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Evaluating shareholder wealth creation in JSE-listed investment holding companies

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Background: The value and performance of underlying investments are the primary driver of value created by investment holding companies. In theory, the intrinsic net asset value of these companies should reflect the fair value of their ownership stakes in the underlying investments; however, most investment holding companies trade at a discount to the reported measure of intrinsic value per share.

Aim: The aim of this study is to determine if corporate actions have reduced discounts to intrinsic net asset value among a sample of Johannesburg Securities Exchange (JSE)-listed holding companies.

Setting: The study focused on a sample of JSE-listed investment holding companies.

Method: The study was quantitative in nature, and an event study using multiple estimation models was used to determine the share price reaction to the corporate actions.

Results: The results confirm the widening of a discount and indicate that corporate actions demonstrate no significant effect in reducing the discount to net asset value.

Conclusion: The corporate actions in this study were not effective as a method to address discounts for holding companies. The persistent and widening discount reflects market perceptions. Demonstration of management's ability to allocate capital and provide returns above the cost of capital is suggested as the only way to narrow the discount.

Contribution: This study contributes to the *existing* JSE event study literature by focusing on investment holding companies and highlighting that the market perception of investment holding companies is reflected in the widening discount to intrinsic net asset value.

Keywords: event study; investment holding company; JSE; discount to net asset value; corporate actions.

Introduction

The Johannesburg Securities Exchange (JSE) has several listed investment holding companies. The business of an investment holding company is substantially different from that of an operating company. For investment holding companies, no products and/or services are being sold. Rather, the value and performance of the underlying investments are the primary drivers of value created by investment holding companies (Remgro 2014). The sample of holding companies examined in this study made up 3.4% of the overall market capitalisation of the JSE as of 30 June 2022.[1] They 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 issuing trading statements and providing interim and annual financial statements. In theory, the intrinsic net asset value per share should reflect the fair value of the ownership stakes within the holding company's stable of *underlying investments* (after considering debt), but the share prices of 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).

The persistent discount to intrinsic net asset value represents a problem for investment holding companies as managers 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 and potentially widens, shareholders are not rewarded for what would be a good operational performance by the investment holding company. The size and general increasing trend of the discount, therefore, indicates an area where the investment holding companies' value creation efforts are not fully appreciated by the market.

1.This period was used as it matched the data collection period for the study; changes to the underlying companies in the study mean that calculating an updated comparison would not be like-for-like.

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, the pricing of investment holding companies displays similar characteristics to a closed mutual fund (Daems 2012) or closed-end fund (Cherkes 2012; Cherkes, Sagi & Stanton 2008; Dimson & Minio-Kozerski 1999; Thomson 1978). For the purposes of this article, an investment holding company is defined as an entity whose primary purpose is to own and manage a portfolio of investments in other companies and look to control and/or influence the companies in which they hold a stake in the equity capital (Cherkes et al. 2008; Daems 2012; Dimson & Minio-Kozerski 1999; Hanafizadeh & Moayer 2008; Thomson 1978).

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 by quantifying the discounts (and how they have changed over time) and specifically aims to evaluate the effectiveness of management's efforts to address discounts through corporate actions 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. The prevalence of the discount has led management teams to cite the reduction of the discount as an increasingly important strategic objective or specifically mentioned as a reason for pursuing certain corporate actions for the firms included in the study (Naspers Limited 2021; PSG Group 2020; Rand Merchant Bank Holdings 2020; Remgro Limited 2008, 2012, 2020). There is limited consensus on the ability of corporate actions to create abnormal returns on the JSE. In this article, we evaluate the effectiveness of corporate actions as a mechanism to reduce discounts to net asset value. Our findings indicate that discounts to intrinsic net asset value have widened among JSE-listed investment holding companies and that corporate actions were not a suitable mechanism for reducing the discount.

Literature review

Value creation for investment holding companies

Kantor (2001) describes the market value of an investment holding company as a function of four variables, namely: (1) the market value of its listed assets (ML); (2) the market value of its unlisted assets (MU); (3) the market value of head office operations (MH) which provide services (and charge fees) to the subsidiary companies; and (4) 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 an Equation (see Eqn 1):

$$MV = ML + MU + MH + MP \quad \text{[Eqn 1]}$$

The model is intuitive and aligns with a sum-of-the-parts valuation approach used to determine an appropriate value for the investment holding companies and provides a model through which we can examine how market participants may determine a market price.

