which is prior to the event date. Possible implications of significant abnormal returns in the anticipation window would be related to insiders anticipating the market reaction and trading prior to the announcement date. A study on insider trading by Penman (1982) found that insiders time their trades relative to announcements of price sensitive information. A more recent study notes that legal fears (as a result of insider trading regulation) does influence the likelihood of trading immediately prior to the announcement of price sensitive information (Billings & Cedergren, 2015).

Lastly, the effect of the event needs to be isolated from the effects of other events. This is perhaps the most critical assumption of the methodology (McWilliams & Siegel, 1997). This is particularly relevant to this study, where the initial sample has been further revised to adjust for the effect of confounding events.

Studies making use of event methodology provide insight into how markets, assuming a semi-strong form of efficiency, react to certain events (Hill & Maroun, 2015). This includes South African focused research on corporate actions relevant to this study such as: Capitalisation issues as investigated by Bhana (1997) and Cross and Firer (1986). Rights offers as investigated by Youds et al. (1993). Scrip dividends as investigated by Bethlehem (1997). Share repurchases as investigated by Bhana (2007) and Krige (2012). Special dividends as investigated by Bhana (1998). Unbundling transactions are investigated by Blount and Davidson (1996), Bhana (2004), Jordan (2012), Nichols et al. (2014) and Nkongho and Makina (2020). Mergers and acquisitions as investigated by: Wimberley and Negash (2004), Smit and Ward (2007) and Mgilane (2019).

3.1 Population and study sample

The sample of this research has been defined as all corporate actions announced by a sample of JSE-listed investment holding companies³ between 2003 and 30 June 2022. Applying the definitions introduced in section 1 allowed for the identification of Investment Holding Companies. Over and above this, purposive sampling was adopted to remove companies from the study with less than four years of trading history at 30 June 2022 and where they were considered illiquid. Liquidity was considered because of the role that liquidity plays in affecting the price discovery function, and accordingly market efficiency. Market efficiency is improved by increasing market liquidity (Muranaga & Shimizu, 1999). The effect of liquidity has also been tested in the JSE more recently by Young and Auret (2018). Liquidity was measured using average daily trading volume and companies with a daily trading volume less than 2000 shares were not included in the study. This threshold of trading volume allowed enough companies to still qualify and allowed a cross-section of different sized firms. The entire sample of corporate actions was included for the purposes of calculating abnormal returns. The data collection indicates 61 corporate actions for the 12 Investment holding companies which have been analysed. Refer to Table 2 below.

The expected, abnormal, and cumulative abnormal returns have been determined for all the investment holding companies in the sample during the test period for each corporate action identified.

³ Investment holding companies evaluated for this study will include: Brait SE, EPE Capital Partners Limited, Naspers Limited, Remgro Limited, RMB Holdings Limited, Brimstone Investment Limited, African Rainbow Capital Investments Limited, PSG Group Limited, Zeder Investments Limited, Sabvest Capital Limited, Rand Merchant Investments Holdings Limited, Hosken Consolidated Investments Limited

Table 2: List of Corporate actions per company

Company name	Event date	Corporate action type
African Rainbow Capital	15 September 2020	Rights/ Claw Back offer
Brait PLC	02 March 2011	Rights/ Claw Back offer
	06 June 2012	Capitalisation issue
	31 July 2012	Listing of preference shares (capital raise)
	05 June 2013	Scrip dividend
	04 June 2014	Scrip dividend
	17 June 2015	Scrip dividend
	15 June 2016	Scrip dividend
	30 June 2017	Scrip dividend
	22 January 2020	Rights/ Claw Back offer
Brimstone Investment Corporation Limited	21 April 2005	Rights/ Claw Back offer
	11 March 2015	Share buybacks - specific
	22 May 2017	Share buybacks - specific
	15 June 2018	Share buybacks - specific
	24 February 2015	Special dividend
	23 February 2010	Scrip dividend
	06 March 2018	Scrip dividend
	08 March 2010	Unbundling
11 March 2020	Capitalisation issue	
Ethos Capital Partners Limited	27 November 2019	Rights/ Claw Back offer
Hosken Consolidated Investments Limited	24 March 2014	Unbundling
	31 August 2006	Share buybacks - specific
	02 October 2013	Share buybacks - specific
	29 November 2016	Share buybacks - specific
	12 June 2018	Share buybacks - specific
	07 February 2020	Share buybacks - specific
Naspers Limited	03 April 2017	Unbundling
	03 August 2017	Unbundling
	22 March 2018	Accelerated offering of Tencent stake
	17 September 2018	Unbundling
	25 March 2019	Prosus transaction
	22 January 2020	ABB of Prosus shares
	30 October 2020	Share buybacks - specific
	07 April 2021	Accelerated offering of Tencent stake
12 May 2021	Voluntary share exchange	
PSG Group Limited	02 August 2006	Share buybacks - specific
	15 January 2015	Share buybacks - specific
	16 July 2008	Special dividend
	15 August 2006	Rights/ Claw Back offer
	04 September 2009	Unbundling
	23 April 2020	Unbundling
	01 March 2022	Group restructuring - value unlock
Remgro Limited	02 March 2006	Share buybacks - specific
	08 August 2008	Unbundling
	21 June 2010	Unbundling

Company name	Event date	Corporate action type
	31 May 2012	Unbundling
	14 April 2020	Unbundling
	15 July 2016	Rights/ Claw Back offer
	22 June 2006	Special dividend
RMB Holdings Limited	17 February 2011	Unbundling
	15 April 2020	Unbundling
	15 September 2011	Special dividend
	09 April 2021	Special dividend
Rand Merchant Investment Holdings	19 September 2017	Scrip dividend
	12 March 2018	Scrip dividend
	11 September 2018	Scrip dividend
Sabvest Capital Limited	19 September 2017	Scrip dividend
Zeder Investments Limited	23 March 2009	Rights/ Claw Back offer
	01 April 2020	Special dividend
	14 April 2021	Special dividend
	22 April 2022	Share buybacks - specific

3.2 Data

For each company investigated as part of the sample the researcher collected daily share price data from January 2003 to 30 June 2022. The earliest share price data that can be extracted from the McGregor BFA database is from January 2003, so this set the starting point from which data was collected. The number of companies (12) in the sample and their corporate actions (61) allowed for sample size requirements to be met for statistical analysis. The initial sample of corporate actions were further reduced to a sample of 33 to exclude the effect of confounding events and improve the validity of the event study methodology employed. The process followed in reducing the sample is discussed in detail in section 4.2. The researcher also collected and collated the intrinsic net asset value data as disclosed by companies by referring to the company's annual financial statements or interim results.

Other data which were required for the estimation of expected returns and the accurate calculation of the discount to intrinsic net asset value included: The US Dollar/Rand

(USD/ZAR) exchange rate⁴, the Hong Kong Dollar/Rand exchange rate (HKD/ZAR)⁵, the Tencent share price, the value of FTSE/JSE All share index (J203), the value of FTSE/JSE Resources index (J210), the value of FTSE/JSE Financial and Industrial index (J213) and the daily rate at which 91 day Treasury bills are allotted. All these data were collected from the EquityRT database.

All share price data for the study have been collected from the McGregor BFA database concerning the sample of investment holding companies which will form part of the study. McGregor BFA was also used to extract data on the corporate action (date and nature of corporate action) and cross-checked against SENS announcements for the companies in the sample.

3.3 Method

3.3.1 Method: research question 1

Research question 1: What is the discount to intrinsic net asset value of investment holding companies listed on the JSE?

In addressing the first research question the following approach was adopted.

To quantify the discounts for each company in the sample, the daily share prices from January 2003 to 30 June 2022 were compared to the most recently reported intrinsic net asset value per share. The discount was calculated as:

⁴ The USD/ZAR exchange rate was used to translate Naspers' financial information that is disclosed in US Dollars.

⁵ The HKD/ZAR exchange rate was used to calculate the Rand value of Naspers' investment in Tencent. Tencent is listed on the Hong Kong Stock exchange with the share price disclosed in Hong Kong dollars.

$$\frac{\text{Share Price}}{\text{Intrinsic net asset value per share}} - 1$$

Equation 1

A discount has been presented as a positive percentage and a premium has been presented as a negative percentage.

Stated formally, the first research question will be tested with the following null and alternate hypothesis:

$H_n =$ *No discount to intrinsic net asset value exists*

$H_a =$ *The discount to intrinsic net asset value exists and is greater than 0*

To analyse the patterns in the behaviour of the discount to intrinsic net asset value per share noted among investment holding companies, the average and standard deviation for each investment holding company is reported. Finally, tests for correlation were performed to identify if there are common economic forces driving these discounts informed by a study prepared by Barr and Kantor (1994).

3.3.2 Method: research question 2

Research question 2: Do corporate actions reduce discounts to intrinsic net asset value for a sample of JSE-listed Investment holding companies?

In addressing the second research question, the following approach was adopted.

The abnormal returns relating to each corporate action in the sample have been calculated using six models to estimate the expected return. Details of the estimation models are provided below. Once again, consistent with definitions provided by Armitage (1995) expected returns were calculated using the index model, average

return model and market model. The returns used have all been determined on a discrete basis.

To illustrate the timeline used for each event, a sample timeline has been provided below:

