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The impact of earnout structure on bidder firm share price in mergers and acquisitions on the JSE

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Abstract

Earnout as a method of payment in an M&A allows for a number of advantages over the traditional choices of exchange medium, such as cash and stock. This study seeks to validate some of the conclusions drawn by existing literature, in the South African context and add value by investigating two specific attributes, namely the size of the earnout as well as the period over which an earnout may be evaluated; and their impact on the acquirer stock return. The investigation is conducted based on the analysis of event period abnormal gains for the acquirer over the event periods of ±10 days; ±5 days and ±1 day around the announcement of the merger or acquisition.

Over the period 2003 – 2009, the data lends significant support to the view that earnout ratio larger than 51% leads to higher abnormal gains than those less than 51% of the total transaction value.

Keywords

1. Mergers
2. Acquisitions
3. Earnout
4. Information Asymmetry
5. Human capital

Declaration

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

Virat Chadha

10th/November/2010

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List of Acronyms

AAR	Average Abnormal Returns
ACAR	Average Cumulative Abnormal Returns
ALSI	All Share Index
CAR	Cumulative Abnormal Returns
E&Y	Ernst and Young
GIBS	Gordon Institute of Business Science
JSE	Johannesburg Securities Exchange
LCL	Lower Confidence Limit
M&A	Merger and Acquisition
MBA	Masters of Business Administration
RMB	Rand Merchant Bank
SENS	Stock Exchange News Service
UCL	Upper Confidence Limit

Chapter 1: Introduction to the Research Problem

1.1 Research Title

The impact of earnout structure on bidder firm share price in mergers and acquisitions on the JSE

1.2 Research Problem

The declining trend in the mergers and acquisitions (M&A) due to the reduction in overall market activity in 2008/09 has been highlighted by the recent survey by Ernst and Young (E&Y) which states that "Deal activity tends to rise as markets do, as strong markets require confidence. That was something in short supply in 2009, particularly in South Africa. Lower market values ought to have created great M&A opportunities, but restrictive capital markets impacted credit availability." (Ernst & Young, 2010, p. 6) As liquidity in the market recovers, businesses will be positioned for expansion, consolidation and diversification. We can therefore, expect to see a growth in M&A activity with a change in strategic trends and positioning, making this topic both current and relevant to the South African business.

Earnouts allow a merger and acquisition (M&A) bid to be structured in such a way as to provide a safety net against asymmetric information (Kohers & Ang, 2000, p. 448). This method of payment also allows for a mitigation of risk of re-negotiation and therefore attends to the cost minimisation need, which can be implicit in long overdrawn negotiations. Earnouts limit the exposure of the bidder in case there is uncertainty about the target, by limiting the payout to the target. This is done by making a large portion of the payment contingent on post merger milestones and

performance gains. Earnouts also have the added benefit of facilitating the retention of target management, (owner managers rather than general operational managers, who may be retained by means of long term contracts) by structuring the earnout portion as bonuses for their performance (Kohers & Ang, 2000, p. 448).

Extensive studies have been done on the medium of exchange covering the stock and cash components of the merger bid. Bid structuring in form of cash and stock, and its relationship to an extensive list of factors has been covered by existing literature. However, research on contingent payments, by means of an earnout, is fairly limited. This is also true in the South African context. South African business' recent past has been consumed with mergers motivated by the transformational policies under the BEE regulations. Earnouts are an important means of controlling the cost of an acquisition for companies seeking to gain a foothold in Africa or contributing to the transformational needs in the African region. This study provides an academic opportunity to review how the use of earnouts has been perceived by South African market investors and businesses, while validating certain findings of the foundation study of Kohers and Ang (2000), in the South African context.

1.3 Key variables of this study

The data for this study will be structured to take account of as much earnout information as is accessible for necessary investigation. This is to allow in-depth analysis and clearer understanding of the data. Not all the variables or data may be entirely relevant to the hypotheses, but since the data gathering exercise is based on a preliminary design, this can be expected. This study will focus on the changes in the following key variables:

Table 1: Key Variables of the study

Variable Full Name	Type	Possible Values
Category	Categorical	Acquisition/Earnout/ Share Buyback/Disposal/None
Announcement Date	Long Date	N/A
Start Date	Long Date	N/A
End Date	Long Date	N/A
Portfolio Eligibility	Categorical	Control/Earnout
Total Transaction Value	Numerical Ratio	Infinite
Earnout Value	Numerical Ratio	Infinite
Earnout	Numerical Percent	Percentage 100% max
Earnout Period	Numerical Fixed	Infinite
Firm Share Price	Numerical Ratio	Infinite
Firm Alpha Value	Numerical Ratio	Infinite
Firm Beta Value	Numerical Ratio	Infinite
All Share Index Value	Numerical Ratio	Infinite
Earnout_CAR10	Numerical Ratio	Infinite
Earnout_CAR5	Numerical Ratio	Infinite
Earnout_CAR1	Numerical Ratio	Infinite
Earnout_ACAR10	Numerical Ratio	Infinite
Earnout_ACAR5	Numerical Ratio	Infinite
Earnout_ACAR1	Numerical Ratio	Infinite
Earnout_AAR14	Numerical Ratio	Infinite
Control_CAR10	Numerical Ratio	Infinite
Control_CAR5	Numerical Ratio	Infinite
Control_CAR1	Numerical Ratio	Infinite
Control_ACAR10	Numerical Ratio	Infinite
Control_ACAR5	Numerical Ratio	Infinite
Control_ACAR1	Numerical Ratio	Infinite
Control_AAR14	Numerical Ratio	Infinite

1.4 Research Aim

The research literature on earnouts is fairly limited. Even though extensive research can be found to discuss the structuring of the exchange medium in M&A, only a limited thread of research is available on use and application of earnouts. The purpose of this study is to determine whether earnouts are extensively applied in South African context and if their application does have the intended benefits for the bidder.

Furthermore, it is the core purpose of this study to determine if the investors on the JSE take earnout structure into account when making investment decisions. Some of the questions that may be answered by this study are as follows:

1. Is an earnout usually applied to comparatively smaller transactions?
2. Does the bidder in the transaction realise any abnormal gains from the inclusion of this contingent payment?
3. Does the ratio of an earnout with respect to the total transaction value, have any impact on the investor decision?
4. Does the earnout period have a significant impact on the investor decision?

These questions are investigated only from the perspective of the bidder in an M&A transaction, on the Johannesburg Securities Exchange South Africa ("JSE"). The simple reason for this limit to the study is that earnouts are known to be applied in relatively small acquisitions when compared to the size of the acquirer. It is likely that the acquired entities or assets may not be publicly listed, making it difficult to get the share price and risk coefficient information for the target.

Also worth noting is that the well understood applications of an earnout in an M&A transaction are twofold. Firstly, it allows the bidder to mitigate the risk of information asymmetry, especially relevant when acquiring private or cross industrial targets. Secondly, it is a mechanism to incentivise the retention of valuable human capital in the acquired entity. This is directed more towards the owner manager scenario than the general operational managers but due to this reason would normally be applied in the acquisition of smaller private enterprises.

M&A data over the years 2003 – 2009 will be utilised for the purposes of this research. Only two published peer reviewed journal papers were uncovered that dealt directly with the topic of earnouts and could be applied to this study.

Chapter 2: Relevant Theory Base

2.1 The reasons for M&A

According to Kummer and Steger (2008) M&A take place as a 'Quest for growth', when there are no other organic options for growth available (Kummer & Steger, 2008, p. 45). They cite Slywotzky & Wise (2002) who also found similarly that 'external drivers', such as the need to perform financially, felt by the listed companies have had a significant impact on the motivation behind mergers, specifically in the 1990s (Slywotzky & Wise, 2002, p. 74). Fauli-Oller (2000) cites Dutz (1989) to build an argument for the 'Bandwagon effect' and 'Capacity Constraints' in the industry as additional forces behind this phenomenon (Fauli-Oller, 2000, p. 190). Kummer and Steger also give emphasis to the 'Testimonial Effect' citing Stanovich (1998) (Kummer & Steger, 2008, p. 46). Others such as Clarke and Christos have suggested that the availability of finance options in the market rather than the excess deposits of firms themselves may be yet another motivation why finance sector and firms may push for more and more mergers (Clarke & Christos, 1994, p. 384). These suggestions or motivations behind M&A also complement the theory of merger waves. The main driver of merger waves is seen to be some technological change that leads to a change in the business environment.

2.2 Problems with M&A

Andrade, Mitchell and Stafford (2001) among others (Leeth & Borg (2000); Agrawal, Jaffe, & Gershon (1992); Mushidzhi & Ward (2004)), find that despite all these reasons, the benefits of a merger like transaction seem to accrue more to the target than to the bidder. In their article, Andrade *et al.* (2001) claim that, "Target firm shareholders are

clearly winners in the merger transactions". They go on further to elaborate "It is difficult to claim that the acquiring firm shareholders are losers in merger transactions, but they clearly are not big winners like the target firm shareholders" (Andrade, Mitchell., & Stafford., 2001, pp. 110-111).

One of the most important concerns during the bid structuring considerations is the asymmetric information problem. Although according to Betton, Eckbo and Thorburn (2008, p. 100) the research may be incomplete, there are others who believe the lack of complete information at bid time plays a major role in the structuring of the bid. According to Myers & Majluf (1984) (in context of asymmetric information problem), "Management is assumed to know more about the firm's value than potential investors." They state that in a scenario of a bid offer composed only of cash, "investors, aware of their relative ignorance, will reason that a decision not to issue shares signals 'good news.' The news conveyed by an [securities] issue is bad or at least less good. This affects the price investors are willing to pay for the issue, which in turn, affects the issue-investment decision." (Myers & Majluf, 1984, p. 187). This asymmetric information problem becomes very relevant to the M&A bid structuring, since very often, neither the bidder, nor the target has complete information on the other. Therefore, the 'quality' of the bidder is judged from the bid structure that is proposed, and the gaps in information may or may not be filled as the bid is negotiated and/or merger approaches completion.