ML should be based on observable market prices and is unlikely to result in a material difference between management and market participants. The market value of its unlisted assets may be subject to slightly different estimates of their market values between management and market participants because of information asymmetry. The market value of head office operations should not result in a material difference between parties. Arguably, MP is the most important determinant of an investment holding company's value because it represents the market's estimate of the value which can be added by the current management team. If investors are pessimistic about the value of the future investment programme, this is likely to result in a persistently large discount on the market value compared to its net asset value (Kantor 2001). In other words, MP becomes the primary source of the discount. This implies that the market is attributing a higher required return on capital allocation projects than management, causing the gap between market prices and intrinsic net asset value to widen. This higher required return would indicate investor scepticism around management's value creation strategies. The market value of its unlisted assets and MH may also contribute to the discount where the unlisted assets in the investment portfolio contribute significantly to intrinsic net asset value or because of significant head office costs. If head office costs are thought of as equivalent to management fees levied in closed-end funds, we can conclude that higher head office costs result in lower returns to shareholders by applying the findings of Gemmill and Thomas (2006). We would expect this to further reduce the market price of the investment holding company.

Kantor (2001) argues 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. The ability to exercise a certain level of shareholder control over the investments is a further justification of the holding company business model. This argument assumes that the holding companies can overcome traditional agency theory difficulties while exercising shareholder control.

Possible reasons for the discount

The structural pricing trend of discounts to intrinsic net asset value affecting investment holding companies can 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 their outstanding stock is less than the market value of their portfolio holdings less short-term liabilities (Cherkes et al. 2008; Dimson & Minio-Kozerski 1999; Thomson 1978). In a systematic review of the research around closed-end funds, Cherkes (2012) highlights possible explanations for the

discounts that are also applicable to South African investment holding companies:

- 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). In particular, the valuation of unlisted assets requires significant estimates from management and accounting rules under IFRS13 which may not align with the strategic intent explaining the rationale for owning a specific unlisted asset (Palea & Maino 2013). Provisions and contingent liabilities are another area where significant judgement is required and the effect of these items has been found to be relevant to the value of listed companies (Lopes & Reis 2019).
- The tax overhang that arises from the realisation of capital gains at a time that is not necessarily optimal for individual investors. This effect can also be explained as investors finding holding companies with large unrealised gains (which would increase Net asset value [NAV]) less attractive as it removes the investor's tax-timing option (Cherkes 2012).
- A trade-off between managerial costs is associated with the holding company structure and the benefits offered by this structure. A large component of the managerial costs is management fees which are often calculated as a percentage of the value of the underlying investments. Management fees have been found to be a source of discounts by Gemmill and Thomas (2006) and Cherkes et al. (2008). A further trade-off exists in that holding companies provide a liquidity service by allowing investors to access otherwise illiquid assets and providing economic exposure to these assets through a single entry point (Cherkes 2012). There is also a link that has been discovered between management fees and the holding company's managers' abilities. The fluctuation in discount or premium is dependent on whether their ability outweighs their management fee. This model finds that as managers outperform, their fee increases by renegotiating and capturing the value and any initial premium is eroded. In the case where managers underperform, the manager can continue earning their initial fee. This implies that any premium to NAV will not be sustainable (Berk & Stanton 2007). These dynamics help explain why investment holding companies in the sample traded at a premium in the past but are now trading at a discount to NAV.

Corporate actions and subsequent share performance

A 'corporate action' is (JSE listing requirements 2004):

> An action taken by an issuer or other entity or third party which affects the holders of securities in terms of entitlements or notifications. (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. These announcements have informational content which is digested by investors and market participants. Under the assumption of semi-strong efficient markets, announcements of corporate actions are signals delivered by the management of the company to the market place about expected or anticipated performances (Ferreira et al. 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 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 et al. 2014; Nkongho & Makina 2020; Smit & Ward 2007; Wimberley & Negash 2004; Youds, Firer & Ward 1993). The findings (summarised in Table 1) suggest that there is a mix of positive and negative abnormal returns associated with the corporate actions that are presented in this article. Additionally, the time periods over which these returns were observed vary. These findings seem to indicate that there is no one-size-fits-all approach that can be adopted by management teams of investment holding companies. By examining a sample of corporate actions executed by management teams that are aware of the market's implied discount applied to their firm's value, the article aims to evaluate if corporate actions do reduce the discount to intrinsic net asset value.

Methods

There is no consensus about which corporate actions create significant positive abnormal returns on the JSE.

TABLE 1: Summary of Johannesburg Securities Exchange event study literature by corporate action.