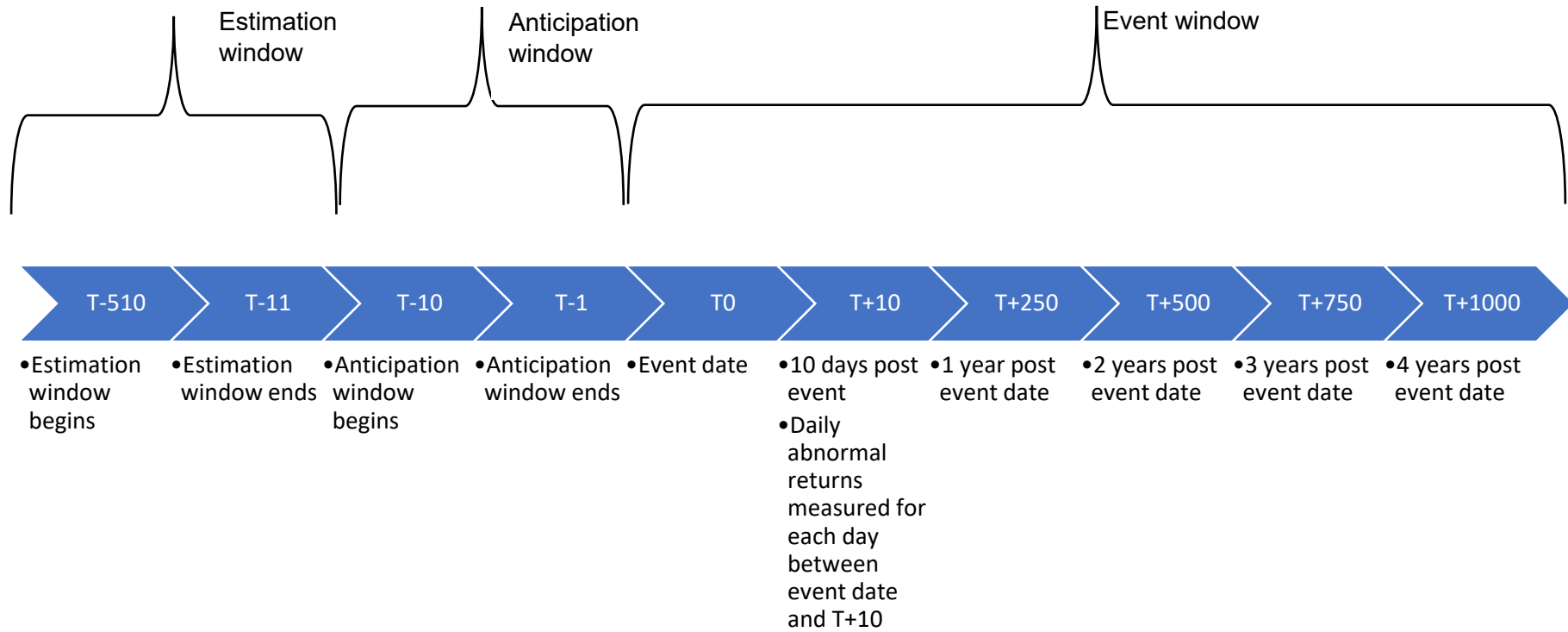


Figure 1: Sample timeline of event study (not to scale)

This study made use of three separate indices as proxies for the market rate of return for the index model. The FTSE/JSE All share index was chosen as the index which best represents an overall market return while the FTSE/JSE Financial and Industrial index and FTSE/JSE Resources index were also used based on the predictive power which these indices were found to have when used in a two factor arbitrage pricing theory (APT) model (Van Rensburg, 2002). The abnormal returns calculated under the index model can be defined by the following formulae, consistent with the approach adopted by Lakonishok and Vermaelen (1990) for their US based study.

$$AR_{it} = R_{it} - R_{ALSit / FINDit / RESit}$$

Equation 2

$$R_{it} = \frac{P_{it} - P_{i(t-1)}}{P_{it}}$$

Equation 3

The abnormal return (AR) of company *i* in period *t* is the actual return (R_{it}) less the return on the index, where the index used is each of the following:

- the FTSE/JSE All share index (J203),
- the FTSE/JSE Financial and Industrial index (J213)
- the FTSE/JSE Resources index (J210).

The use of three separate indices results in three observations of abnormal return for each estimation period used.

The actual return (R_{it}) is the share price of company *i* in period *t* less the share price of company *i* in the immediately preceding period divided by the share price of company *i* in period *t*.

The average return model was also employed, consistent with the approach adopted by Lakonishok and Vermaelen (1990) for their US based study.

$$AR_{it} = R_{it} - \bar{R}_i$$

Equation 4

Where the abnormal return on company *i* in period *t* is the actual return (R_{it}) less the average return on company *i* noted during the estimation period (\bar{R}_i).

Two separate market models were utilised in estimating expected returns. Firstly, a standard market model was used in line with the approach followed by Wolmarans and Sartorius (2009). Secondly in line with the approach followed by Nichols et al. (2014), the expected return was calculated using the two-factor asset pricing model suggested by Van Rensburg (2002).

The market model is illustrated below:

$$R_{it} = \alpha_i + \beta_i(R_{mt}) + \varepsilon_{it}$$

Equation 5

Where R_{it} is the return on company *i* in period *t*, α_i is the intercept term for company *i*, β_i is the systematic risk of share *i* and ε_{it} is the error term where the expected error is equal to 0. The expected return was constructed using the firm-specific parameters by way of the ordinary least squares method (Wolmarans & Sartorius, 2009). The estimation period utilised is two years prior to the event consistent with Nichols et al. (2014). The period is calculated considering a ten-day period as an anticipation window; this window is included to detect the existence of an anticipation effect before the announcement (Wai Kong Cheung, 2011). Any anticipation effect may provide

evidence of insider trading on an event prior to the event announcement. The estimation period is from 510 days prior to 11 days prior to the event (-510, -11).

The two-factor asset pricing model can be derived from the following formula:

$$R_{it} - R_{ft} = \alpha_f + \beta_{findi}(R_{findit} - R_{ft}) + \beta_{resi}(R_{resit} - R_{ft}) + \varepsilon_{ft}$$

Equation 6

Where:

- R_{it} is the return on company i in period t , R_{ft} is the risk-free rate in period t proxied by the 91-day South African Treasury Bill as in Van Rensburg (2002) and Cox and Britten (2019),
- R_{findit} is the return on the JSE Financial-Industrial index (“FINDI”),
- R_{resit} is the return on the JSE Resources index (“RESI”),
- β_{findi} and β_{resi} are the risk parameters to be estimated,
- ε_{ft} is the residual error term.

Van Rensburg (2002) finds that the FINDI and RESI index may be used as observable proxies for future applications of the two-factor arbitrage pricing theory model for the JSE. He further finds that this APT model can be used in preference to a market-based model using the ALSI in the South African environment.

Both models have been used to determine expected return $E[R_{it}]$.

$$AR_{it} = R_{it} - E[R_{it}]$$

Equation 7

The abnormal returns were calculated daily for each corporate action for the estimation period (being 510 days prior to the event up to eleven days prior to the event) and for a post-event period of a maximum of four years. If the event occurred more recently

and four years have not passed since the event and the 30th of June 2022 then the max period was up to 30 June 2022. These abnormal returns were then used to calculate cumulative abnormal returns.

The cumulative average abnormal return (CAAR) was calculated as follows for the pre-announcement date period and post-announcement date period.

$$CAAR_T = \sum_{t=1}^T \frac{1}{N} \sum_i AR_{it}$$

Equation 8

Where N is the number of observations and T is the number of days post-announcement date being examined. The cumulative average abnormal returns were calculated for the anticipation window (being ten days prior up to one day prior to the announcement of each corporate action in the sample), the event day and daily for up to ten days post the event, then up to six months post the event and then at an interval of one, two, three and four years post the announcement. Once again, in cases where fewer than four years has passed the longest possible CAAR was determined. The shorter, daily periods post the event are in order to be consistent with the design and methodology findings of McWilliams and Siegel (1997). The longer time period is consistent with that used by Nkongho and Makina (2020), which complemented the research performed by Bhana (2004) where wealth effects were investigated and a longer event window was considered appropriate.

For each period identified above for the events in the sample, non-parametric tests were performed to determine if these CAARs are significantly different from zero. The use of non-parametric tests is suggested to improve the statistical rigour of the tests in numerous studies (Corrado, 2011; McWilliams & Siegel, 1997; McWilliams & McWilliams, 2000) and is relevant when the underlying data displays evidence that it

is not normally distributed. The results of the analysis have focused on identifying if the events result in statistically significant changes in returns (positive or negative statistically significant returns).

Non-parametric tests have been performed on the abnormal returns. This is recommended by McWilliams and Siegel (1997) and McWilliams and McWilliams (2000). The Wilcoxon signed-rank test has been performed. The Wilcoxon test is useful to employ as it considers both the sign and magnitude of abnormal returns. The null hypothesis is that there are equally likely positive and negative abnormal returns and when N is large the test statistic follows a normal distribution (Dutta, 2014). This test is more advanced than a signed non-parametric test as it compares whether abnormal returns are significantly different to zero (as with a sign test) but also measures the extent to which the returns deviate from the median value (Gladyssek, 2012). The Wilcoxon test does not require symmetry and has a power advantage over the two-sample t-test for fat-tailed distributions (Corrado, 1989).

Sensitivity tests

An ANCOVA analysis was also performed using firm size as a covariate to investigate the relationship between abnormal returns and the type of corporate action, controlling for the effects of firm size. Firm size is utilised as the covariate, while the type of corporate action is investigated through the variation in abnormal returns between the corporate actions. The ANCOVA analysis serves as a useful sensitivity test to understand how the size of the firm influenced the abnormal returns noted. This further investigates if there are any significant relationships across the types of corporate actions once firm size is controlled for, enabling an analysis of the corporate action to be isolated from any effect that the firm size may have had on the abnormal return.

3.3.3 Method: research question 3

Research question 3: What corporate actions, if any, are most effective at reducing the discount to intrinsic net asset value?

The main hypothesis will be that there is no difference in the level of effectiveness of reducing the discount across the various categories of corporate action.

$$H_n = \mu_1 = \mu_2 = \mu_3 = \mu_k$$

μ represents the average abnormal returns for each type of corporate action. Where k is the number of independent corporate action categories.

$$H_a = \text{the means are not all equal}$$

To identify which type of corporate action is most effective at reducing the discount a Kruskal-Wallis test was performed. This will identify where there is a significant difference in the variance between the different types of corporate actions. A parametric version of this approach was followed by Wolmarans and Sartorius (2009) to determine the impact of the year of BEE transaction and type of BEE transaction on abnormal returns associated with BEE transactions.

3.4 Validity and reliability

Questions around validity and reliability have been addressed as follows:

Validity

Conclusions from an event study can be considered valid only to the extent that the abnormal returns associated with the event have been accurately identified. To add further validity to the findings, multiple estimation models have been used, rather than only one estimation model as is the norm in event studies. The use of the index model

provides a relative measure and controls for within industry effects which may influence the share prices of the companies in the sample.

Various measurement periods have been adopted in line with best practice suggested by McWilliams and Siegel (1997) and these periods used are based on prior event studies (Nichols et al., 2014; Nkongho & Makina, 2020; Wai Kong Cheung, 2011; Wolmarans & Sartorious, 2009).

As the statistics in the event study will be sensitive to outliers⁶, non-parametric test statistics have been reported as suggested by McWilliams and Siegel (1997). The study reported Wilcoxon signed-rank tests.

Confounding events have been controlled for in the following manner to improve the validity of the findings:

1. Analysis over various event window lengths. Using different lengths enabled the researcher to measure abnormal returns up until the confounding event, in this way isolating the effect that the confounding event may have had.
2. Confounding events have been controlled for using methods discussed by Foster (1980). These methods include eliminating firms that have confounding events, partitioning a sample of firms with the same events, eliminating a firm from the sample on the day it experiences the event and adjusting the abnormal returns for the effect of the confounding event. For the purposes of this study confounding events have been defined as corporate actions. Other market announcements were assumed to be captured through the estimation models used. Confounding events have been identified by referring to the first SENS

⁶ The evaluation of the normality of the data using a Shapiro-Wilks test indicated that there is evidence that the abnormal returns calculated are not normally distributed. Refer to appendix E for the assessment of the abnormal returns data using the Shapiro-Wilks test.

announcement date of each relevant corporate action. This study has eliminated confounding events by eliminating the corporate action from the sample from the day it experiences the event.