"The average length of the period between bid announcement and resolution is approximately half a year, during which time regulatory and shareholder approvals must be obtained." (Officer, 2004, p. 2272). Similar time durations are accepted by

other researchers such as Houston and Ryngaert in the context of banking and finance merger negotiations, "Since regulatory delays in banking mergers cause the average time to completion of a proposed merger to exceed seven months" (Houston & Ryngaert, 1997, p. 198). During that period, the directors on either side of the transaction have the right and/or the governance duty to demand renegotiation of the terms if there is a drastic change in value foreseen by the transaction. The bidding process is also impacted by a number of other factors such as 'control contest' as explained by Betton (2008) where the possibility of a competitive bid may extend the negotiations and renegotiations period, raising the related costs (Betton, Eckbo, & Thorburn, 2008, p. 9). These costs may include negotiation, legal, consultative costs as well as the time and effort of management invested in this process. Competition may also make the bid more expensive overall with the extended negotiation period as well as competitive bidding.

There are therefore a number of risks associated with the delay between the bidding and the completion of a merger. Some of which, as mentioned above, are exacerbated by the great deal of uncertainty during the bid period and before the completion of the merger.

2.3 Choice of Bid Structure

In its simplest form, a bid may be composed of either all cash, or all stock, each of which has consequence on both the perception of the bid by the target, as well as the investor reaction to the bid. In Hensen's (1987) view of the asymmetric information hypothesis, bidders have complete information on its own premerger values, and depending on the valuation of its own shares, will choose to offer cash in situations

where its own shares are undervalued (Hansen, 1987). This agrees with the findings of Myers & Majluf (1984). If competitive bidding is expected by the initiator of the transaction, the result is the same except this time, the use and the size of the bid may also demonstrate the high value of the target (Fishman, 1989). Fishman predicts a target share price increase if the offer is accepted.

If there is asymmetric information about the target, then a cash bid increases the risk for the bidder, as the values and/or synergies expected from the merger or acquisition may not be realised if the information about the target is inaccurate. In such a situation, it is better to structure the bid in the form of stock in the merged entity, which then serves as a contingent form of the same bid. Use of stock allows the bidder to share the risks of the venture with the management of the target, thereby hedging the bet against the incomplete information problem. It has been noted by Hansen that a bidder may rely on the use of stock as a bid only in a situation where its stock is overvalued (Hansen, 1987, pp. 76-77).

Another consequence of bid structure was noted by Baron (1983) which centres on management's need for corporate control in the merged entity. Some stakeholders may not be willing to give up a power hold in the pre merger scenario, if the terms of the bid leave them in a position of less power and/or control in the merged entity. Baron highlights that it is entirely possible that management in such a case may see a securities offer of lower value than it is really worth. This agency effect can therefore lead to inaccurate recommendations from management to the shareholders. Cash offer in such a situation would allow shareholders to make an efficient decision without having to rely on the management's judgement. Therefore it is more likely

that management would choose to reject a securities offer, rather than a cash offer (Baron, 1983, p. 331). Contrary to the view above, Travlos (1987) noted in his study of both mergers and tenders that the chances of success are lower if the medium of exchange is cash (Travlos, 1987, p. 954). Baron's study focused only on mergers.

There are also other considerations such as the tax and regulatory issues since stock offer has the advantage of postponing the consequence of corporate or capital gains taxes, while cash requires that such liabilities be settled immediately. This has the consequence of increasing the cash cost of acquisition as the target recipients want to be compensated for such a disadvantage (Davidson & Chen, 1997, p. 465).

On the topic of abnormal returns associated with bid structure, Mushidzhi and Ward (2004) have noted that "Returns earned by the shareholders of target acquired using cash are significantly higher than those earned by the shareholders of share-acquired targets." They also note that these results are the same as those uncovered in previous empirical studies such as Davidson and Chen (1997) and Mushidzhi & Ward (2004).

Outside of these consequences, the decision of cash versus stock is also dependent on whether the bidder has access to cash. This can be surplus cash, retained profits and such. Financed debt may be cheaper and keeps management disciplined and motivates efficient decision making in relation to the acquisition, what Jensen referred to as his "control hypothesis" to encompass all the benefits of debt financing (Jensen, 1986, p. 324). Cash may also be raised by selling equity, which at the end of the day has the same consequences as bidding with stock (Myers & Majluf, 1984, p. 211)

2.4 Theory behind 'Conditional Stock offer'

Myers and Majluf (1984) dealt with the concept of asymmetric information and explored how it would affect the bid structuring decision in terms of cash or stock. Travlos (1987) further built on this concept and explored how the bid structure would impact the investor reaction on bidder's stock.

Hansen (1987) delved into the work of Samuelson (1984) on how asymmetric information may not be the only factor affecting the choice between cash or stock, but this decision may also be impacted by other factors such as tax consequences of the bid structure and corporate control. These factors therefore make the bid structuring into a more complex problem. Hansen (1987) also explored how a bid can become an important tool for the target to determine the quality of the bidder and the true value of the acquisition to the bidder. This helps reduce the information gap between the bidder and the target. Hansen's model suggested the relationship between the relative sizes of the bidder and target, and the probability of a stock offering. Fishman (1989) added to this literature by suggesting a more realistic model involving competing bids and their impact on the negotiation process and the initial bid structure.

Brown & Ryngaert (1991) went on further to develop a model based on the findings of Myers and Majluf (1984), Hansen (1987) and Fishman (1989) to state that even though a cash offer can result in a good post announcement gains on bidder's stock, it leads to overpayments due to tax implications. Therefore a stock offer is still a good possibility because even though such a bid may not lead to as large gains on the bidder's stock, the negative effect risk would be shared by the target. Even though this

is a good reasoning, further investigative work needs to be done to uncover further research on this topic. The reasoning by Brown & Ryngaert (1991) is challenged by Kohers & Ang (2000) in their research on earnouts, where they state that despite all the attempts to mitigate these factors, the risk to the bidder may still be disproportionate depending on the size of the acquisition. In cases where the size of the acquisition is small compared to the acquirer, a drop in share value of the combined entity may be felt more by the acquiring shareholders than the target shareholders as the latter have already have been compensated in the form of the transaction premium.

Houston & Ryngaert (1997) further tested the validity of the work by Jensen (1986) who dealt with the 'agency effect' (Jensen, 1986, p. 324) and discussed how "Firms issuing equity rather than debt may forego the discipline that debt imposes on managers" (Houston & Ryngaert, 1997, p. 197). This analysis was done in light of the use of conditional stock offers which allow "bidder to offer the target firm stock in the merged entity and provide the target some degree of protection from post agreement revelations of adverse changes in the bidder's true value" (Houston & Ryngaert, 1997, p. 197). Houston & Ryngaert (1997) taking the 'adverse selection' of equity issuance into account, suggested that there may be other reasons for this such as the ones related to debt and discipline outlined in the work by Jensen (1986). Such firms would also end up losing out on the tax advantages on debt financing. What they discovered from their research was that firms were able to utilise conditional stock offer to circumvent a number of these hurdles attributed to 'Fixed Stock Offers'.

Houston & Ryngaert (1997) conducted their study in the banking sector and demonstrated that the stock bids were accompanied by varying degrees of protection against adverse movement of the bidder's stock price. The risk of overpayment was mitigated by deciding on the quantity of shares to be offered to the target only much closer to the completion date of the merger. This reduced the adverse effects of the stock bid announcement. Alternatively, it was also possible to agree to a dollar amount of this share transaction, i.e. a 'Floating Stock Offer'. Such agreements, converted the share transaction to a cash transaction for all intends and purposes bypassing the tax issues that would surely be of concern around a cash only transaction. In their research Houston & Ryngaert (1997) highlighted how the regulatory environment in the United States was more agreeable to a stock transfer transaction than a cash transaction, so such a bid also facilitated a smooth agreement of the regulatory bodies to the merger. Such a bid structure also had the advantage of sending a clear signal to the target of the high quality of the bidder, thereby reducing the uncertainty about the bidder (but could be stated only in the case of regulated mergers) as per Fuller (2003, pp. 130-131).

2.5 Use of Earnout in a M&A bid

The problem of asymmetric information can be further simplified into a problem with valuation of the bid target. Overpayment reduces the profitability of the transaction, while underpayment may result in renegotiations and increased costs in the bidding process. Of the few studies that were found on the topic of earnouts, only two were found to be applicable to the research being pursued here.

Kohers & Ang (2000) study the need for earnouts in two respects. One of their hypotheses relates the problem of asymmetric information and thereby to misvaluation problem mentioned above. They find that the use of earnouts had a significant positive affect on period abnormal returns for the acquirer. This can be interpreted to mean that the investors in the acquirer firm see the inclusion of an earnout as a positive development. As well as that, target also gained value by the use of earnouts since the premiums offered to the target shareholders in an earnout exceeded those paid in stock or cash offers. Similar trend could be observed for bidders abnormal returns even when there existed asymmetric information for both the bidder and the target; and the target was a private firm. Kohers & Ang (2000) elaborate that the risk in case of small acquisitions is disproportionately high for the bidder as even in the share ownership of the merged entity, the target may only form a small percentage of the overall ownership. The earnout mechanism therefore splits the value of the bid into two parts which are an upfront payment component to the value that can be agreed upon between the buyer and the seller, and the second component contingent on future earnings or performance of the target. As a consequence of this split, the buyer/bidder is able to transfer the risk of overpayment to the target as it only pays for what can be justified to its own shareholders, while the premium of the overall transaction is transferred to the earnout component of the transaction (Kohers & Ang, 2000).

Kohers & Ang found that what may be perceived as two main reasons to utilise an earnout, information asymmetry and human capital retention, may not be exclusive objectives. It is very possible that the earnout allows the mitigation of risk of

information asymmetry not only by allowing the postponement of the part of the transaction value, but also by the retention of human capital to further address the same risk (Kohers & Ang, 2000, p. 448).