Corporate action type	Studies cited	Abnormal returns findings
Capitalisation issue	Bhana (1997); Biger and Page (1992); Cross and Firer (1986)	Significant positive abnormal returns noted around the announcement date
Rights or 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 the 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 the announcement date
Unbundling	Blount and 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

TABLE 2: Sample of Johannesburg Securities Exchange-listed investment holding companies.

Entity name (JSE ticker)	Market capitalisation – June 2022 (ZAR millions)
African rainbow capital investments limited (JSE: AIL)	8565
Brait PLC (JSE: BAT)	5399
Brimstone investment corporation limited (JSE: BRN)	281
Epe capital partners limited (JSE: EPE)	1472
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)	2414
Rand merchant investment holdings (JSE: RMIH)‡	42 554
Sabvest capital limited (JSE: SBP)	2907
Zeder investments limited (JSE: ZED)	2793

JSE, Johannesburg Securities Exchange.

†, PSG Group has been delisted from the JSE subsequent to the restructuring of the group, effective from 27 September 2022.

‡, Now known as Outsurance Group Limited, with the name change effective from 07 December 2022.

The objective of this study was to establish the trend of the relationship between intrinsic net asset values and share prices of investment holding companies measured by calculating the discount to intrinsic net asset value and to examine if corporate actions pursued by the investment holding companies have resulted in positive abnormal returns. Given the persistent existence of the discount, share price returns need to exceed market returns in reaction to management's corporate actions (i.e. a positive abnormal return) to meaningfully reduce the discount and create value for financial capital providers. If positive abnormal returns are detected, these returns are the most likely way to reduce the discount, creating value for financial capital providers. Specifically, in this article, we determine: (1) the discount to intrinsic net asset value of a sample of investment holding companies listed on the JSE and (2) whether corporate actions reduce discounts to intrinsic net asset value for those companies.

Research data

The article presents data for the period between January 2003 and June 2022 for 12 JSE-listed investment holding companies (see Table 2). Observations before January 2003 were not available. However, this period still allowed for daily share price observations and a suitable number of corporate actions across the sample period.

Daily share prices for each company were obtained for this period. Corporate actions were identified for each of the companies in the sample. Both share prices and corporate actions were extracted from the IRESS research domain (formerly McGregor BFA). The corporate actions of the initial sample were further refined to a sample of 33 (see Table 3 and Table 4) to exclude the effect of confounding events and improve the validity of the event study methodology employed. The process used to refine the sample is in line with that suggested by McWilliams and Siegel (1997). The process entailed organising each corporate action chronologically for each company in the sample. Each corporate action would only be incorporated in the revised sample if the next corporate action for that specific entity was more than one full trading year later.

TABLE 3: Sample reconciliation.

Sample reconciliation	Number of companies
Starting number of corporate actions in the sample	61
Corporate actions removed from the sample to eliminate the effect of corporate actions as confounding events affecting the long-term abnormal return	29
Final sample of corporate actions	33

TABLE 4: Revised list of corporate actions (n = 33).

Company name	Event date	Event type
African rainbow capital investments limited	15 September 2020	Rights or claw back offer
Brait PLC	02 March 2011	Rights or claw back offer
Brait PLC	30 June 2017	Scrip dividend
Brait PLC	22 January 2020	Rights or claw back offer
Brimstone investment corporation limited	21 April 2005	Rights or claw back offer
Brimstone investment corporation limited	11 March 2015	Share buyback
Brimstone investment corporation limited	15 June 2018	Share buyback
Brimstone investment corporation limited	08 March 2010	Unbundling
Brimstone investment corporation limited	11 March 2020	Capitalisation issue
Epe capital partners limited	27 November 2019	Rights or claw back offer
Hosken consolidated investments limited	24 March 2014	Unbundling
Hosken consolidated investments limited	31 August 2006	Share buyback
Hosken consolidated investments limited	29 November 2016	Share buyback
Hosken consolidated investments limited	12 June 2018	Share buyback
Hosken consolidated investments limited	07 February 2020	Share buyback
Naspers limited	12 May 2021	Voluntary share exchange
PSG group limited	15 January 2015	Share buyback
PSG group limited	16 July 2008	Special dividend
PSG group limited	15 August 2006	Rights or claw back offer
PSG group limited	04 September 2009	Unbundling
PSG group limited	23 April 2020	Unbundling
Remgro limited	08 August 2008	Unbundling
Remgro limited	21 June 2010	Unbundling
Remgro limited	31 May 2012	Unbundling
Remgro limited	14 April 2020	Unbundling
Remgro limited	15 July 2016	Rights or claw back offer
Remgro limited	22 June 2006	Special dividend
Rand merchant bank holdings	15 April 2020	Unbundling
Rand merchant bank holdings	15 September 2011	Special dividend
Rand merchant bank holdings	09 April 2021	Special dividend
Rand merchant investment holdings	11 September 2018	Scrip dividend
Sabvest capital limited	19 September 2017	Scrip dividend
Zeder investments limited	23 March 2009	Rights or claw back offer