The use of an ANCOVA analysis as a sensitivity test also provides further validity and reliability by investigating factors such as firm size which may exaggerate certain abnormal returns and accordingly influence the findings.

Reliability

The reliability of the share price and corporate action data were controlled for by using reputable databases (McGregor BFA and EquityRT). The corporate action information was further assessed for completeness by considering SENS announcements released by the companies in the sample.

4. Results

The research results will be presented and discussed for the purposes of answering the research questions of the study.

4.1 Key findings: research question 1

The summary statistics of the discounts to intrinsic net asset value for all the holding companies in the sample is presented below.

Table 3: Summary statistics of discounts to intrinsic net asset value

	AIL	BAT	BRT	EPE	HCI	NPN ⁷	PSG	REM	RMBH	RMIH	SBV	ZED
Min	0.1%	-189.4%	-223.5%	0.0%	-378.2%	-367.2%	-486.7%	-10.2%	-194.5%	-37.5%	-103.6%	-26.9%
Max	78.8%	91.8%	60.5%	67.8%	89.5%	81.3%	85.5%	73.1%	95.6%	47.5%	62.6%	71.9%
Average	45.2%	-23.7%	-5.9%	30.1%	-39.7%	-12.2%	-18.0%	18.4%	-7.6%	1.6%	18.6%	17.2%
Median	46.1%	-19.0%	-3.9%	31.0%	2.9%	-5.8%	4.2%	16.6%	-0.6%	0.0%	26.8%	17.2%
Std. dev.	17.5%	62.6%	48.1%	14.0%	103.7%	76.0%	73.9%	12.4%	47.0%	14.1%	28.9%	18.2%

Table 3 above displays the discounts determined daily from January 2003 to 30 June 2022. In cases where the company was listed after January 2003 the listing date is used as the first date from which data was calculated for (apart from Naspers Limited – refer to the footnote below for further details).

Certain investment holding companies in the sample for this study appear to be aware of the impact that capital gains tax has on the intrinsic net asset value and therefore provide disclosure to the market. Of the sample investigated in this study Brimstone, RMIH⁸, RMH, PSG and Remgro provide disclosure or attempt to incorporate

⁷ The discount to intrinsic net asset value for Naspers Limited was calculated from April 2006. This is because the discount to intrinsic net asset value was calculated in a different manner for Naspers because of the importance of the investment in Tencent. Accordingly, the intrinsic net asset value for use in the discount calculation was determined by taking the effective value of the stake in Tencent based on the prevailing Tencent share price and using this to determine a pro-forma intrinsic net asset value per share for Naspers.

⁸ RMIH disclosure mentions that they have not accounted for CGT as based on the stakes in the underlying investee companies they are eligible for certain tax exemptions.

information relating to capital gains that will be incurred on their investment holdings. In essence they provide an intrinsic value after deducting an expected capital gains charge to illustrate the impact which disposal of their stakes in their investee companies would have on shareholders⁹. The fact that five of the companies in the sample provide disclosure of the expected capital gains charge adds weight to the tax considerations argument identified by Thomson (1978) as a potential cause for a discount to intrinsic net asset value.

Negative amounts included in the table above indicate a premium to intrinsic net asset value. While there are some companies which have, on average, a premium this is primarily because of very large premiums to intrinsic net asset value historically and this is not the case anymore. BAT, HCI, NPN, PSG and RMBH all have an average premium over the period included in their respective calculations: it should though be noted that no company in the sample has a premium on a rolling basis within the past 3 years. Further evidence that the average premiums of these companies are impacted by large historic premiums to intrinsic net asset value is illustrated by the difference between the average and the median as well as the standard deviation for those companies.

Refer to appendix C which shows a graphical depiction of the discount for each company in the sample. To further illustrate the trend in the discounts. Rolling averages were calculated for each company in the sample and are presented in Table 4 below. The findings in Table 4 present a comprehensive summary of discounts to intrinsic net asset value for the companies in the sample stretching as far back as 19 years.

⁹ This disclosure goes beyond that provided by incorporating deferred taxes due to all the measurement nuances that exist within IAS12.

Table 4: Average rolling discounts from 30 June 2022

	AIL ¹⁰	BAT	BRT	EPE ¹¹	HCI	NPN	PSG	REM	RMBH	RMIH ¹²	SBV ¹³	ZED ¹⁴	Average
1-year	42.9%	50.5%	40.1%	32.7%	42.3%	72.1%	25.2%	30.4%	45.4%	17.3%	34.2%	33.5%	38.9%
2-year	53.4%	55.5%	41.2%	37.5%	54.1%	67.0%	26.4%	33.4%	52.4%	19.4%	42.9%	34.7%	43.2%
3-year	55.0%	58.6%	36.6%	39.7%	56.4%	62.1%	26.2%	32.4%	3.2%	17.0%	40.0%	34.0%	38.4%
4-year	50.8%	54.3%	28.8%	37.4%	50.8%	55.7%	23.2%	29.0%	-13.5%	13.5%	33.9%	33.2%	33.1%
5-year	45.2%	49.6%	20.8%	34.0%	45.5%	49.5%	19.7%	26.2%	-26.7%	11.1%	32.7%	30.7%	28.2%
6-year		43.5%	11.6%	30.1%	41.6%	45.3%	16.8%	25.0%	-21.4%	9.1%	30.7%	27.6%	23.6%
7-year		31.9%	6.4%		38.1%	38.6%	13.4%	23.2%	-17.6%	7.7%	25.1%	27.0%	19.4%
8-year		15.2%	3.1%		31.3%	32.0%	11.3%	20.9%	-15.7%	5.6%	16.5%	24.1%	14.4%
9-year		6.0%	2.0%		24.4%	25.2%	10.3%	19.5%	-15.0%	4.4%	13.2%	22.0%	11.2%
10-year		1.0%	1.0%		21.5%	20.6%	9.7%	18.0%	-13.9%	2.2%	12.2%	20.0%	9.2%
11-year		-0.6%	-1.6%		20.0%	17.1%	9.3%	17.5%	-13.4%	1.6%	14.0%	18.9%	8.3%
12-year		-4.3%	-1.3%		11.6%	14.0%	6.9%	17.3%	-11.9%	1.6%	16.1%	17.5%	6.8%
13-year		-7.6%	-0.5%		3.0%	11.8%	4.8%	17.4%	-11.2%		18.2%	18.0%	6.0%
14-year		-7.0%	2.9%		-2.7%	10.2%	5.5%	19.3%	-9.7%		18.6%	19.7%	6.3%
15-year		-12.7%	3.6%		-21.3%	5.6%	4.0%	19.2%	-8.3%			18.0%	1.0%
16-year		-19.8%	-2.0%		-35.5%	-7.4%	-7.9%	18.7%	-8.0%			17.2%	-5.6%
17-year		-26.2%	-9.3%		-43.7%	-12.2%	-20.3%	18.3%	-7.9%				-14.5%
18-year		-27.2%	-8.6%		-46.2%	-12.2%	-22.9%	18.3%	-7.6%				-15.2%
19-year		-25.3%	-6.9%		-41.6%	-12.2%	-19.9%	18.4%	-7.6%				-13.6%

The rolling discounts disclosed above indicate a key trend with the discounts for all companies in the sample increasing, and all companies trading at a discount for the past 3 years. The average rolling discount of the companies in the sample indicates this trend, with an increase in the rolling discount from a five-year rolling discount of 28.2% to a one-year rolling discount of 38.9%. For the period 1 July 2019 to 30 June 2022, the ALSI increased by 13%. Over this period the only companies in the sample

¹⁰ AIL was listed on the 7th of September 2017, therefore the maximum rolling discount that can be calculated is up to 5-years.

¹¹ EPE was listed on the 5th of August 2016, therefore the maximum rolling discount that can be calculated is up to 6 years

¹² RMIH was listed in 2011, therefore the maximum rolling discount that can be calculated is up to 12 years

¹³ SBV financial information was only available for 31 December 2008 onwards, therefore the maximum rolling discount that can be calculated is up to 14 years

¹⁴ Zeder was listed in 2006, therefore the maximum rolling discount that can be calculated is up to 16 years

to have outperformed the index are AIL: 38%, HCI: 49%, SBV: 68%. These companies have also noted a reduction in their discount, which may indicate that the market is acknowledging their performance and may also provide evidence of improved performance and market rating of their portfolio companies. The 2-year rolling discount is the highest discount observed for each company in the sample (apart from AIL, BAT, EPE, HCI). This indicates that discounts were at their highest when incorporating data from 1 July 2020 to 30 June 2022. Over this period the ALSI increased by 21%, albeit off a low base because the market reaction from the Covid-19 pandemic, 6 of the companies in the sample underperformed the index in this period (BRT: 20%, NPN: -26%, PSG: -48%, RMBH: 8%, RMIH: -7% and Zeder: -20%). The other 6 companies outperformed the index in this period (AIL: 107%, BAT: 21.6%, EPE: 45.6%, HCI: 390%, Remgro: 29%, SBV: 168%). Over the period 1 July 2021 to 30 June 2022, the ALSI was basically flat (-0.5%) and companies in the sample have performed better relative to the index. The only companies which did not outperform were NPN: -21%, RMIH:-11% and Zeder:-36%.

The trend in the rolling discounts, along with the initial summary statistics allows the average premiums calculated over the entire study length to be placed in context. BAT, with an average premium of 23.7% over the period of the study has traded at a discount consistently going back 10 years. BRT has an average premium of 5.9% but has traded at a discount consistently going back 10 years with the recent discount nearing 40%. HCI, with an average premium of 39.7% has traded at a discount for longer than 13 years and the recent discounts have been above 50%. NPN and PSG are two other examples that have a premium on average but this is only because of some short-lived periods of very high premiums to intrinsic net asset value. The rolling

discounts also indicate that no investment holding company has attracted a premium in the 3 years from 1 July 2019 to 30 June 2022.

To assess if there are common economic factors influencing the discounts, a correlation between the discounts of each company was performed for the one-, two-, three- and four-year rolling discount. The higher the correlation noted among the investment holding companies, the stronger the indication that discounts are a function of factors which influence all investment holding companies and not entity specific factors only. Going back a period of four years was considered appropriate as this ensured that there was discount data for each company in the sample. The correlations between the discounts of the companies in the samples is presented in the tables below. The tables are ordered from longest period (four-year) to shortest period (one-year) on a rolling basis.