Earnouts can therefore be used as a mechanism to retain human capital that may be essential to the merger success. Since the premium of the payment is transferred to a later date contingent on further performance and revenue production, this is often targeted at the owner manager of the target firm, so as to keep the old management incentivised to continue operations with the new entity. Kohers and Ang (2000) found that this often resulted in the target companies being run as fairly independent subsidiaries, to restrain the control on the target management, which had already been producing attractive results, and also to measure their future performance in light of the earnout agreement. Kohers & Ang (2000) also note that the widespread adoption of this contingency mechanism is hindered by the high costs of negotiation, implementation and post merger monitoring of such a contract.

Datar, Frankel, & Wolfson (2001) further substantiate many of the claims by Kohers & Ang (2000). They also added the knowledge on the kind of acquisitions involve the use of earnouts. They found that earnouts are most commonly used in acquisitions where the target is small compared to the bidder; where the target may lie in an unrelated industry from the bidder and where the target asymmetric information is high.

Chapter 3: Research Propositions and Hypotheses

3.1 Are Earnouts used in relatively smaller value M&A transactions on the JSE

Hypothesis 1.

Bids with earnout contingent offer, are more likely to be acquisitions of relatively smaller enterprises and therefore transaction value of such transactions is significantly lower than the transaction values of bids where earnout contingent is not used.

The null hypothesis states that there is no significant difference between the mean of earnout transactions and the mean of transactions not using earnout contingent. The alternative hypothesis states that there is a significant difference between the mean of earnout transactions and the mean of transactions not using an earnout contingent.

$$H_0: \mu_E <> \mu_{NE}$$

$$H_A: \mu_E < \mu_{NE}$$

where:

μ_E is the mean of total value of transactions utilising an earnout contingent

μ_{NE} is the mean of total value of transactions not utilising an earnout contingent

3.2 Impact of Earnout on the bidder share price on the JSE

Hypothesis 2.

The null hypothesis states that the ACAR for the shareholders of bidding companies that include earnout contingent offers are not significantly different from zero. The alternative hypothesis states that the ACAR for the shareholders of bidding companies that include earnout contingent offers are significantly different from zero.

$$H_0: \mu_{ACAR_{BE}} = 0$$

$$H_A: \mu_{ACAR_{BE}} \neq 0$$

where:

$\mu_{ACAR_{BE}}$ is the mean of ACAR of transactions utilising an earnout contingent

Hypothesis 3.

The null hypothesis states that the CAR for the shareholders of bidding companies that include earnout contingent offers are not significantly different from zero. The alternative hypothesis states that the CAR for the shareholders of bidding companies that include earnout contingent offers are significantly different from zero.

$$H_0: \mu_{CAR_{BE}} = 0$$

$$H_A: \mu_{CAR_{BE}} \neq 0$$

where:

$\mu_{CAR_{BE}}$ is the mean of CAR of transactions utilising an earnout contingent

Hypothesis 4.

The null hypothesis states that the AAR for the shareholders of bidding companies that include earnout contingent offers are not significantly different from zero. The alternative hypothesis states that the AAR for the shareholders of bidding companies that include earnout contingent offers are significantly different from zero.

$$H_0: \mu_{AAR_{BE}} = 0$$

$$H_A: \mu_{AAR_{BE}} \neq 0$$

where:

$\mu_{AAR_{BE}}$ is the mean of AAR of transactions utilising an earnout contingent

Hypothesis 5.

The null hypothesis states that there is no significant difference between the ACAR for the shareholders of bidding companies that include earnout contingent offers and ACAR for the shareholders of bidders that have not used an earnout contingent. The alternative hypothesis states that there is a significant difference between the ACAR for the shareholders of bidding companies that include earnout contingent offers and ACAR for the shareholders of bidders that have not used an earnout contingent.

$$H_0: \mu_{ACAR_{BE}} = \mu_{ACAR_B}$$

$$H_A: \mu_{ACAR_{BE}} \neq \mu_{ACAR_B}$$

where:

$\mu_{ACAR_{BE}}$ is the mean of ACAR of transactions utilising an earnout contingent

μ_{ACAR_B} is the mean of ACAR of transactions not utilising an earnout contingent

Hypothesis 6.

The null hypothesis states that there is no significant difference between the CAR for the shareholders of bidding companies that include earnout contingent offers and CAR for the shareholders of bidders that have not used an earnout contingent. The alternative hypothesis states that there is a significant difference between the CAR for the shareholders of bidding companies that include earnout contingent offers and CAR for the shareholders of bidders that have not used an earnout contingent.

$$H_0: \mu_{CAR_{BE}} = \mu_{CAR_B}$$

$$H_A: \mu_{CAR_{BE}} \neq \mu_{CAR_B}$$

where:

$\mu_{CAR_{BE}}$ is the mean of CAR of transactions utilising an earnout contingent

μ_{CAR_B} is the mean of CAR of transactions not utilising an earnout contingent

Hypothesis 7.

The null hypothesis states that there is no significant difference between the AAR for the shareholders of bidding companies that include earnout contingent offers and AAR for the shareholders of bidders that have not used an earnout contingent. The alternative hypothesis states that there is a significant difference between the AAR for

the shareholders of bidding companies that include earnout contingent offers and AAR for the shareholders of bidders that have not used an earnout contingent.

$$H_0: \mu_{AAR_{BE}} = \mu_{AAR_B}$$

$$H_A: \mu_{AAR_{BE}} \neq \mu_{AAR_B}$$

where:

$\mu_{AAR_{BE}}$ is the mean of AAR of transactions utilising an earnout contingent

μ_{AAR_B} is the mean of AAR of transactions not utilising an earnout contingent

3.3 Impact of Earnout structure on bidder returns on the JSE

Hypothesis 8.

a. Are ACAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically different from the ACAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?

The null hypothesis states that the ACAR returns of bidders with earnout portion less than 51% of total transaction value are not statistically different from the ACAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value. The null hypothesis states that the ACAR returns of bidders with earnout portion less than 51% of total transaction value are statistically different from the ACAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value.

$$H_0: ACAR_{LT51} = ACAR_{GT51}$$

$$H_A: ACAR_{LT51} \neq ACAR_{GT51}$$

b. ***Are ACAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically smaller than the ACAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?***

The null hypothesis states that the ACAR returns of bidders with earnout portion less than 51% of total transaction value are statistically larger than or equal to the ACAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value. The null hypothesis states that the ACAR returns of bidders with earnout portion less than 51% of total transaction value are statistically smaller than the ACAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value.

$$H_0: ACAR_{LT51} \geq ACAR_{GT51}$$

$$H_A: ACAR_{LT51} < ACAR_{GT51}$$

c. ***Are ACAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically larger than the ACAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?***

The null hypothesis states that the ACAR returns of bidders with earnout portion less than 51% of total transaction value are statistically smaller than or equal to the ACAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value. The null hypothesis states that the ACAR returns of bidders with earnout portion less than 51% of total transaction value are statistically larger than the ACAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value.

$$H_0: ACAR_{LT51} \leq ACAR_{GT51}$$

$$H_A: ACAR_{LT51} > ACAR_{GT51}$$

where:

$ACAR_{GT51}$ is the Average Cumulative Abnormal Returns for the bidding company where earnout value greater than or equal to 51% of the total transaction have been used

$ACAR_{LT51}$ is the Average Cumulative Abnormal Returns for the bidding company where earnout value less than 51% of the total transaction have been used

d. Are CAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically different from the CAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?

The null hypothesis states that the CAR returns of bidders with earnout portion less than 51% of total transaction value are not statistically different from the CAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value. The null hypothesis states that the CAR returns of bidders with earnout portion less than 51% of total transaction value are statistically different from the CAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value.

$$H_0: CAR_{LT51} = CAR_{GT51}$$

$$H_A: CAR_{LT51} \neq CAR_{GT51}$$

e. Are CAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically smaller than the CAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?

The null hypothesis states that the CAR returns of bidders with earnout portion less than 51% of total transaction value are statistically larger than or equal to the CAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value. The null hypothesis states that the CAR returns of bidders with earnout portion less than 51% of total transaction value are statistically smaller than the CAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value.

$$H_0: CAR_{LT51} \geq CAR_{GT51}$$

$$H_A: CAR_{LT51} < CAR_{GT51}$$

f. Are CAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically larger than the CAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?

The null hypothesis states that the CAR returns of bidders with earnout portion less than 51% of total transaction value are statistically smaller than or equal to the CAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value. The null hypothesis states that the CAR returns of bidders with earnout portion less than 51% of total transaction value are statistically larger than the CAR returns for a bidder with earnout portion more than or equal to 51% of total transaction value.

$$H_0: CAR_{LT51} \leq CAR_{GT51}$$

$$H_A: CAR_{LT51} > CAR_{GT51}$$

where:

CAR_{GT51} is the Cumulative Abnormal Returns for the bidding company where earnout value greater than or equal to 51% of the total transaction have been used

CAR_{LT51} is the Cumulative Abnormal Returns for the bidding company where earnout value less than 51% of the total transaction have been used

Hypothesis 9.

a. Are ACAR returns for bidders using earnout periods less than 18 months statistically different from the ACAR returns for bidders using earnout periods more than or equal to 18months?