Discount estimation and event study

The daily discount for each company in the sample was calculated as:

$$\frac{\text{Share price}}{\text{Intrinsic net asset value per share}} - 1 \quad \text{[Eqn 2]}$$

Disclosed intrinsic net asset value was the preferred measure rather than net asset value to avoid the accounting problems discussed earlier that affect the measurement of assets (Cherkes 2012). The intrinsic net asset value for each company in the sample was obtained from each company's presented results and was updated at each company's semi-annual reporting date. The discount was calculated daily. 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 are reported.

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 in this section. 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.

Index model

This study made use of three separate indices as proxies for the market rate of return for the index model. The Financial times stock exchange (FTSE)/JSE All Share index was chosen as the index which best represents an overall market return. 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 as Equations 3 and 4 (Van Rensburg 2002):

$$AR_{it} = R_{it} - R_{ALSIt/\,FINDIt\,/\,RESIt} \quad \text{[Eqn 3]}$$

$$Rit = \frac{P_{it} - P_{i(t-1)}}{P_{it}} \quad \text{[Eqn 4]}$$

Average return model

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

$$AR_{it} = R_{it} - \overline{R}_i \quad \text{[Eqn 5]}$$

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

Market model

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 Sartorious (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).

Equation 6 illustrates the market model as:

$$R_{it} = \propto_i + \beta_i (R_{mt}) + \varepsilon_{it} \quad \text{[Eqn 6]}$$

where R_{it} is the return on the company i in period t, $\propto_i$ 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 and Sartorious 2009). The estimation period utilised is 2 years prior to the event consistent with Nichols et al. (2014). The period is calculated considering a 10-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 the event to 11 days prior to the event (–510, –11).

The two-factor asset pricing model can be derived from the Equation 7's formula:

$$R_{it} - R_{ft} = \propto_f + \beta_{findi} (R_{findit} - R_{ft}) + \beta_{resi} (R_{resit} - R_{ft}) + \varepsilon_{ft} \quad \text{[Eqn 7]}$$

where R_{it} is the return on the 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_{findit} and β_{resit} are the risk parameters to be estimated and 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 APT model for the JSE. He further finds that this APT model can be used in preference to a market-based model using the All Share Index (ALSI) in the South African environment.

Calculation of cumulative average abnormal returns

The abnormal returns were calculated daily for each corporate action for the estimation period (being 510 days prior to the event up to 11 days prior to the event) and for a post-event period of a maximum of 4 years.

The cumulative average abnormal return (CAAR) was calculated as in Equation 8 for the pre-announcement date period and post-announcement date period:

$$CAAR_T = \Sigma_{t=1}^{T} \frac{1}{N} \Sigma_i AR_i \quad \text{[Eqn 8]}$$

where N is the number of observations and T is the number of days post-announcement date being examined. The CAARs were calculated for the anticipation window (being 10 days prior to the announcement up to 1 day prior to the announcement of each corporate action in the sample),

TABLE 5: 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

the event day and daily for up to 10 days post the event, then up to 6 months post the event and then at an interval of 1, 2, 3 and 4 years post the announcement. In cases where fewer than 4 years have 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.

Cumulative average abnormal returns have been tested for significance across various measurement periods. These are indicated in Table 5.

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 & McWilliams 2000; McWilliams & Siegel 1997) and is relevant when the underlying data display 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).

Results

Discounts to intrinsic net asset value

The summary statistics of the discounts to intrinsic net asset value for all the holding companies in the sample are presented in Table 6.

Negative amounts included in Table 6 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. It should 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.

Of the sample investigated in this study, Brimstone, RMIH,[2] RMH, PSG and Remgro provide disclosure or 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 shareholders.[3] 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 Cherkes (2012) as a potential cause for a discount to the intrinsic net asset value.

To further illustrate the trend in the discounts, rolling averages were calculated for each company in the sample and are presented in Table 7. The findings in Table 7 present a comprehensive summary of discounts to intrinsic net asset value for the companies in the sample stretching as far back as 19 years.