Looking at the correlations for the four-year rolling period in Table 5 below, all the companies exhibit a strong positive correlation (apart from BAT and RMBH) implying that the holding companies are subject to the same economic forces driving their discounts. This suggests that investors may believe that a certain level of discount is appropriate for the investment holding companies. This is in line with findings by Barr and Kantor (1994) when investigating the discount to NAV for the large diversified mining houses that were a significant component of the JSE between 1989 and 1993

Table 5: Cross correlation of four-year rolling discount Table 5 displays the strong correlation between discounts for holding companies in the sample over a four-year rolling period.

Table 5: Cross correlation of four-year rolling discount

	AIL	BAT	BRT	EPE	HCI	NPN	PSG	REM	RMBH	RMIH	SBV	ZED
AIL	1.000											
BAT	0.728	1.000										
BRT	0.560	0.483	1.000									
EPE	0.705	0.556	0.406	1.000								
HCI	0.835	0.601	0.548	0.724	1.000							
NPN	0.254	0.258	0.771	0.216	0.240	1.000						
PSG	0.503	0.342	0.526	0.529	0.551	0.319	1.000					
REM	0.624	0.379	0.681	0.736	0.676	0.549	0.711	1.000				
RMBH	0.133	-0.136	0.490	0.091	0.145	0.611	0.338	0.571	1.000			
RMIH	0.402	0.489	0.507	0.361	0.158	0.530	0.324	0.473	0.356	1.000		
SBV	0.660	0.366	0.727	0.499	0.653	0.529	0.517	0.771	0.589	0.363	1.000	
ZED	0.218	0.088	0.298	0.394	0.203	0.140	0.533	0.455	0.227	0.261	0.286	1.000

Table 6 displays the correlation between holding companies over a three-year rolling period.

Table 6: Cross correlation of three-year rolling discount

	AIL	BAT	BRT	EPE	HCI	NPN	PSG	REM	RMBH	RMIH	SBV	ZED
AIL	1.000											
BAT	0.574	1.000										
BRT	0.192	-0.195	1.000									
EPE	0.642	0.459	0.136	1.000								
HCI	0.776	0.392	0.218	0.667	1.000							
NPN	-0.396	-0.516	0.496	-0.171	-0.340	1.000						
PSG	0.375	0.095	0.332	0.450	0.417	-0.067	1.000					
REM	0.510	0.096	0.564	0.744	0.581	0.116	0.635	1.000				
RMBH	0.007	-0.351	0.720	-0.027	0.030	0.654	0.258	0.444	1.000			
RMIH	0.145	0.235	0.193	0.198	-0.177	0.268	0.116	0.268	0.338	1.000		
SBV	0.652	0.080	0.602	0.419	0.593	0.014	0.321	0.663	0.510	0.098	1.000	
ZED	0.188	0.015	0.395	0.396	0.172	0.082	0.574	0.523	0.238	0.248	0.321	1.000

Table 7: Cross correlation of two-year rolling discount

	AIL	BAT	BRT	EPE	HCI	NPN	PSG	REM	RMBH	RMIH	SBV	ZED
AIL	1.000											
BAT	0.611	1.000										
BRT	0.345	-0.001	1.000									
EPE	0.669	0.658	0.171	1.000								
HCI	0.764	0.458	0.347	0.527	1.000							
NPN	-0.694	-0.502	-0.297	-0.499	-0.760	1.000						
PSG	0.286	0.020	0.490	0.029	0.255	-0.297	1.000					
REM	0.625	0.333	0.604	0.666	0.567	-0.551	0.320	1.000				
RMBH	0.831	0.519	0.398	0.513	0.656	-0.557	0.216	0.611	1.000			
RMIH	0.155	0.448	-0.005	0.269	-0.290	0.063	-0.123	0.173	0.201	1.000		
SBV	0.804	0.351	0.381	0.575	0.712	-0.747	0.262	0.754	0.743	-0.012	1.000	
ZED	0.075	0.211	0.370	0.035	-0.126	-0.202	0.599	0.242	0.133	0.331	0.116	1.000

Table 8: Cross correlation of one-year rolling discount

	AIL	BAT	BRT	EPE	HCI	NPN	PSG	REM	RMBH	RMIH	SBV	ZED
AIL	1.000											
BAT	0.679	1.000										
BRT	0.084	0.228	1.000									
EPE	0.421	0.446	0.288	1.000								
HCI	0.495	0.275	-0.074	0.229	1.000							
NPN	-0.038	0.100	-0.175	0.231	-0.563	1.000						
PSG	0.090	-0.193	-0.119	-0.312	-0.451	0.218	1.000					
REM	0.229	0.461	0.600	0.761	0.168	0.030	-0.401	1.000				
RMBH	0.664	0.804	0.253	0.206	0.355	-0.078	-0.057	0.321	1.000			
RMIH	0.236	0.494	0.487	0.253	-0.456	0.357	0.229	0.405	0.481	1.000		
SBV	0.558	0.515	0.078	0.460	0.670	-0.186	-0.521	0.387	0.487	-0.031	1.000	
ZED	-0.262	0.069	0.285	-0.131	-0.818	0.345	0.403	0.083	0.096	0.701	-0.454	1.000

A weakening trend can be observed by the lower correlation coefficients displayed in Table 6, Table 7 and Table 8 compared to Table 5. This seems to indicate that investors are not treating all investment holding companies the same when pricing

these entities and rather bringing in more entity specific factors that allow for a benchmark discount to be lower or higher amongst certain companies.

The persistent existence of a discount and the recent trend indicating a peak in the discount may indicate that investors believe that all investment holding companies should trade at a base discount to intrinsic net asset value, but the varying levels of discounts may be a factor of the underlying portfolio composition. The weaker correlations noted may indicate that investors are more interested in the outlook of the investee companies for each holding company rather than applying a blanket or base discount to all holding companies.

Therefore, the null hypothesis for research question 1 will be rejected as each company in the sample trades at a discount to intrinsic net asset value for a minimum of a three-year rolling average.

4.2 Key findings: research question 2

To answer the second research question an event study was conducted. To improve the robustness of the research design, the initial sample of 61 corporate actions was checked to see if the sample contained confounding events. This is in line with recommendations provided by McWilliams and Siegel (1997).

Confounding events were identified and removed for each company in the sample (treating abnormal returns of different companies as independent) as follows:

1. Corporate actions for each company were sorted from oldest to most recent. Any other confounding event that would have impacted the industry should be captured using various estimation models.
2. Trading days between each event were calculated.

3. Events were excluded from the sample if the next corporate action for that company was within 250 trading days of that event. This allowed for the long-term wealth creation impact to be measured to some extent (Nkongho & Makina, 2020) and also shortened the period in line with the recommendations provided by McWilliams and Siegel (1997).
4. This process was repeated for each company, resulting in a revised sample of 33 events each with an event window of at least 1 year (250 trading days). Refer to Table 9 below for a complete list of the corporate actions and the date on which they were announced.

Table 9: Revised list of corporate actions (n=33)

Company name	Event date	Event type
African Rainbow Capital Investments	15 September 2020	Rights/ Claw Back offer
Brait	02 March 2011	Rights/ Claw Back offer
Brait	30 June 2017	Scrip dividend
Brait	22 January 2020	Rights/ Claw Back offer
Brimstone Investment Corporation	21 April 2005	Rights/ Claw Back offer
Brimstone Investment Corporation	11 March 2015	Share buyback
Brimstone Investment Corporation	15 June 2018	Share buyback
Brimstone Investment Corporation	08 March 2010	Unbundling
Brimstone Investment Corporation	11 March 2020	Capitalisation issue
Ethos Private Equity	27 November 2019	Rights/ Claw Back offer
Hosken Consolidated Investments	24 March 2014	Unbundling
Hosken Consolidated Investments	31 August 2006	Share buyback
Hosken Consolidated Investments	29 November 2016	Share buyback
Hosken Consolidated Investments	12 June 2018	Share buyback
Hosken Consolidated Investments	07 February 2020	Share buyback
Naspers	12 May 2021	Voluntary share exchange
PSG Holdings	15 January 2015	Share buyback
PSG Holdings	16 July 2008	Special dividend
PSG Holdings	15 August 2006	Rights/ Claw Back offer
PSG Holdings	04 September 2009	Unbundling
PSG Holdings	23 April 2020	Unbundling
Remgro	08 August 2008	Unbundling
Remgro	21 June 2010	Unbundling
Remgro	31 May 2012	Unbundling
Remgro	14 April 2020	Unbundling
Remgro	15 July 2016	Rights/ Claw Back offer
Remgro	22 June 2006	Special dividend
RMB Holdings	15 April 2020	Unbundling
RMB Holdings	15 September 2011	Special dividend

RMB Holdings	09 April 2021	Special dividend
RMI Holdings	11 September 2018	Scrip dividend
Sabvest Capital	19 September 2017	Scrip dividend
Zeder	23 March 2009	Rights/ Claw Back offer

Table 10: Summary of corporate action by type (n=33)

Corporate action type	Number of events noted
Capitalisation issue	1
Rights/ Claw Back offer	8
Scrip dividend	3
Share buybacks	7
Special dividend	4
Unbundling	9
Voluntary share exchange	1

The sample reflected in Table 10 above was determined by eliminating confounding events from the initial population of corporate actions is the sample that has been tested to identify if there are statistically significant abnormal returns.

Based on the results of the Shapiro-Wilks test provided in Appendix E and the evidence presented in Table 18 to Table 23 that the abnormal returns were not normally distributed, a non-parametric test approach has been adopted. A Wilcoxon signed-rank test was performed as the non-parametric test for each measurement period for each model.

CAARs have been tested for significance across various measurement periods. These are indicated in Table 11 below:

Table 11: Measure of abnormal return for different periods surrounding an event

Days relative to the event (trading days)	Measure of cumulative abnormal return
-10 to -1 (10-day anticipation window)	R1
0 (event day)	R2
0 to 4 (5 days post event)	R3
0 to 9 (10 days post event)	R4
0 to 120 (6 months post event)	R5
0 to 250 (1 year post event)	R6

Results of the analysis will be presented across each of the models used to estimate abnormal returns.

Table 12 reports results from the non-parametric tests conducted on the abnormal returns during the measurement periods. For measurement period R1, the anticipation window shows that the average abnormal returns were positive across all estimation models (apart from the 2-factor asset pricing model) but none of these returns were statistically significant. This indicates that there was no anticipation effect for the corporate actions in the sample suggesting that no anticipatory trading took place before the announcement of the corporate action.

Table 12: Non-parametric (Wilcoxon Signed-Rank test) results for each model used to determine abnormal returns.