The null hypothesis states that the bidders using earnout periods less than 18 months earn no significantly different ACAR returns in comparison to the bidders using earnout periods more than or equal to 18 months. The alternative hypothesis states that the bidders using earnout periods less than 18 months earn significantly different ACAR returns in comparison to the bidders using earnout periods more than or equal to 18 months.

$$H_0: ACAR_{LT18} = ACAR_{GT18}$$

$$H_A: ACAR_{LT18} \neq ACAR_{GT18}$$

b. *Are ACAR returns for bidders using earnout periods less than 18 months statistically smaller than the ACAR returns for bidders using earnout periods more than or equal to 18months?*

The null hypothesis states that the bidders using earnout periods less than 18 months earn no significantly negative ACAR returns in comparison to the bidders using earnout periods more than or equal to 18 months. The alternative hypothesis states that the bidders using earnout periods less than 18 months earn significantly negative ACAR returns in comparison to the bidders using earnout periods more than or equal to 18 months.

$$H_0: ACAR_{LT18} \geq ACAR_{GT18}$$

$$H_A: ACAR_{LT18} < ACAR_{GT18}$$

c. *Are ACAR returns for bidders using earnout periods less than 18 months statistically larger than the ACAR returns for bidders using earnout periods more than or equal to 18months?*

The null hypothesis states that the bidders using earnout periods less than 18 months earn no significantly positive ACAR returns in comparison to the bidders using earnout periods more than or equal to 18 months. The alternative hypothesis states that the bidders using earnout periods less than 18 months earn significantly positive ACAR returns in comparison to the bidders using earnout periods more than or equal to 18 months.

$$H_0: ACAR_{LT18} \leq ACAR_{GT18}$$

$$H_A: ACAR_{LT18} > ACAR_{GT18}$$

where:

$ACAR_{LT18}$ is the Average Cumulative Abnormal Returns for the bidding company where earnout periods less than 18 months have been used

$ACAR_{GT18}$ is the Average Cumulative Abnormal Returns for the bidding company where earnout periods greater than or equal to 18 months have been used

d. Are CAR returns for bidders using earnout periods less than 18 months statistically different from the CAR returns for bidders using earnout periods more than or equal to 18months?

The null hypothesis states that the bidders using earnout periods less than 18 months earn no significantly different CAR returns in comparison to the bidders using earnout periods more than or equal to 18 months. The alternative hypothesis states that the bidders using earnout periods less than 18 months earn significantly different CAR returns in comparison to the bidders using earnout periods more than or equal to 18 months.

$$H_0: CAR_{LT18} = CAR_{GT18}$$

$$H_A: CAR_{LT18} \neq CAR_{GT18}$$

e. Are CAR returns for bidders using earnout periods less than 18 months statistically smaller than the CAR returns for bidders using earnout periods more than or equal to 18months?

The null hypothesis states that the bidders using earnout periods less than 18 months earn no significantly negative CAR returns in comparison to the bidders using earnout periods more than or equal to 18 months. The alternative hypothesis states that the bidders using earnout periods less than 18 months earn significantly negative CAR returns in comparison to the bidders using earnout periods more than or equal to 18 months.

$$H_0: CAR_{LT18} \geq CAR_{GT18}$$

$$H_A: CAR_{LT18} < CAR_{GT18}$$

f. Are CAR returns for bidders using earnout periods less than 18 months statistically larger than the CAR returns for bidders using earnout periods more than or equal to 18months?

The null hypothesis states that the bidders using earnout periods less than 18 months earn no significantly positive CAR returns in comparison to the bidders using earnout periods more than or equal to 18 months. The alternative hypothesis states that the bidders using earnout periods less than 18 months earn significantly positive CAR returns in comparison to the bidders using earnout periods more than or equal to 18 months.

$$H_0: CAR_{LT18} \leq CAR_{GT18}$$

$$H_A: CAR_{LT18} > CAR_{GT18}$$

where:

CAR_{LT18} is the Cumulative Abnormal Returns for the bidding company where earnout periods less than 18 months have been used

CAR_{GT18} is the Cumulative Abnormal Returns for the bidding company where earnout periods greater than or equal to 18 months have been used

Chapter 4: Research Methodology

The research of this kind, pertaining to share price and checks on significance lends itself to quantitative analysis. The problems are clearly defined and can be stated in mathematical terms. We can therefore pursue a quantitative descriptive research path to investigate the effect of earnouts on both the investor behaviour and the successful completion of the transaction. The author is also aware that the research may only establish correlation of one construct with another and proving causality falls outside the scope of this study (Zikmund, 2003).

In general, bivariate statistical methods of analysis will be used in the testing of multiple hypotheses (Zikmund, 2003, pp. 498-541). Although multivariate analysis may be used to combine some of the hypotheses, it was decided that bivariate techniques would be sufficient for the purposes of this study. The relationship between the earnout portion of a transaction and the market returns, as well as the earnout period and the market returns for the bidder will be analysed as separate hypotheses.

This research took the two works published by Kohers & Ang and Datar, Frankel and Wolfson, as the background studies to this work. Kohers & Ang found significant positive period abnormal returns for the acquirer. Data, Frankel and Wolfson further confirmed some of the claims by Kohers & Ang while adding that the earnout component of the transaction is most commonly used in transactions where the acquisition is relatively small compared to the bidder; where the target may lie in an unrelated industry from the acquirer and/or where the target asymmetric information is high. The hypotheses specified in chapter 3 cover some of these claims to test them in the South African context.

Hypothesis one tests the statement that earnout may be utilised in transactions where the acquisition is relatively small compared to the acquirer.

Hypotheses two to seven attempted to retest the results by Kohers & Ang as well as Datar, Frankel and Wolfson by investigating if their findings in relation to the acquirer abnormal returns held true in the South African context.

Hypotheses eight to nine were designed as an attempt to add further to the literature of earnouts by testing if the two attributes of earnouts, namely the relative size of the earnout component and the period over which the earnout may be evaluated (total period which may include multiple evaluations until such time that the evaluations and earnout are no longer calculated), had any impact on the acquirer abnormal returns. It is very possible that this may have been attempted before but author was unable to uncover any seminal work related to the testing of these earnout attributes in relation to the stock returns for the bidder.

4.1 Unit of analysis

The unit of analysis will be a merger or acquisition transaction. The period covered by this study was initially expected to be over the years 2000 – 2009. Unfortunately, due to an unavailability of sufficient data pre 2004, these limits were revised. The data analysed in this study therefore covers the period 2003 – 2009.

4.2 Population of relevance

The population for this study will be composed of available M&A transactions on the JSE in the period 2003 – 2009. The main sources of information utilised for this purpose will be the McGregor BFA database as well as the E&Y database of M&A,

study and analysis of which is published each year by E&Y. This information was requested and obtained from E&Y for academic research purposes.

4.3 Data Collection

Following may be noted in relation to the two information sources. Even though E&Y data was easily accessible, thanks to the generosity of the firm and its senior management, certain inconsistencies within the data structuring over the period 2003 – 2009 were realised. This drove the choice of McGregor as the primary data source while E&Y data was used largely to validate and supplement the data as and when required. The data was provided in a very concise and manageable Microsoft Excel format which allowed for easy manipulation, search and extraction of information. The process of populating this information initially at E&Y however was prone to human error therefore, the most reliable source of correct information was deemed to be the shareholder circular document, as and where available on McGregor. Added to this was the knowledge that the information in this database was also sourced from documents not publicly available on other databases such as McGregor. This created the problem of being able to validate the data as well as supplement it within correct additional data from McGregor.

On the other hand, McGregor BFA provided detailed information but required a good knowledge of the constraints for each search. The data had to be queried from the higher level searches to more specific and lower level searches which was time consuming and monotonous. Also, a large set of data such as the alpha and beta values for the JSE securities was not available for years before 2004.

Following information was downloaded from McGregor BFA

- SENS Information and company announcements
- Shareholder Circulars
- Share price data
- alpha and beta coefficients of volatility of instruments
- All Share Index (ALSI) data

This list of appropriate data set was supplemented with information provided by Rand Merchant Bank (RMB) library as well as the Contingent payments and Earnout related shortlisted transactions from the E&Y database. Since the reliable source documentation for E&Y data was not at hand, only the appropriate, relevant and verifiable transactions were used from the E&Y database. The E&Y transactions were only included in the data set if acceptable detail could be found in relation to those documents. This detail was taken in the form of Announcements and SENS information from McGregor BFA.

An Earnout portfolio was then created which included all the transactions found to have used an earnout or similar contingent payment conditions.

A Control portfolio of acquisition transactions that had not used earnout was created using random sampling. The random sampling was done in Microsoft Excel package by filtering out the earnout transactions from the population of all acquisitions and utilising the 'Random()' Visual Basic Application function. Numeric sorting of the data based on this random number generation then allowed a short listing of top 40 transactions for the control portfolio.

Both the Earnout and the Control Portfolios were then reduced further due to unavailability of detailed information, where either the stock price or the instrument

volatility and risk coefficient was not found. Following reasons can be stated for the disqualified transactions:

- Bidder was not a listed business on the JSE (Foreign, Private and/or Unlisted bidders cannot be used). Therefore the share price information and alpha and beta coefficients were not available.
- Unavailability of volatility/risk coefficients. This was found to be prevalent for periods prior to 2004 and therefore led to a revision in the period of interest from 2000 to 2009 to 2003 to 2009.
- Share buybacks were expected to have no use for an earnout contingent and did not fit into the definition of an acquisition which is implied in this study. Further, it is not expected that such risk mitigation tactics would be useful in the share repurchase scenario. Travlos (1987) further defines a merger as a transaction where the management is directly involved on behalf of the shareholders, whereas a tender/acquisition is seen as a transaction where the management may be bypassed completely and shareholders are directly involved in the deal negotiation (Travlos, 1987, p. 946).

Following steps were taken to structure and supplement the data

- E&Y database guided the search for earnout transactions by means of the 'Feature' Column specified for most years as well as by general search for keywords such 'contingent' and various variations of the word 'earnout'.
- The transactions shortlisted here were then validated using the McGregor database for availability of information

- Search on McGregor BFA Library for the keywords of interest was conducted. The keyword search string can be defined very simply as 'Shareholder Circular AND (Merger OR Acquisition)'. The simple search string allowed the extraction of maximum possible documentation where the details of an M&A transaction could be downloaded.
- All of this information was deemed necessary for a comprehensive testing of the M&A transactions. The search was limited to JSE main board companies only. The search was limited to period 2003 to 2010. 2010 was included in the initial search even though due to the lack of available information, the year was disqualified from the period under review. The data relevant to this study belongs to the period 2003 – 2009.
- 538 documents were downloaded and each document was reviewed and categorised as one or more of the following:
    - Acquisitions (and/or Mergers)
    - Share buybacks
    - Earnouts
    - Disposals
- An Acquisition was defined as any merger or tender offer, including hostile takeovers and offers of shares or purchase of assets from another entity.
- Relevant information pertaining to the bidder; target and the transaction was then compiled from the documents at hand and populated in Microsoft Excel spreadsheets.