Abnormal returns associated with corporate actions

Table 8 reports results from the non-parametric tests (Shapiro Wilks and Wilcoxon signed-rank tests) conducted on the abnormal returns during the measurement periods. For measurement period R1, no statistically significant returns were noted. This suggests that no anticipatory trading took place before the announcement of the corporate action.

The returns noted for measurement period R2, the event day, indicate that there were no observable abnormal returns on event day across the corporate actions in the sample.

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. The trend appears to continue after the event date into measurement period R4 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.

2.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.

3.This disclosure goes beyond that provided by incorporating deferred taxes because of all the measurement nuances that exist within IAS12.

TABLE 6: Summary statistics of discounts to intrinsic net asset value.

Descriptive statistics	AIL (%)	BAT (%)	BRT (%)	EPE (%)	HCI (%)	NPN (%)†	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
SD	17.5	62.6	48.1	14.0	103.7	76.0	73.9	12.4	47.0	14.1	28.9	18.2

SD, standard deviation.

†, 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.

TABLE 7: Average rolling discounts from 30 June 2022.

Rolling discount length	AIL (%)†	BAT (%)	BRT (%)‡	EPE (%)§	HCI (%)	NPN (%)	PSG (%)	REM (%)	RMBH (%)	RMIH (%)¶	SBV (%)††	ZED (%)‡‡	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

†, AIL was listed on 07 September 2017; therefore, the maximum rolling discount that can be calculated is up to 5 years.

‡, BRT: Brimstone has a dual share structure. The study was conducted on the ordinary shares rather than 'N' ordinary shares. The ordinary shares carry 100 voting rights per share and the share price movement has a correlation coefficient of 0.97 over the sample period.

§, EPE was listed on 05 August 2016; therefore, the maximum rolling discount that can be calculated is up to 6 years.

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

††, 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.

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

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) that the corporate actions adopted are not sufficient to overcome a high degree of market scepticism reflected in the large discount.

To determine if firm size or the type of corporate action adopted influences the abnormal return, a non-parametric ANCOVA analysis was 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). Untabulated results confirm that there is no statistically significant relationship between either firm size or the corporate action chosen and abnormal returns ($p < 5\%$). This indicates that, even though there were significant negative abnormal returns over this measurement period, neither the size of the investment holding company nor the type of corporate action demonstrates a relationship to the abnormal return.

Conclusion

This article attempts to quantify the extent to which JSE-listed investment holding companies trade at a discount to intrinsic net asset value and whether corporate actions pursued by management can be effective in reducing the discount and creating shareholder wealth.

The first part of the analysis indicated that all investment holding companies in the sample trade at a discount and that

TABLE 8: Measure of abnormal return for different periods surrounding the corporate action.

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

SD, standard deviation; ALSI, All share index; RESI, the return on the JSE Resources index; FINDI, the return on the JSE Financial-Industrial index.

*, indicates statistical significance at the 10% level; **, indicates statistical significance at the 5% level.

there has been a trend of the discount increasing over time. This is widely acknowledged by investment professionals and the financial press but has not been subject to academic research since Kantor (2001). The existence of a discount is in line with the theory put forward by Kantor (2001), indicating 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 programmes.

The second part of the analysis indicates that corporate actions are not an effective way to reduce the discount. In fact, 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. 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 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.

Further research could incorporate other types of companies to investigate the impact of corporate actions over a broader number of listed entities as well as examine if similar statistically significant findings arise within a 6-month period for other entities. 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 including addressing how information asymmetry may be relevant to the discount.

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 for closed-end funds provided by Cherkes (2012) that were adapted for a view of investment holding companies and could investigate them in a South African context. The sample period included the global pandemic years; further research can be done to establish the effects of corporate actions for investment holding companies after the pandemic period.

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 in a way that will be appreciated by the market (Kantor 2001). Therefore, the action that the market will react most favourably towards investment holding companies, and reward through higher share prices is a management track record of pursuing investment projects that provide returns above the cost of capital (Barr & Kantor 2000).

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

All authors, N.S., A.S. and W.M., contributed equally to the article.

Ethical considerations

An application for full ethical approval was made to the Human Research Ethics Committee at the University of the Witwatersrand, Johannesburg and ethics consent was received on 29 November 2021. The ethics approval number is WSOA-2021-11-12W.

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Data availability

Raw share price data were obtained from IRess Expert. Derived data that supported the findings of this study are available from the corresponding author, N.S., on reasonable request.

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