Variable	N	Index model (ALSI)			Index model (RESI)			Index model (FINDI)			Market model			Market model - 2 factor Asset pricing theory			Average return model		
		Average	Std. dev.	p-value	Average	Std. dev.	p-value	Average	Std. dev.	p-value	Average	Std. dev.	p-value	Average	Std. dev.	p-value	Average	Std. dev.	p-value
R1	33	0.006	0.075	0.874	0.004	0.102	0.764	0.006	0.069	0.560	0.001	0.062	0.902	-0.001	0.071	0.874	0.008	0.060	0.711
R2	33	0.001	0.036	0.874	0.001	0.040	0.986	-0.000	0.036	0.805	0.001	0.035	0.778	-0.002	0.032	0.791	0.003	0.040	0.944
R3	33	-0.004	0.058	0.264	-0.007	0.059	0.214	-0.003	0.060	0.396	-0.010	0.048	0.140	-0.010	0.047	0.105	-0.012	0.046	0.272
R4	33	-0.018	0.093	0.117	-0.023	0.093	0.097	-0.020	0.096	0.097	-0.024	0.088	0.155	-0.024	0.089	0.109	-0.023	0.092	0.313
R5	33	-0.154	0.399	0.068**	-0.162	0.483	0.288	-0.166	0.376	0.012*	-0.161	0.383	0.035*	-0.165	0.417	0.034*	-0.104	0.419	0.031*
R6	33	-0.099	0.403	0.155	-0.117	0.486	0.288	-0.105	0.394	0.051**	-0.088	0.463	0.416	-0.090	0.478	0.264	-0.056	0.461	0.751

*Denotes significance at the 5% level, ** denotes significance at the 10% level

Measurement period R2, the event day, also shows positive abnormal returns across all estimation models (apart from the index model – RESI and the 2-factor asset pricing model) but none of these returns were statistically significant. This indicates that there was no observable abnormal return on event day across the corporate actions in the sample.

Measurement period R3, 5 days from the event day onwards shows negative abnormal returns across all estimation models. None of the abnormal returns were statistically significant. Over measurement period R1 and R2, positive returns were noted while over measurement period R3, the abnormal returns became negative indicating that for the companies in the sample the market reaction was negative after the announcement of the corporate action.

Measurement period R4, 10 days from the event day onwards also shows negative abnormal returns across all estimation models but none of these were statistically significant. The trend appears to continue after event date with a more negative reaction to the corporate action.

Measurement period R5, 6 months after the event date, begins to show statistically significant negative abnormal returns. The abnormal return for the index model (ALSI) was statistically significant at the 10% level with a p-value of 0.068. The abnormal return for the index model (FINDI), both market models and the average return models were statistically significant at the 5% level with p-values of 0.012, 0.035, 0.034 and 0,031 respectively. This indicates that there is a significantly negative market reaction to the corporate actions in the sample and that the effect of this negative reaction is largest between the event date and 6 months after the event.

Under the final measurement period, 1 year after the event date, the returns are all still consistently negative across estimation models. There was a statistically significant negative abnormal return using the index model (FINDI) at a 10% significance level with a p-value of 0.051. This further indicates the negative reaction is statistically significant up to a year post the announcement of corporate actions.

There is insufficient evidence to reject the null hypothesis for measurement periods R1, R2, R3, R4 and R6. For measurement period R5 there is sufficient evidence to reject the null hypothesis.

Rejecting the null hypothesis (CAAR = 0), in this case because of statistically significant negative CAARs indicates that the corporate actions undertaken in the sample do not reduce discounts to intrinsic net asset value as a reduction in the discount will require a positive abnormal return.

This finding seems to confirm the view taken by Kantor (2001) where the corporate actions adopted are not sufficient to overcome a high degree of market scepticism reflected in the large discount.

Finally, a non-parametric ANCOVA was performed using the 6-month CAAR determined from the market model and controlling for firm size as represented by market capitalisation. The 6-month CAAR was chosen as this was a statistically significant measure and the market model was chosen as the value did not differ significantly from the value determined by other estimation models. The ANCOVA should identify if there are statistically significant differences between any of the corporate actions in the sample when controlling for firm size. Firm size may influence the extent to which information is efficiently reflected in the share prices which can

result in higher abnormal returns as found by Heymans and Santana (2018). The corporate actions are further summarised below in Table 13.

Table 13: Summary of each corporate action by type

Corporate action type	Number of events noted
Capitalisation issue	1
Rights/ Claw Back offer	8
Scrip dividend	3
Share buybacks	7
Special dividend	4
Unbundling	9
Voluntary share exchange	1

Table 14: ANCOVA table investigating the variance in abnormal return controlling for firm size

Source of variation	df	F	p-value
Covariate - firm size	1	1.100547498	0.302256
Between groups - corporate action type	6	0.818296116	0.565782
Within groups	25		
Total	32		

Table 14 above presents the results of the non-parametric ANCOVA performed. The abnormal returns used as the dependant variable in the test were the abnormal returns from the Market model for measurement period R5 (event date to 6 months after the event date). The P-values for both the co-variate and corporate action type indicate that there is no statistically significant relationship between either firm size or the corporate action chosen and abnormal returns. This indicates that, despite the fact that there were significant negative abnormal returns over this measurement period, neither the size of the investment holding company or the type of corporate action demonstrates a relationship to the abnormal return.

4.3 Key findings: research question 3

To answer the final research question of this study a non-parametric alternative to the ANOVA, the Kruskal-Wallis test, was performed. This test should identify if the variation between groups (corporate action types) is significant.

Table 15: Results of Kruskal-Wallis test across measurement periods

	Index model (ALSI)	Index model (RESI)	Index model (FINDI)	Market model	Market model - 2 factor Asset pricing theory
Variable	p-value	p-value	p-value	p-value	p-value
R1	0.140	0.398	0.067	0.097	0.336
R2	0.839	0.574	0.918	0.918	0.831
R3	0.607	0.505	0.535	0.535	0.455
R4	0.622	0.287	0.592	0.592	0.679
R5	0.540	0.476	0.642	0.642	0.735
R6	0.609	0.666	0.576	0.576	0.578

Table 15 above presents the test p-value of the Kruskal-Wallis test for each measurement period. No statistically significant results were found at the 5% level. Based on the results in Table 14, the type of corporate action has no impact on explaining the differences in the CAARs. This is in line with the findings of Wolmarans and Sartorius (2009) who found that the type of BEE transaction had no impact on explaining the differences in the abnormal returns albeit through the use of a parametric test.

Therefore, it can be concluded that the type of corporate action does not explain any differences in abnormal return. This implies that the choice of corporate action does not influence abnormal returns. Further enhancing the finding that no corporate action will reduce the discount to intrinsic net asset value.

5. Conclusion

Event studies to measure the stock price reaction to various events have been a popular area of research, globally and for the JSE. Research into the effect of events is typically grouped around examining one event type. This research adopted a different approach by examining several events across a defined sample of companies. Precedents for research of this nature, were performed relating to closed-end funds. Thomson (1978) evaluated a sample of closed-end fund shares with Bhana (1993) replicating the research in a JSE context. Both those research papers were investigating what appeared to be a mispricing by the market with the hopes of developing a profitable trading strategy. This research adopted a different approach by accepting the “mispricing” (the discount) and investigating if management of companies can reduce this discount and accordingly create shareholder wealth.

This chapter presented and analysed the research results for 33 corporate actions undertaken by investment holding companies between 2003 and June 2022. The primary aim was to identify if corporate actions can create shareholder wealth by reducing discounts to intrinsic net asset value. The secondary aim was to quantify the discounts and identify which corporate actions can be most effective at reducing discounts to intrinsic net asset value.

A trend in increasing discounts over time was noted across the companies in the sample while a weakening in the correlation between the discounts was noted. This indicates that the significance of the common economic factor that is being incorporated into the pricing by investors is reducing over time. Additionally, it was found that the type of corporate action does not appear to impact the subsequent

reaction to the share price and cannot be considered effective at reducing the discount to intrinsic value.

The findings meant that the null hypothesis for research question 1 was rejected as it was proved that the investment holding companies in the sample trade at a discount to intrinsic net asset value. In addition to that finding, it was noted that no companies have traded at a premium for more than 3 years going back from 30 of June 2022.

The null hypothesis for research question 2 was rejected for measurement period R5 (event date to 6 months after event). The negative abnormal returns were found to be statistically significant for this event window. It was found that corporate actions included in this sample were not effective at reducing the discount as they produced statistically significant negative abnormal returns. Other event studies which found negative abnormal returns include: Nichols et al. (2014) and Blount and Davidson (1996) investigating unbundling, Youds et al. (1993) investigating rights issues found a decline in the first ten days after the announcement and Wimberley and Negash (2004) when investigating Mergers and acquisitions found a negative abnormal return 36 months after the announcement.

Insufficient evidence was found for the null hypothesis for research question 3 to be rejected. No one corporate action was more effective at reducing the discount or even producing significant negative abnormal returns. This suggests that management and interested parties need to consider firm specific factors when planning a response or initiative aimed at reducing the discount to intrinsic net asset value. Actions which clearly communicate a believable commitment to value creating opportunities (or ending value destroying projects) as theorised by Kantor (2001) are likely to be the only meaningful way to reduce discounts for investment holding companies.

The primary findings focused on the share price reaction to the corporate actions (as a positive share price reaction would indicate a way to reduce the discount). The results produced statistically significant negative CAARs over a measurement of 6 months from the event date across the various models used to estimate expected returns. The fact that the specific event window associated with 6 months from announcement date resulted in statistically significant abnormal returns across all estimation models may indicate that this is an area for future research. Across the other measurement periods of the corporate actions in the sample there were no statistically significant abnormal returns. The absence of statistically significant returns over most measurement periods aside from negative abnormal returns over a measurement of 6 months indicates that corporate actions are not an appropriate way to create shareholder wealth.

A summary of findings for each research question is presented in Table 16 below.

Table 16: Summary of findings for each Research Question

Research Question (RQ)	Summary of findings
RQ1	All companies in the sample trade at a one-year rolling discount and evidence noted of an increasing trend in the discount to intrinsic net asset value. Weakening correlation between the discount, which may indicate that more entity-specific factors are affecting the share prices of these entities.
RQ2	Null hypothesis was rejected for measurement period R5 (up to 6 months post event date) where statistically significant negative abnormal returns were noted. Therefore, the corporate actions included in this sample were not effective in reducing the discount.
RQ3	Insufficient evidence was found for the null hypothesis to be rejected. This finding implies that no one corporate action included in the sample was observably more effective than another at reducing the discount.

5.1 Concluding remarks and areas for future research

The study provides a review into discounts to intrinsic net asset value of investment holding companies. Important implications for the results of the study are the evidence demonstrating the existence of discounts to intrinsic net asset value, confirming research which has largely been confined to the financial press and other market commentators. The lack of positive abnormal returns may also imply that management responses to mispricing are not consistent with actions rewarded by market participants.