Table 2: Data Structure in MS Excel

Column Name	Data Type	Comment
Document Name	String (36,3)	Name of the file as named by McGregor BFA
Year	Year (4)	Year of the transaction
Category	Categorical	Acquisition/Earnout/Reviewed/Disposal/Share buyback
Bidder Name	String (n)	Company Name of the Bidder/Acquirer
CompA Code	String (3)	Stock exchange trading code
EXCH	String (3)	Stock exchange name
Seller Name	String (n)	Company Name of the Bidder/Acquirer
CompB Code	String (3)	Stock exchange trading code
EXCH	String (3)	Stock exchange name
Date Of Document Issue	Long Date	Circular issue date
Announcement Date	Long Date	Announcement date on SENS
Acquisition	Categorical	Private/Subsidiary/Equity/Properties/Assets
Currency	Categorical	Cash/Stock/Other combinations
Portfolio Info	Categorical	Earnout/Control
Total Value	Numerical Ratio	Transaction Total Value in Rand
Earnout Value	Numerical Ratio	Transaction Earnout Value in Rand
Earnout %	Percentage	Earnout ratio of total transaction value
Earnout Pd (Mths)	Numerical	Number of months to the end of earnout
Completion Status	Categorical	Confirmed/Cancelled
Tech	Categorical	Tech(1)/Non Tech (0)
Services	Categorical	Services(1)/Non Services (0)

4.4 Sampling Method and size

All the M&A transactions utilising earnouts in the population of relevance were analysed without sampling. Transactions where adequate data cannot be found were either removed completely from the portfolio or discounted as missing data.

Also, In order to test the earnouts against a control portfolio of transactions where earnout or contingent payment had not been used, random sampling was used to create this control portfolio. The random sampling was done in Microsoft Excel spreadsheet by filtering out the earnout transactions from the population of relevance and utilising the 'Random()' Visual Basic Application function. Numeric sorting of the data based on this random number generation allowed us to shortlist top 40

transactions for the control portfolio. This was followed by some further casualties where sufficient supplemental data (price information or alpha/beta coefficients) could not be found/calculated reducing the portfolio transaction count. It was expected that the control portfolio would be of a similar weighting, in terms of the number and types of transactions within it and the earnout portfolio. No judgemental sampling was used to ensure this match.

The calculation of abnormal returns depended on the following supplemental information which was structured in Excel spreadsheets as follows. This structure was mimicked for both earnout and control portfolio.

Table 3: Portfolio Structure in MS Excel

Name	Data Type	Comment
Portfolio Tab		
Transaction	String (36,3)	Name of the file as named by McGregor BFA
Bidder	String(n)	Company Name of the Bidder/Acquirer
Announcement	Long Date	Announcement date on SENS
Start Date	Long Date	Calculated Announcement – 20 days
End Date	Long Date	Calculated Announcement + 20 days
Day	Numeric	Share closing price on Day x around the event
ALSI Tab		
Date	Long Date	Date of ALSI Reading
ALSI Index	Numeric Ratio	ALSI value at the respective date
Values	Numeric Ratio	ALSI Value at the respective date
AlphaBeta Tab		
Document	String (36,3)	Name of the file as named by McGregor BFA
RowNumber	Numeric	Dependency for calculations
Bidder	String(n)	Company Name of the Bidder/Acquirer
Announcement	Long Date	Announcement date on SENS
Start Date	Long Date	Calculated Announcement – 180 days
End Date	Long Date	Calculated Announcement - 25 days
4WeekAlphaVariable	Numeric Ratio	Alpha value calculated every 4 weeks between the relevant Start and End Dates
4WeekBetaVariable	Numeric Ratio	Leveraged Beta value calculated every 4 weeks between the relevant Start and End

		Dates
Multiple Txn Specific Tabs		
Date	Long Date	Date of the price information
Close	Numeric	Closing price information
Alpha	Numeric	Relevant Alpha value for the specific transaction
Beta	Numeric	Relevant Beta value for the specific transaction
ActualRateOfReturn	Numeric	Calculated as shown in sections below
ExpectedRateOfReturn	Numeric	Calculated as shown in sections below
DiffRateOfReturn	Numeric	ActualRateOfReturn – ExpectedRateOfReturn
AAR-CAR-ACAR Tab		
Average Abnormal Returns	Numeric	AAR for the portfolio on a specific day
Cumulative Abnormal Returns	Numeric	CAR for the transaction over the period ±10; ±5 and ±1 days around the event announcement
Average Cumulative Abnormal Returns	Numeric	ACAR for the transaction over the period ±10; ±5 and ±1 days around the event announcement

The data was refined further to take account of the following scenarios:

- Certain transactions were eliminated on the basis of thin trading on the bidder stock
- For the transactions that were included in the calculations and where trading information was missing due to no trade days, this information was taken as missing data rather than leaving a zero value which would impact the mean based statistics.
- Weekend information was removed reducing the day count around the event day zero from ±20 to ±14 days
- All currency values were converted to Rand values to allow the same basis of calculations. The conversion rates were downloaded from XE Universal Currency Converter for the relevant announcement dates (Converter, 2010).

4.5 Data Analysis

This study is based on the work of Kohers and Ang in 2000, to be referred to as 'Kohers' for the remaining discussion in this section. While their work on earnouts was a lot more elaborate in its investigative detail, the scope and time constraints around this study did not allow for that level of comprehensiveness in detail. Kohers' work was based on a study of 938 completed mergers between 1984 and 1996. Out of which transaction amount information was available for approximately 844 merger transactions. The summary stats for their study are provided in Table 4: Kohers & Ang - Summary statistics of the sample of .

Table 4: Kohers & Ang - Summary statistics of the sample of earnout mergers

Name	Aggregate	Min	Average	Max	Median	No. of Cases
Value of merger	37106.2	0.1	44	2290	7.7	844
Value of earnout	8444.7	0.1	15.52	700	0.7	554
Value of Cash	21184.3	0.1	29.8	1100	3.35	705
Value of Common stock	3467.07	0.01	14.6	595	2.01	237
Value of debt	1110.79	0.08	13.5	550	2.45	82
Offer Price/Book value		0.2	8.72	98.8	4.4	141
Target total assets	40005.6	0.1	179.4	17000	5.9	223
Acquirer total assets	464644.1	0.7	2610.4	176423	54.25	179

In comparison to the Kohers study, this investigation focused on a shorter period of 2003 – 2009 and resulted in a likely population of 232 M&A transactions. Out of these both the control and the earnout portfolios, with 36 and 37 transactions respectively, were designed and investigated.

4.5.1 Event Study Methodology

Event period study methodology was used to calculate the abnormal returns around the acquisition announcement date. As cited by Mushidzhi & Ward (2004, p. 22),

Bowman (1983) and Henderson (1990) recommended steps to be taken in application of this method.

- Identification of the event of interest and the event window
- Modelling of the security price returns
- Estimation of excess returns
- Aggregation and grouping of excess returns
- Analysis of the results

Very similar to the Mushidzhi and Ward's (2004) study of cash vs share acquisitions; Kohers and Ang (2000) investigation into drivers behind the use of earnouts, the event of interest for this research is also the announcement of the acquisition. Three event windows were investigated for Cumulative Abnormal Returns (CAR) and Average Cumulative Abnormal Return (ACAR) for each transaction.

- ±1 day around the announcement date
- ±5 days around the announcement date
- ±10 days around the announcement date

The main window of interest is taken to be 10 days, i.e. ±5 days surrounding the event. The shorter window of ±1 day has the advantage of limiting the possibility of confounding events, while the longer window ±10 days has the advantage of being the same as the number of working/trading days in a month.

A Control Portfolio Modelling will be used to segregate and analyse the companies according to the methodology outlined by Mordant and Muller, (2003), which in turn is based on the work by Fama and French, (1996).

When analysing the abnormal returns in any form (Cumulative; Average Cumulative or just Average Abnormal), the occurrence of the normal or expected return needs to be

determined. Utilising this calculated value (based on the α and β for the bidder firm in a transaction), we can determine the abnormal return by subtracting this value from the actual return, which is available on the McGregor BFA market price data.

The predicted/expected return is calculated as follows:

$$\hat{R}_{it} = \alpha_i + \beta_i R_{mt}$$

Where

$\hat{R}_{it}$ = The predicted daily rate of return on instrument i at time t

$$R_{mt} = \text{Log}(\frac{ALSI_t}{ALSI_{t-1}})$$

$ALSI_t$ = JSE All Share Index on day t

$ALSI_{t-1}$ = JSE All Share Index on day t-1

α_i = Measures the volatility of instrument i in the period that is not explained by the market, i.e. the return on instrument i when the market does not move.

β_i = Measures the sensitivity of security/instrument i to the market. This is the measure of systematic risk of the share i.

ALSI; α and β values are available on McGregor BFA database. They were calculated over the period of interest taken as -180 days before the event to -25 days before the announcement of the event. Please refer to the Table 3: Portfolio Structure in MS Excel.

The excess or abnormal return in the period can therefore be calculated as follows:

$$r_{it} = R_{it} - \hat{R}_{it}$$

Where

r_{it} = The excess return for instrument i on day t

R_{it} = The observed return for instrument i on day t

$$R_{it} = \log\left[\frac{P_{it} + D_{it}}{P_{i(t-1)}}\right]$$

Where

P_{it} = Price of instrument/equity i at the end of period t;

D_{it} = Dividends paid during period t

$P_{i(t-1)}$ = Price of instrument i at time t-1;

And

R_{it} = observed return

Average Abonormal Returns (AAR) are calculated as follows:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} r_{it}$$

Where

N = the number of firms in the sample

We can also calculate the Average Cumulative Abnormal Returns (ACAR) for our periods of interest as follows:

$$\mathrm{ACAR_{iT}} = \frac{1}{N}.\mathrm{CAR_{iT}}$$

Where

$ACAR_{iT}$ is the Average Cumulative Abnormal Returns of an instrument I over a period of interest T, which may be ±1; ±5 or ±10 days.