The results of the study only found statistically significant negative CAARs for one measurement period. This was noted for a period of 6 months after the event date. The CAARs for the other measurement periods were not statistically significant. As the abnormal returns were noted across several estimation models for a period of 6 months after the event, it may imply that certain market inefficiencies exist relating to that timeframe. The results indicate that corporate actions have not been effective in creating shareholder wealth for investment holding companies trading at a discount to intrinsic net asset value. The results in this regard are surprising as management of investment holding companies often cite the value unlock or reduction in the discount as a primary reason why certain corporate actions are pursued.

The existence of a discount seems to be in line with the theory of Kantor (2001). Implications of this are that the discount exists based on market perceptions. The reported intrinsic net asset value is, as a result, inconsistent with the intrinsic value allocated by market participants. This phenomenon is most likely because of an overestimation of the opportunity cost of capital of the investment holding companies by the market or an underestimation of the cost of capital by management when performing their valuations of unlisted assets and investment programs. The results of the event study confirm the role of market perceptions as the corporate actions undertaken by management teams did not, in aggregate, result in favourable market reactions. The current pricing (reflected in the discount) indicates a degree of market scepticism. The most compelling way to reduce this discount seems to be adopting a more disciplined process for undertaking investments, which needs to be communicated and discussed so that it will be appreciated by the market (Kantor, 2001). The action that the market will react most favourably towards, and reward

through higher share prices is a management track record of pursuing investments projects that provide returns above the cost of capital.

Further research could incorporate other types of companies to investigate the impact of corporate actions over a broader number of listed entities. This can increase the sample size of corporate actions. Additionally, the more sophisticated non-parametric generalised rank test proposed by Kolari and Pynnonen (2011) can be used which would be beneficial given a larger sample size. This will remain an area for future research that will refine event studies, particularly those performed on JSE listed companies. A case-study style research inquiry into one company may allow a researcher to evaluate the effect of corporate actions empirically and reinforce these findings with a qualitative finding grounded in theory. Given the inherent limitations of event studies, a case-study employing mixed methods could prove to be a research design which can address some of the limitations and improve the quality of the findings. Additionally, the fact that one measurement period (R5) had statistically significant abnormal returns across all estimation models may need to be investigated further to see if this is a trend that is noticeable across other samples of companies and corporate actions.

Future research can also investigate the possible reasons which have caused the investment holding companies to trade at a discount. Research focused on the cause will provide an update to the reasons put forward by Thomson (1978) and could investigate them in a South African context.

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Appendices

Appendix A

Table 17: Market capitalisation of a sample of JSE listed investment holding companies.

Source: EquityRT, author's computations

Entity Name (JSE Ticker)	Market Capitalisation – June 2022 (ZAR'millions)
African Rainbow Capital Investments Limited (JSE: AIL)	8 565
Brait PLC (JSE: BAT)	5 399
Brimstone Investment Corporation Limited (JSE: BRN)	281
EPE Capital Partners Limited (JSE: EPE)	1 472
Hosken Consolidated Investments Limited (JSE: HCI)	13 057
Naspers Limited (JSE: NPN)	542 406
PSG Group Limited (JSE: PSG)	17 555
Remgro Limited (JSE: REM)	68 337
Rand Merchant Bank Holdings (JSE: RMBH)	2 414
Rand Merchant Investment Holdings (JSE: RMIH)	42 554
Sabvest Capital Limited (JSE: SBP)	2 907
Zeder Investments Limited (JSE: ZED)	2 793

Appendix B: Brief case study of Naspers and PSG and their response to attempting to unlock the discount.

Naspers Limited

Naspers, as one of the largest companies on the JSE, and a company boasting an incredible value creation track record has arguably gained the most attention for the discount to the company's underlying intrinsic net asset value.

Management have mentioned a desire to close the discount and it is often mentioned as a driving factor behind numerous management-led initiatives.

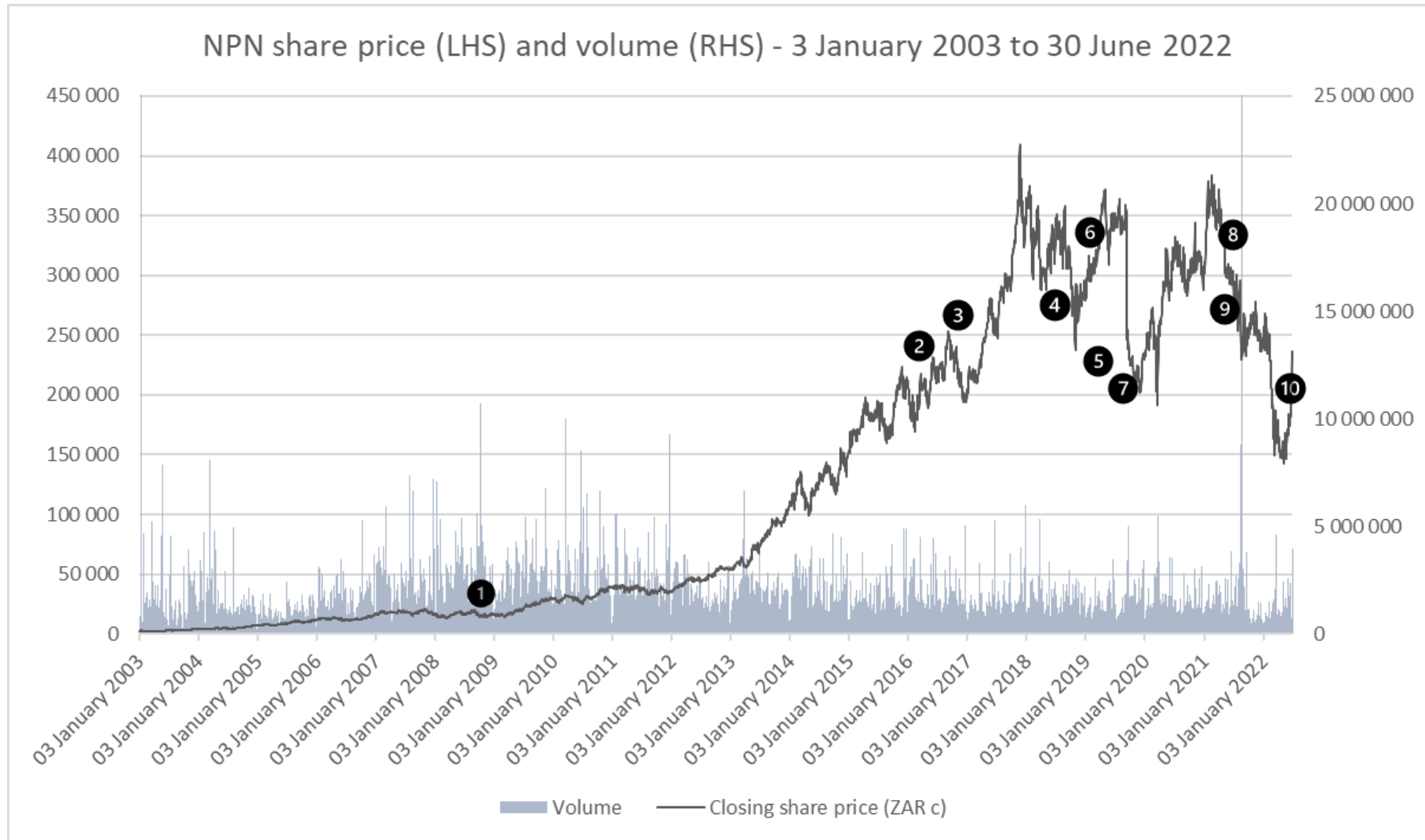


Figure 2: Naspers Limited share price performance (annotated).

Reference to chart	Date	Comment
1	30 September 2008	Based on the author's calculations, this is the first time that the pro-forma value per share was equal to the share price. Between September 2008 and March 2016 (reference 2 below), the share price traded at an average premium of approximately 16% to the pro-forma value per share.
2	31 March 2016	Discount (author's calculation) exceeds 20% for first time
3	2 November 16	Discount (author's calculation) exceeds 30% for first time
4	3 April 2018	Discount (author's calculation) exceeds 40% for first time
5	30 October 2018	Discount (author's calculation) exceeds 50% for first time
6	25 March 2019	Naspers make an official announcement of intention to listing international assets on Euronext (Prosus). Listing took place on 11 September 2019. The rationale stated by management was to reduce NPN weighting on the JSE and unlock value. Naspers management claim in a later SENS announcement that at listing this transaction unlocked \$16bn worth of value by reducing the discount. However, it appears that this reduction in the discount was not sustained.
7	29 November 2019	Discount (author's calculation) exceeds 60% for first time
8	12 May 2021	Voluntary share exchange announced. Key reason for the transaction announced to shareholders was to create value and improve structural factors that management believe is worsening the discount. One of the primary structural factors that resulted from Naspers becoming so large is that it dominated certain market capitalisation weighted indices, with Naspers management noting weightings almost as high as 30%. This creates a problem as most large institutional shareholders would be required to sell down positions in a single share to reduce concentration risk. The implementation of this deal resulted in a complicated cross-holding structure.
9	05 July 2021	Discount (author's calculation) exceeds 70% for first time
9	09 July 2021	Finweek article published
10	27 June 2022	Open ended share repurchases announced. The intention behind the repurchases is to increase NAV per share and will take place "as long as elevated levels of the trading discount to the Group's underlying net asset value persist".

PSG Group Limited

PSG grew their reputation as an investment holding company that often invested in businesses that would grow to become very successful. The most notable businesses they have been involved in include Capitec, Curro and Stadio.