CAR_{iT} is the Cumulative Abnormal Returns of security instrument I over a period T, calculated as follows:

$$CAR_{iT} = \sum_{t=1}^{T} r_{it}$$

Nine hypotheses were formulated to investigate the three questions in this study.

4.5.2 Hypothesis 1 testing

This hypothesis seeks to investigate whether the transaction values of bids involving earnouts are significantly lower than those that do not use earnout contingent clause. The test is a comparative analysis of the earnout and control portfolios and relies on the total value of the transaction. This value was taken or calculated from the information provided in the circular documents.

Kohers applied a line of reasoning in their study which can be stated as follows. Earnouts are most suited for application by smaller bidders/firms for which

information asymmetry may imply a larger magnitude of relative risk. A large bidder may be able to absorb risk of information gap a lot more than a smaller firm where the associated acquisition transaction value may be large relative to the bidder value. This implies two things. Firstly, earnouts are appropriate when M&A are large relative to the size of the bidder. Secondly, earnouts are appropriate for small firms. Taking this thought process a step further; we should therefore be able to test if the earnout portfolio is composed of transactions that are significantly smaller than the control portfolio.

The variables of interest for this hypothesis are shown in Table 5: Hypothesis 1 - Variables of Interest

Table 5: Hypothesis 1 - Variables of Interest

Column Name	Data Type	Values of Interest
Category	Categorical	Reviewed
Portfolio Info	Categorical	Earnout/Control
Total Value	Numerical Ratio	Transaction Total Value in Rands

Two-sample T-test under assumption of normality was executed on the sample data to determine if a significant difference existed between the total values of the control portfolio and the earnout portfolio.

4.5.3 Hypothesis 2, 3 and 4 Testing

In their study of mergers with earnouts, Kohers found significant positive abnormal returns for the bidder around the merger announcement (Kohers & Ang, 2000, p. 445). Their investigation was formed on the assumption that mitigation of risk on part of the bidder would make its stock more attractive for the investors (Kohers & Ang, 2000, p.

449). Stock market would therefore respond favourably to such a transaction, increasing the stock price of the bidder. In order to confirm their hypotheses, Kohers conducted least squared analysis on the average abnormal returns for each day in the event study around the announcement date. They estimated their risk and volatility coefficients between -300 to -51 days before the event announcement date and found significant positive returns for the bidder, on the day of the event and the day after the announcement.

In order to confirm Kohers' findings in South African context, one-sample T-test were conducted on the AAR; CAR and ACAR series of values to determine any significant difference from zero. This test was executed for 10% significance level only. For the values of ACAR and CAR, the test was run for all the event periods under investigation, namely ±10 days; ±5 days and ±1 day around the announcement date. If the P Level is found to be less than 0.10 then there is a significant difference from zero

Table 6: Hypothesis 2 - 7 - Variables of interest

Name	Data Type	Values of Interest
Average Abnormal Returns	Numeric Ratio	All portfolio values
Cumulative Abnormal Returns	Numeric Ratio	All portfolio values
Average Cumulative Abnormal Returns	Numeric Ratio	All portfolio values

4.5.4 Hypothesis 5, 6 and 7 Testing

Following on from the testing of Hypotheses two to four, the respective abnormal returns for earnout and control portfolio were analysed using two sample T-test.

4.5.5 Hypothesis 8 and 9 Testing

Hypotheses eight and nine were an attempt to add value to the earnout literature. Relationship between two variables such as ACAR and earnout size of the transaction or ACAR and the period of earnout valuations can be investigated by conducting a two sample T test on the data. A reasonable split point was chosen in the data and two samples were created to test the hypotheses. The split was likely to result in insufficient testing samples, impacting the robustness of the data. It was therefore likely that we would need to focus on the non parametric test results in order to gain reliable results. With that knowledge the testing was focused on the differences in the medians rather than the means.

In order to test whether the size of an earnout relative to the total transaction value had any impact on the investor reaction, a boundary of 51% was chosen as a reasonable point to split the data. The data was sorted according to the earnout portion information and abnormal returns for transactions utilising earnouts making up 51% or less of the total transaction value, were tested against the data for the abnormal returns for transactions where earnout portion was larger than 51%. A two sample T test was used to determine the difference between the two medians.

The data structuring was done using the Microsoft Excel package, while the calculated values were then ported to a statistical package (NCSS) to perform in depth statistical analysis.

4.6 Research Limitations

Following research limitations and gaps have been noted during this investigation:

- Earnout is a method of payment rather than a tool to mitigate bidder risk. This implies that research conducted to investigate earnouts should control for all other means of exchange in an M&A.
- Study was not structured to exclude some specific confounding events which could also have polluted the data. These include dividend issue to name one, as discussed by Miller & Rock (1982) who discovered that an issuance of a dividend had the ability to dampen investor confidence if expectation were not met.
- Lack of adequate data limits the lengths to which we could have investigated these hypotheses. A larger data set with better utilisation of E&Y data in the future may allow for more accurate investigation.
- The study could have also controlled for the financing of the merger which would be different from controlling the analysis for the other methods of payment. The lack of sufficient data places an insurmountable constraint on the study in this respect.
- Relative size of the bidder and target was stressed a number of times in the background research, but not taken into account in this study.
- Public or Private ownership of the firms was not taken into account in this study but from the literature, it is likely that this may have had a large impact on the results.

Chapter 5: Results

5.1 Description of the Data

Overall the data was extracted from 557 individual shareholder circular documents or SENS extracts over the period 2003 - 2009. All of these documents were downloaded from McGregor BFA database but the information was guided by both the E&Y data as well as general search on McGregor BFA Net.

Table 7: Documents Categorisation/Breakdown

Year	Acquisition	Disposal	Share Buyback	Earnout	Reviewed
2003	5			5	5
2004	23	24	9	4	82
2005	27	2		13	122
2006	39	15	7	9	102
2007	34	17	10	7	92
2008	23	6	7	6	63
2009	13	4		6	91
Grand Total	**164**	**68**	**33**	**50**	**557**

The review of the documents allowed a categorisation of the transactions in the categories shown in Table 7: Documents Categorisation/Breakdown. The categorisation was not exclusive and allowed for overlap. The data extracted had to remain identifiable and traceable to the source as the information was broken down further. Shareholder documents normally cover more than one topic/transaction at a time, which implies that a single document could be categorised in one or more of the said categories, thus the overlap.

All but the acquisitions and disposals were ignored since the well understood reasons behind using an earnout are either to mitigate risk of asymmetry of information, or to retain highly valued human capital (Kohers & Ang, 2000, p. 445). Disposals could be

considered as an opposite of a takeover which implied that a similar negotiation and consideration as an acquisition would come to pass. A disposal can therefore be considered as an acquisition from the viewpoint of the buyer/bidder.

Of the 232 acquisitions and disposal related shareholder circular documents considered for the period 2003 – 2009, 50 documents were found to have utilised the earnout contingent payment structure.

Table 8: Data unavailable breakdown

Document Category	Data Not Available	Duplicate
Acquisition	16	4
Earnout	13	
Reviewed	19	12

Of these 50, a portion had to be removed from consideration as sufficient data was not available to continue an investigation on those cases. 13 documents were ignored specifically for the earnout category, while a total of 20 were removed from larger set of acquisitions which overlaps with the earnout categorisation.

Table 9: Portfolio breakdown

Portfolio	Acquisition	Disposal	Grand Total
Control	36	3	39
Earnout	33	4	37
Grand Total	**69**	**7**	**76**

The two portfolios created for analysis covered 76 of the 212 useful cases which could be studied as either a control transaction or as an earnout using transaction. All the cases that used an earnout contingent payment, where sufficient data was available were analysed.

Table 10: Acquisition Type breakdown

Portfolio	Equity	Private Entity/Subsidiary	Properties	(blank)
Control		34	1	2
Earnout	3	33	1	

No obvious difference was found between the two portfolios in terms of the kind of acquisitions that were made in these transactions. This was encouraging as this allowed for a more balanced view. The Equity acquisitions were samples where the transaction was not intended to acquire a 100% equity ownership in the target, which may or may not qualify as a takeover, depending on the level of management control acquired in total post the acquisition. On the other hand, acquisition of partial equity may be for the purposes of a merger or a joint venture. Myers and Majluf (1984) considered mergers to be those transactions where the means of payment or exchange was stock or share swaps and where the target entity disappeared, or was no longer able to trade as an independent entity. Acquisitions or Tenders as they were referred in the Myer and Majluf study were those transactions which were transacted using cash or combination of cash and stock.

Table 11: Earnout Portfolio at a glance

Transaction	Total Value	Earnout Value	Earnout %	Earnout Pd (Mths)	Completion Status
Txn 1	R 19 574 400.00	R 5 872 320.00	30%	19	Confirmed
Txn 2	R 8 970 769.00	R 4 070 769.00	45%	24	Confirmed
Txn 3	R 35 000 000.00	R 35 000 000.00	100%	29	Confirmed
Txn 4	R 2 160 000.00	R 2 160 000.00	100%	34	Confirmed
Txn 5	R 286 046 810.08	R 146 797 969.20	51%	17	Confirmed
Txn 6	R 180 000 000.00	R 57 000 000.00	32%	36	Cancelled
Txn 7*	R 215 741 269.27	R 18 231 656.56	8%	1	Confirmed
Txn 8	R 36 640 000.00	R 30 640 000.00	84%	15	Confirmed
Txn 9	R 1 123 034 917.38	R 74 171 779.76	7%	36	Confirmed
Txn 10*	R 6 000 000.00	R 4 000 000.00	67%	36	Confirmed

Txn 11	R 17 300 000.00	R 12 000 000.00	69%	24	Confirmed
Txn 12	R 19 928 571.00	R 18 214 285.40	91%	16	Confirmed
Txn 13	R 360 000 000.00	R 51 501 000.00	14%	24	Confirmed
Txn 14	R 100 000 000.00	R 75 000 000.00	75%	48	Confirmed
Txn 15	R 247 000 000.00	R 10 000 000.00	4%	11	Confirmed
Txn 16*	R 12 000 000.00	R 7 652 154.00	64%	11	Confirmed
Txn 17	R 116 500 000.00	R 10 300 000.00	9%	12	Confirmed
Txn 18*	R 2 955 000.00	R 1 314 500.00	44%	6	Confirmed
Txn 19	R 180 000 000.00	R 98 910 000.00	55%	18	Confirmed
Txn 20	R 568 920 120.60	R 227 568 049.80	40%	36	Confirmed
Txn 21*	R 80 190 342.00	R 17 149 386.00	21%	35	Confirmed
Txn 22	R 108 236 000.00	R 27 552 000.60	25%	26	Confirmed
Txn 23	R 88 101 277.81	R 28 080 000.00	32%	39	Confirmed
Txn 24	R 957 720 892.00	R 160 867 994.00	17%	14	Confirmed
Txn 25	R 828 604 142.25	R 59 863 500.00	7%	15	Confirmed
Txn 26	R 34 200 000.00	R 14 950 000.00	44%	#N/A	Confirmed
Txn 27	R 2 000 000 000.00	R 600 000 000.00	30%	6	Confirmed
Txn 28	R 1 200 000 000.00	R 300 000 000.00	25%	14	Confirmed
Txn 29*	R 10 994 200.00	R 6 010 200.00	55%	9	Confirmed
Txn 30	R 565 000 000.00	R 75 000 000.00	13%	20	Confirmed
Txn 31	R 11 000 000.00	R 7 000 000.00	64%	47	Confirmed
Txn 32	R 186 682 667.20	R 16 682 667.20	9%	15	Confirmed
Txn 33	R 266 804 410.00	R 129 333 393.00	48%	17	Confirmed
Txn 34	R 8 500 000.00	R 2 500 000.00	29%	35	Confirmed
Txn 35	R 8 500 000.00	R 2 500 000.00	29%	35	Confirmed
Txn 36	R 15 000 000.00	R 3 000 000.00	20%	14	Confirmed
Txn 37	R 125 000 000.00	R 45 000 000.00	36%	60	Confirmed

*** Transactions not included in Abnormal returns calculations due to low trading volumes**

No significant abnormal returns were noticed for any day in the ±14 day data at hand.

The results can be seen as shown in Table 12: Average Abnormal Returns for Earnout Portfolio.

Table 12: Average Abnormal Returns for Earnout Portfolio

Day	Count	T-Value	P Level	Reject H0	(Alpha=.05)	(Alpha=.01)
+14	28	0.5939	0.557551	No	0.088381	0.022694
+13	29	0.3063	0.76166	No	0.06009	0.013183
+12	29	1.0016	0.325121	No	0.162199	0.051552
+11	31	1.459	0.154962	No	0.292378	0.11588
+10	31	1.163	0.254001	No	0.203163	0.070129
+9	31	1.1294	0.267698	No	0.194232	0.065975

+8	30	1.2359	0.226411	No	0.223012	0.079501
+7	28	1.0402	0.307454	No	0.170951	0.055234
+6	30	1.3518	0.18689	No	0.257509	0.0969
+5	31	0.8793	0.38621	No	0.136282	0.040919
+4	29	1.2525	0.220737	No	0.227347	0.081471
+3	31	1.2336	0.226918	No	0.22276	0.079516
+2	30	1.1357	0.265389	No	0.195556	0.066476
+1	29	1.1272	0.269206	No	0.192996	0.065184
0	31	1.4183	0.166417	No	0.279055	0.108554
-1	30	0.2015	0.841701	No	0.054364	0.011365
-2	30	0.8694	0.391767	No	0.1341	0.039986
-3	31	0.8753	0.388382	No	0.135465	0.040589
-4	30	1.1432	0.2623	No	0.197539	0.067392
-5	29	0.9915	0.329952	No	0.159881	0.050564
-6	31	0.7877	0.43708	No	0.118836	0.034031
-7	29	1.4766	0.150929	No	0.297097	0.118056
-8	30	1.0351	0.309162	No	0.170351	0.055163
-9	31	0.988	0.331042	No	0.159623	0.050612
-10	30	1.076	0.290783	No	0.180315	0.059561
-11	30	1.0209	0.315754	No	0.166972	0.053693
-12	30	1.3255	0.195347	No	0.249439	0.092726
-13	31	1.2957	0.204953	No	0.240898	0.088535
-14	31	1.0793	0.289062	No	0.181427	0.060154
+14	28	0.5939	0.557551	No	0.088381	0.022694

Zero values taken as missing values for the significance test where the count is not equal to 31

Table 13: Services/Tech breakdown

Services/Tech	Non Tech	Tech	Grand Total
Services	16	10	26
Non Services	10	1	11
Grand Total	**26**	**11**	**37**

It has been theorised that earnouts may be more applicable in transactions where the acquisition offers no tangible assets, making the problem of asymmetry of information a major concern for valuation purposes (Kohers & Ang, 2000, p. 448). Such a situation may arise when acquiring services oriented companies or acquisitions where the value may reside in the intellectual property rather than the tangible assets of the

firm/entity. Technology firms/entities satisfy the latter criteria, therefore the 37 transactions in the earnout portfolio were further categorised as technology acquisitions and/or services oriented acquisitions.

In the portfolio of 37 transactions that were investigated, 10 were neither technology acquisitions, nor services oriented acquisitions, leaving a large 72.97% of the portfolio which would seem to support the belief above.

Table 14: Transaction completion breakdown

Portfolio	Confirmed	Cancelled	Unconfirmed
Control1	7		29
Earnout	36	1	

Negotiations costs in an M&A process are high. It is therefore a major point of concern for the parties involved in such negotiations to control such costs and avoid having to renegotiate. On average an M&A transaction in the US can take approximately six months to complete (Officer, 2004, p. 2272). This period involves dedicating management attention, legal and external consultancy costs, plus an impact on equity and shareholder perceptions which need to be managed. While an earnout mitigates the risk of asymmetric information for the bidder, it would therefore be safe to start off with the assumption that it serves as a tool to avoid renegotiations. It therefore facilitates a successful conclusion to the negotiations. Of the 37 transactions in the earnout portfolio, 36 were confirmed completed successfully, while one was cancelled. This would seem to support the view that an earnout may facilitate a successful conclusion to a negotiation by mitigating the risk for the bidder. Similar test was not

conducted on the control portfolio, therefore a comparative view has not been provided in this study.

Table 15: Transaction currency breakdown

Portfolio	Cash	Cash and Shares	Linked Units	Share Swap	Shares
Control	19	7	2	7	1
Earnout	17	16			4
Grand Total	**36**	**23**	**2**	**7**	**5**

The use of shares over cash can be seen another means of mitigating the risk involved in a transaction where asymmetry of information is high (Hansen, 1987, p. 76). By offering shares in the joint entity, the bidder can ensure that the management/shareholders of the target share in the risk. This still may not be the most efficient means of risk mitigation, if the acquisition is much smaller relative to the bidder. Most of the risk in such a situation may still be borne by the bidder as the target may already have been compensated by the premium portion of the transaction (Kohers & Ang, 2000, p. 447). Of the 73 transaction investigated as part of the earnout and control portfolios, only 14 used some form of security instruments (shares; linked units), while 36 used all cash. The use of cash may signal the value of the target while indicating the strong position of the bidder (Travlos, 1987), while at the same time, it may serve to increase the risk for the bidder as an overvalued cash transaction would only effect the bidder and not the target in the longer run. The financing of the transaction has also been seen to be a factor in such cases where cash payments from the balance sheet; cash/bank surplus on the balance sheet, may result in overpayments, while external financing of the transaction, i.e. debt, may instil some level of discipline in the decision (Myers & Majluf, 1984, pp. 5-6). A large cash

component here may also tie in with the size of the acquisitions, which may be much smaller for earnouts and therefore create limited cause for concern in terms of associated risks.

5.2 Earnout relationship to transaction size

If we are to accept that earnouts are used in the acquisition of private; unlisted or cross industrial targets, then based on what Kohers and Ang found in their 2000 study, we would expect the size of takeovers using earnouts to be comparatively smaller than the size of the transactions not using earnout (Kohers & Ang, 2000, p. 454)

The investigation from this hypothesis explores whether an earnout contingent payment is utilised more in smaller value transactions, while the larger acquisitions perhaps mitigate the relevant risks by means other than earnout. In order to do that, the total value of transactions using earnout and those in the control portfolio, not using earnout were evaluated.

Table 16: Total Value breakdown

Portfolio	Acquisition (mil)	Disposal (mil)	Grand Total (mil)
Control	R 67 804.10	R 0.00	R 67 804.10
Earnout	R 7 634.50	R 2 397.80.00	R 10 032.30
Grand Total	**R 75 438.60**	**R 2 397.80**	**R 77 836.41**

Table 17: Total value Descriptives 1

Portfolio	Count	Mean	Standard Deviation	Minimum (,000)	Maximum (,000)	Range (,000)
Earnout	37	271100000	434200000	2160	2000000	1997000
Control	28	1693000000	4343000000	754.46	21880000	21880000

Even though no conclusions can be drawn without an in depth analysis of the data, It was noticeable that the mean of the control portfolio was larger by a factor of 10 than

the mean of the earnout portfolio. It should be noted that a large number of control portfolio transactions utilised a scheme of arrangement. This made it exceedingly difficult to calculate the total financial impact of an acquisition. Eight of the 36 values either could not be calculated reliably, or did not provide enough information to perform the calculation. It should be noted that this can have a large impact on the overall shape of the data, as mean is highly sensitive to outliers and missing values can have a significant impact on the results.