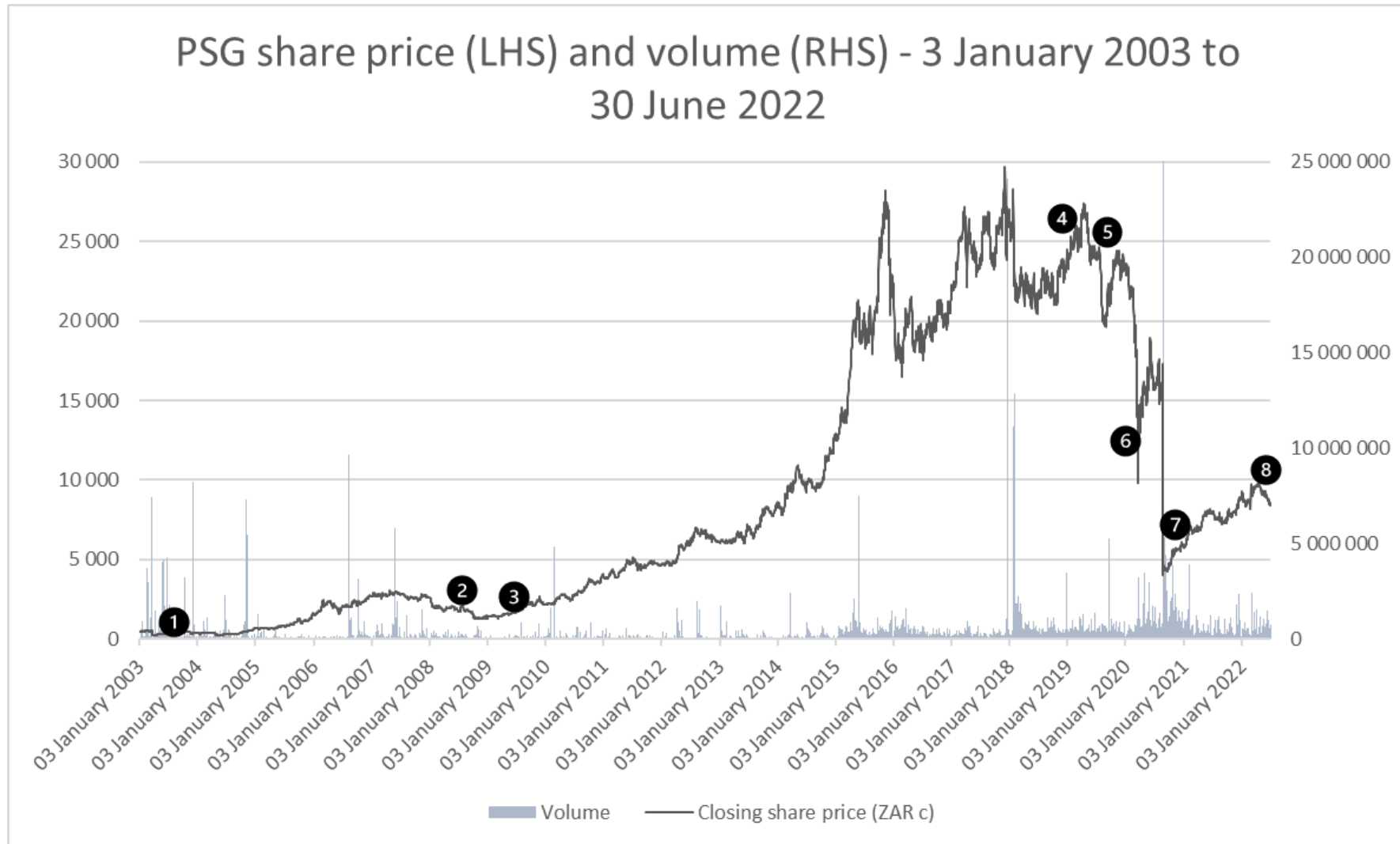
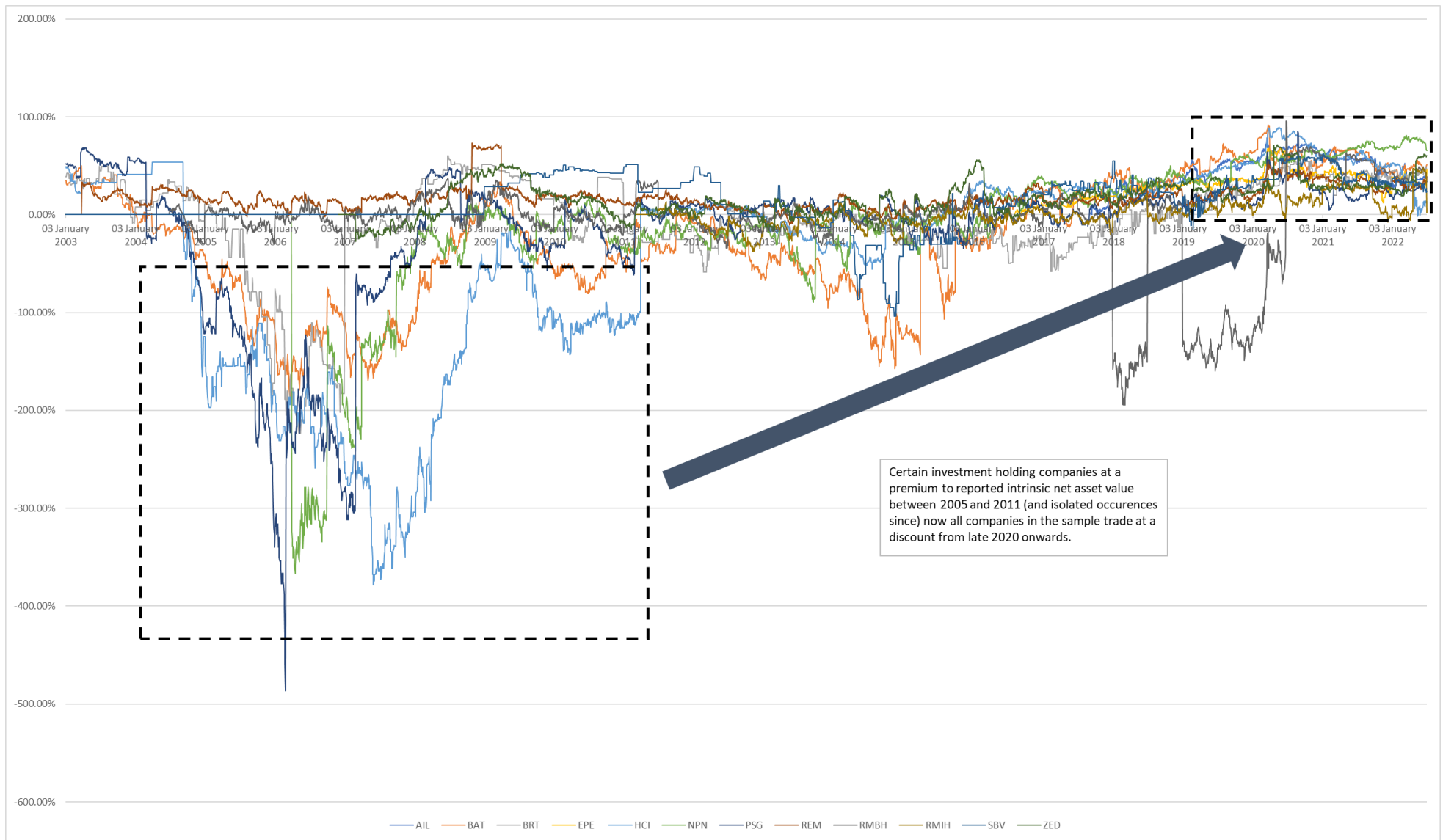


Figure 3: PSG group limited share price performance (annotated)

Reference to chart	Date	Comment
1	1 November 2003	Capitec unbundled. This transaction was part of PSG Group's "Project Unlock Value". PSG CEO Jannie Mouton provides the following quote(PSG Group, 2004, p. 4): <i>"PSG Group is trading at a discount to NAV. We do not like this situation and as a result embarked on a project to unlock this discount, mainly turning NAV into cash. "(Surplus) cash belongs to shareholders (as always) and will be returned to shareholders unless we find a great opportunity. "A shareholder who receives a special distribution can purchase additional shares in (PSG) – as I am planning to do."</i> Emphasis is my own. Average discount from January 2003 - November 2003 = 52.9%
2	11 March 2008	Discount closed until early 2008. By 11 March 2008 the discount (author's calculation) crosses 40% for the first time since 2003
3	04 September 2009	Paladin unbundling completed by using a right issue mechanism.
4	20 May 2019	Discount (author's calculation) exceeds 20% for first time since 2003
5	5 Aug 2019	Discount (author's calculation) exceeds 30% for first time since 2003
6	13 March 2020	Discount (author's calculation) exceeds 40% for first time since 2003
7	31 August 2020	PSG group completes the unbundling of the remaining Capitec stake by way of a distribution in specie. The rationale for the unbundling noted in the circular is (PSG Group, 2020, p. 16): <i>"The rationale for the PSG Group Unbundling is to:</i> <i>2.1.1 ease the administrative and regulatory compliance burden that would otherwise be imposed on PSG Group, should PSG Group be classified in terms of the FSRA as belonging to a financial conglomerate, as a result of its shareholding in Capitec, and to avoid the resulting restrictions that could impact on PSG Group's ability to operate as a dynamic and nimble investment holding company; and</i> <i>2.1.2 assist in the reduction of the discount at which PSG Group Shares trade to its sum-of-theparts ("SOTP") value and to unlock value for PSG Group Shareholders.</i> <i>2.2 The Board believes that the PSG Group Unbundling is in the best interests of Shareholders and should unlock value for Shareholders."</i> -Emphasis is my own

8	01 March 2022	<p>PSG group restructuring announced, the rationale given for the restructuring was provided in the PSG Group Restructuring circular as(PSG Group, 2022, p. 23):</p> <p><i>“2.1 PSG Group is an investment holding company consisting of underlying investments that operate across a diverse range of industries, which include financial services (PSG Konsult), education (Curro and Stadio), food and related businesses (Zeder and Kaap Agri), route-to-market services for fast-moving consumer goods in southern Africa (CA&S), as well as early-stage unlisted investments in select sectors.</i></p> <p><i>2.2 As a JSE-listed investment holding company, the main objective of PSG Group remains to create wealth for PSG Group Shareholders on a per share basis. However, the share price of PSG Group has unfortunately been trading at a significant discount of approximately 30% to 40% to the value of its underlying investments (or the so-called sum-of-the-parts value) in recent years, despite significant value-unlock initiatives undertaken, such as PSG Group’s unbundling of nearly its entire shareholding in Capitec during the financial year ended 28 February 2021, in terms of which approximately R21bn was unlocked for PSG Group Shareholders, based on Capitec’s closing share price on the Last Practicable Date. The PSG Group Restructuring is accordingly a further initiative to unlock the aforementioned discount; however, should the PSG Group Restructuring not proceed, Shareholders must resign themselves thereto that PSG Group Shares will likely continue to trade at a significant discount to its sum-of-the-parts value.</i></p> <p><i>2.3 Given the significant discount at which PSG Group has been trading to its sum-of-the-parts value in recent times, and having evaluated other measures, the PSG Group Board (with the recusal of the directors who are Remaining Shareholders) has investigated and decided as a final resort to pursue a value-unlock initiative by way of the PSG Group Restructuring. Details of the (sum-at-the-parts value) can be found under the investor relations/reports section of the PSG Group website (https://psggroup.co.za/investor-relations/reports/) under an annexure to the financial statements, published from time to time.”</i></p> <p>-Emphasis is my own.</p>
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Appendix C: Graphical depiction of discount to intrinsic net asset value for all companies in the sample



Appendix D: Complete list of revised corporate actions included in the samples (n=33)

Company name	Event date	Event type
African Rainbow Capital Investments	15 September 2020	Rights/ Claw Back offer
Brait	02 March 2011	Rights/ Claw Back offer
Brait	30 June 2017	Scrip dividend
Brait	22 January 2020	Rights/ Claw Back offer
Brimstone Investment Corporation	21 April 2005	Rights/ Claw Back offer
Brimstone Investment Corporation	11 March 2015	Share buyback
Brimstone Investment Corporation	15 June 2018	Share buyback
Brimstone Investment Corporation	08 March 2010	Unbundling
Brimstone Investment Corporation	11 March 2020	Capitalisation issue
Ethos Private Equity	27 November 2019	Rights/ Claw Back offer
Hosken Consolidated Investments	24 March 2014	Unbundling
Hosken Consolidated Investments	31 August 2006	Share buyback
Hosken Consolidated Investments	29 November 2016	Share buyback
Hosken Consolidated Investments	12 June 2018	Share buyback
Hosken Consolidated Investments	07 February 2020	Share buyback
Naspers	12 May 2021	Voluntary share exchange
PSG Holdings	15 January 2015	Share buyback
PSG Holdings	16 July 2008	Special dividend
PSG Holdings	15 August 2006	Rights/ Claw Back offer
PSG Holdings	04 September 2009	Unbundling
PSG Holdings	23 April 2020	Unbundling
Remgro	08 August 2008	Unbundling
Remgro	21 June 2010	Unbundling
Remgro	31 May 2012	Unbundling
Remgro	14 April 2020	Unbundling
Remgro	15 July 2016	Rights/ Claw Back offer
Remgro	22 June 2006	Special dividend
RMB Holdings	15 April 2020	Unbundling
RMB Holdings	15 September 2011	Special dividend
RMB Holdings	09 April 2021	Special dividend
RMI Holdings	11 September 2018	Scrip dividend
Sabvest Capital	19 September 2017	Scrip dividend
Zeder	23 March 2009	Rights/ Claw Back offer

Appendix E: Normality of the abnormal returns data

To ensure that the data collected is suitable for research tests and methods that have been used to answer the research questions of this study, an analysis was performed on the data to assess the distribution characteristics.

To test for the normality of the data, a Shapiro-Wilks test (Shapiro & Wilk, 1965) was performed over the abnormal returns determined using each model across the various measurement windows. The Shapiro-Wilks test was used due to the relatively small sample size ($n=61$). The results of these tests are displayed below for each estimation model.

The null hypothesis of the test is that the data is normally distributed. The results of the Shapiro-Wilks test indicate that there is evidence that the data is not normally distributed. At a 5% significance level, the p-value from the abnormal returns is generally less than 0.05 which means that the null hypothesis can be rejected. This result is consistent across the various measurements of abnormal returns.

Due to there being evidence ($p\text{-value} < 0.05$) to suggest the non-normality of the abnormal returns. Non-parametric tests have been reported rather than parametric statistical tests.

Index model (ALSI)

Table 18: Normality of abnormal returns estimated using the index model (ALSI)

	<i>Anticipation window</i>	<i>Event day</i>	<i>Event + 1 day</i>	<i>Event + 2 days</i>	<i>Event + 3 days</i>	<i>Event + 4 days</i>	<i>Event + 5 days</i>	<i>Event + 6 days</i>	<i>Event + 7 days</i>	<i>Event + 8 days</i>	<i>Event + 9 days</i>	<i>Event + 10 days</i>	<i>Event + 6 months</i>	<i>Event + 1 year</i>	<i>Event + 2 years</i>	<i>Event + 3 years</i>	<i>Event + 4 years</i>
W-stat	0.969	0.537	0.881	0.938	0.891	0.867	0.754	0.755	0.817	0.824	0.861	0.851	0.890	0.969	0.952	0.866	0.814
p-value	0.127	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.121	0.030	0.000	0.000
normal	yes	no	no	no	no	no	no	no	no	no	no	no	no	yes	no	no	no

The distribution of the abnormal returns estimated using the Index model (ALSI) departed significantly from normality (p -value < 0.05) for all measurement periods except the anticipation window and event +1-year periods. The Shapiro-Wilk test did not show evidence of non-normality for the anticipation and event + 1-year period (p values = 0.127 and 0.121 respectively).

Index model (RESI)

Table 19: Normality of abnormal returns estimated using the index model (RESI)

	<i>Anticipation window</i>	<i>Event day</i>	<i>Event + 1 day</i>	<i>Event + 2 days</i>	<i>Event + 3 days</i>	<i>Event + 4 days</i>	<i>Event + 5 days</i>	<i>Event + 6 days</i>	<i>Event + 7 days</i>	<i>Event + 8 days</i>	<i>Event + 9 days</i>	<i>Event + 10 days</i>	<i>Event + 6 months</i>	<i>Event + 1 year</i>	<i>Event + 2 years</i>	<i>Event + 3 years</i>	<i>Event + 4 years</i>
W-stat	0.959	0.557	0.846	0.934	0.912	0.942	0.864	0.848	0.883	0.906	0.929	0.911	0.913	0.985	0.974	0.937	0.905
p-value	0.041	0.000	0.000	0.003	0.000	0.006	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.678	0.290	0.015	0.002
normal	no	no	no	no	no	no	no	no	no	no	no	no	no	yes	yes	no	no

The distribution of the abnormal returns estimated using the Index model (RESI) departed significantly from normality (p-value < 0.05) for all measurement periods except the event +1-year and event + 2-year periods. The Shapiro-Wilk test did not show evidence of non-normality for the event + 1-year period and event +2-year period (p values = 0.678 and 0.290 respectively).

Index model (FINDI)

Table 20: Normality of abnormal returns estimated using the Index model (FINDI)

	<i>Anticipation window</i>	<i>Event day</i>	<i>Event + 1 day</i>	<i>Event + 2 days</i>	<i>Event + 3 days</i>	<i>Event + 4 days</i>	<i>Event + 5 days</i>	<i>Event + 6 days</i>	<i>Event + 7 days</i>	<i>Event + 8 days</i>	<i>Event + 9 days</i>	<i>Event + 10 days</i>	<i>Event + 6 months</i>	<i>Event + 1 year</i>	<i>Event + 2 years</i>	<i>Event + 3 years</i>	<i>Event + 4 years</i>
W-stat	0.977	0.532	0.906	0.933	0.895	0.848	0.734	0.747	0.804	0.811	0.835	0.831	0.901	0.967	0.963	0.838	0.798
p-value	0.304	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.095	0.085	0.000	0.000
normal	yes	no	no	no	no	no	no	no	no	no	no	no	no	yes	yes	no	no

The distribution of the abnormal returns estimated using the Index model (FINDI) departed significantly from normality (p-value < 0.05) for all measurement periods except the event +1-year and event + 2-year periods. The Shapiro-Wilk test did not show evidence of non-normality for the event + 1-year period and event +2-year period (p values = 0.095 and 0.085 respectively).

Market model

Table 21: Normality of abnormal returns estimated using the market model

	<i>Anticipation window</i>	<i>Event day</i>	<i>Event + 1 day</i>	<i>Event + 2 days</i>	<i>Event + 3 days</i>	<i>Event + 4 days</i>	<i>Event + 5 days</i>	<i>Event + 6 days</i>	<i>Event + 7 days</i>	<i>Event + 8 days</i>	<i>Event + 9 days</i>	<i>Event + 10 days</i>	<i>Event + 6 months</i>	<i>Event + 1 year</i>	<i>Event + 2 years</i>	<i>Event + 3 years</i>	<i>Event + 4 years</i>
W-stat	0.985	0.521	0.903	0.945	0.939	0.932	0.806	0.791	0.832	0.861	0.858	0.850	0.927	0.955	0.855	0.889	0.865
p-value	0.647	0.000	0.000	0.008	0.004	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.026	0.000	0.001	0.000
normal	yes	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no

The distribution of the abnormal returns estimated using the market model departed significantly from normality (p -value < 0.05) for all measurement periods except the anticipation window. The Shapiro-Wilk test did not show evidence of non-normality for the anticipation window (p value = 0.647).

Market model using the two-factor asset pricing model

Table 22: Normality of abnormal returns estimated using the two-factor asset pricing model

	<i>Anticipation window</i>	<i>Event day</i>	<i>Event + 1 day</i>	<i>Event + 2 days</i>	<i>Event + 3 days</i>	<i>Event + 4 days</i>	<i>Event + 5 days</i>	<i>Event + 6 days</i>	<i>Event + 7 days</i>	<i>Event + 8 days</i>	<i>Event + 9 days</i>	<i>Event + 10 days</i>	<i>Event + 6 months</i>	<i>Event + 1 year</i>	<i>Event + 2 years</i>	<i>Event + 3 years</i>	<i>Event + 4 years</i>
W-stat	0.990	0.505	0.889	0.936	0.945	0.941	0.803	0.787	0.820	0.842	0.863	0.853	0.886	0.955	0.971	0.906	0.850
p-value	0.907	0.000	0.000	0.003	0.009	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.220	0.001	0.000
normal	yes	no	no	no	no	no	no	no	no	no	no	no	no	no	yes	no	no

The distribution of the abnormal returns estimated using the two-factor asset pricing model departed significantly from normality (p-value < 0.05) for all measurement periods except the anticipation window. The Shapiro-Wilk test did not show evidence of non-normality for the anticipation window and the event+ 2-year period (p values = 0.907 and 0.220 respectively).

Average returns model

Table 23: Normality of abnormal returns estimated using the average returns model

	<i>Anticipation window</i>	<i>Event day</i>	<i>Event + 1 day</i>	<i>Event + 2 days</i>	<i>Event + 3 days</i>	<i>Event + 4 days</i>	<i>Event + 5 days</i>	<i>Event + 6 days</i>	<i>Event + 7 days</i>	<i>Event + 8 days</i>	<i>Event + 9 days</i>	<i>Event + 10 days</i>	<i>Event + 6 months</i>	<i>Event + 1 year</i>	<i>Event + 2 years</i>	<i>Event + 3 years</i>	<i>Event + 4 years</i>
W-stat	0.979	0.555	0.913	0.954	0.949	0.942	0.835	0.797	0.828	0.844	0.854	0.855	0.967	0.970	0.874	0.895	0.881
p-value	0.393	0.000	0.000	0.022	0.013	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.104	0.141	0.000	0.001	0.000
normal	yes	no	no	no	no	no	no	no	no	no	no	no	yes	yes	no	no	no

The distribution of the abnormal returns estimated using the average returns model departed significantly from normality (p-value < 0.05) for all measurement periods except the anticipation window, the event+6-month period and event +1-year period. The Shapiro-Wilk test did not show evidence of non-normality for the anticipation window, the event+6-month period and event +1-year period (p values = 0.393, 0.104 and 0.220 respectively).

As there were numerous periods across the different estimation models that provided evidence of non-normality (p-value < 0.05) it is more appropriate to test the abnormal returns using non-parametric tests.