Table 18: Control Total Value Descriptives

Parameter	Mean	Median
Value	1693254000	209500000
95% LCL	8853001	38593750
95% UCL	3377655000	749843800
T-Value	2.062615	
Prob Level	0.004888986	
Count	28	

Table 19: Earnout Total Value Descriptives

Parameter	Mean	Median
Value	271143400	100000000
95% LCL	126360300	19928570
95% UCL	415926500	186682700
T-Value	3.798126	
Prob Level	0.0005409842	
Count	37	

The Lower and upper confidence levels for the control and earnout portfolios also provide the range of values in the two portfolios. Control portfolio demonstrates a larger range of values than earnout portfolio. It is also noticeable that the mean and the median values for both the portfolios lie far apart. Mean is very sensitive to outliers and therefore can be polluted easily. Same comparisons were done with

trimmed mean with the hope that the mean would approach the median rapidly but this was not the case. In case of the earnout portfolio, the trimmed mean only approached the median at 25% trimmed scenario, with only 19 of the 37 values taken into account. This also demonstrated that there were no significant outliers affecting the mean as drastic difference was not noticeable between the ordinary mean and the 5% trimmed mean value.

Table 20: Total Value Skewness and Kurtosis

Portfolio	Skewness	Kurtosis
Earnout	2.351142	8.521623
Control	3.915684	18.20142

The skewness and kurtosis of both the portfolios indicates a longtailedness to the right with tails much heavier than a normal distribution.

Table 21: Test for Normality

Control	Test Value	P Level	Normality Assumption
Shapiro-Wilk W	0.4222706	1.972347E-09	Reject normality
Anderson-Darling	6.2139	2.931502E-15	Reject normality
Earnout	**Test Value**	**P Level**	**Normality Assumption**
Shapiro-Wilk W	0.6551055	4.477965E-08	Reject normality
Anderson-Darling	4.759544	8.79193E-12	Reject normality

Based on the above two tests for normality, and the discussion above of the shape of the data, it is safe to assume that the data is not normally distributed. However due to the large set of values over and above 30 sample cases, we can assume a level of robustness and therefore are able to perform parametric tests on the available data.

The two sample T test gave the following results at 10% significance level

Table 22: Hypothesis 1 - Equal Variance Tests

Test	Value	Probability	Recommendation
Variance-Ratio Equal-Variance	100.0702	0.000000	Reject equal variances
Modified-Levene Equal-Variance	3.8729	0.053475	Reject equal variances

This recommendation requires that we reject the results from equal variance T test and focus on the Aspin-Welch unequal variance results instead.

Table 23: Hypothesis 1 - Aspin-Welch Unequal Variance Test Results

H_A	T Value	P Value (α = 0.10)	Reject	Power (α = 0.05)	Power (α = 0.01)
Difference <> 0	-1.7258	0.095640	Yes	0.384301	0.170374
Difference < 0	-1.7258	0.047820	Yes	0.515218	0.246695
Difference > 0	-1.7258	0.952180	No	0.000435	0.000036

Difference: (Earnout_TotalValue)-(Control_TotalValue)

This result does not support the null hypothesis, which can be rejected at the 10% significance level. The P Value of the left sided T test is also encouraging for the 5% level since it supports the alternative hypothesis at that level. The left sided T test results must however be ignored as we are required to focus on the differences of the means using a two tailed T Test, at a 10% significance level.

Size of earnout transaction, total values is statistically different from the control portfolio transaction total values at the 90% confidence level. A similar result at the 95% and 99% confidence levels would be stronger evidence to reject the hypothesis, but the data at hand does not provide stronger evidence to reject the null hypothesis.

5.3 Impact of earnout on Bidder stock price

Earnout contingent payments can mitigate risk of asymmetric information for the bidder. To an investor, a more refined transaction, such as one that shows awareness

of such a risk and ensures mitigation of such a risk should demonstrate a more highly aware management on the side of the bidder. It should therefore follow that a bidder utilising the earnout contingent payment be viewed as a lower risk investment and therefore should experience abnormal positive gains in its share price (Kohers & Ang, 2000, p. 449).

Six hypotheses were formulated to test this question. The hypotheses tested on the ACAR, CAR and AAR data respectively. ACAR and CAR data was tested over three periods, namely ±10 days; ±5 days and ±1 day around the announcement date. The test data for AAR was taken over ±14 days around the announcement date to allow the assumption of normality and robustness to the test. This data was first tested to investigate any significant difference from zero and then compared to similar data for the control group to investigate any significant difference from returns for bidders that did not use earnouts in their bid structuring.

Normality was assumed based on high sample rates over and above 30 which adds to the robustness of the data.

Table 24: Question 2 Hypothesis 2, 3 and 4 Descriptives

Variable	Count	Mean	Standard Deviation	95% LCL	95% UCL
Earnout_CAR10	31	0.393979	1.986652	-0.2116261	0.999584
Earnout_CAR5	31	0.2049706	1.100619	-0.1305388	0.54048
Earnout_CAR1	31	0.03157149	0.2027383	-0.03023066	0.09337364
Earnout_ACAR10	31	0.01915326	0.09709307	-0.0104443	0.04875083
Earnout_ACAR5	31	0.01851649	0.1003563	-0.01207582	0.04910881
Earnout_ACAR1	31	0.01550596	0.1014508	-0.01542002	0.04643194
Earnout_AAR14	29	0.01889107	0.005944412	0.01701328	0.02076887
Control_CAR10	30	-0.7712308	3.250768	-1.779673	0.2372118
Control_CAR5	30	-0.374275	1.564108	-0.8594874	0.1109374
Control_CAR1	30	-0.1388132	0.6175305	-0.3303815	0.05275511
Control_ACAR10	30	-0.05109781	0.2168988	-0.1183835	0.01618784
Control_ACAR5	30	-0.05105072	0.2170799	-0.1183925	0.0162911

Control_ACAR1	30	-0.05084628	0.2178972	-0.1184416	0.01674908
Control_AAR14	29	-0.05048478	0.005602482	-0.05225457	-0.04871501

As expected, the means and the standard deviation of the CAR data approaches zero as the range of days around the event is reduced. Also of similar interest is the difference in the means of the control and the earnout portfolios. While the control portfolio demonstrates negative abnormal returns, earnout portfolio shows positive abnormal returns. No conclusions may be drawn from these descriptives without further in depth testing. The results were tested further as part of a two sample T test which compared the abnormal returns of the two portfolios.

Table 25: Question 2 One Sample T Test Results

H_A	T Value	P Level (α = 0.10)	Reject H_0	Power α = 0.05	Power α = 0.01
Earnout_CAR10<>0	1.1042	0.278301	No	0.18772	0.06299
Earnout_CAR5<>0	1.0369	0.30807	No	0.17105	0.05556
Earnout_CAR1<>0	0.867	0.392801	No	0.13382	0.03993
Earnout_ACAR10<>0	1.0983	0.280795	No	0.18623	0.06232
Earnout_ACAR5<>0	1.0273	0.312494	No	0.16876	0.05455
Earnout_ACAR1<>0	0.851	0.401517	No	0.13067	0.03867
Earnout_AAR14<>0	17.1138	0	Yes	1	1
Control_CAR10<>0	-1.2994	0.204026	No	0.24157	0.08872
Control_CAR5<>0	-1.3106	0.200263	No	0.24493	0.09042
Control_CAR1<>0	-1.2312	0.228135	No	0.22168	0.07885
Control_ACAR10<>0	-1.2903	0.207125	No	0.23886	0.08735
Control_ACAR5<>0	-1.2881	0.207901	No	0.23819	0.08701
Control_ACAR1<>0	-1.2781	0.211347	No	0.23524	0.08554
Control_AAR14<>0	-48.5265	0	Yes	1	1

The means of the average abnormal returns, AAR14 for the 29 days covered by the two test portfolios, namely the earnout and the control portfolio, lay far apart without overlap. These two data samples are significantly different, which is further proven later by a comparative t test. In Table 25: Question 2 One Sample T Test Results

above, we can also see that the two returns are significantly different from zero. While the earnout abnormal results are significantly positive, control portfolio demonstrates significantly negative abnormal results when it comes to AAR over the ±14 day period around the announcement date.

P values for the three hypotheses testing significant difference from zero, are not small enough to reject the null hypotheses. The abnormal returns, in cumulative or average cumulative form for transactions utilising the earnout contingent payment method, are not significantly different from zero. The Average abnormal returns for the portfolio overall however does suggest that the null hypothesis be rejected. Probability levels for the AAR data are zero.

Two sample T tests were run on the earnout and control portfolio data to investigate if the inclusion of an earnout had any significant effect on investor demand for bidder stock. The expectation was that the use of an earnout demonstrates to the investor that the bidder management is risk aware and is able to take reasonable precautions in mitigating those risks. It was expected that such a perception would make bidder stock more attractive to the investor, the impact of which would be evident in the bidder stock price with higher than expected abnormal returns (Kohers & Ang, 2000, p. 449). Following results were obtained from the two sample T tests of this data.

Table 26: Question 2 - Equal Variance Tests

Test	Reject H_0	P Level
Earnout – Control <> 0		
CAR10	Yes	0.095263
CAR5	Yes	0.09879
CAR1	No	0.150269
ACAR10	No	0.105973
ACAR5	No	0.111613

ACAR1	No	0.130681
AAR14	Yes	0

A two sample T test supports the null hypothesis in most cases except for the 10 day and 5 days Cumulative Abnormal Returns as well as, Average Abnormal Returns and therefore the null hypothesis cannot be rejected for most of these tests as shown above. The null hypothesis can be rejected for Cumulative Abnormal returns for period ±5 and ±10 days around the event.

5.4 Impact of earnout structure on bidder returns

The third and the last question under investigation in this research was to determine if the structure of the earnout had any impact on the abnormal returns for the bidder. Two specific factors, the size of the earnout relative to the total transaction value, and the period over which an earnout may be evaluated were the focus of this question. Both the factors were analysed by applying a two sample T test to the available data. The data for each factor was split into two samples based on a reasonable judgemental boundary. For the study of the earnout proportion affect, a limit of 51% was chosen, while for the study of the earnout period, a limit of 18 months was applied. Both the T tests were conducted for the 90% confidence levels with a keen lookout for P levels pointing to a higher confidence levels. The abnormal returns for the transactions below and above these limits were taken as two independent samples and analysed.

Each hypothesis was further fully defined to test if the impact was negative or positive for both ACAR and CAR data. This resulted in six sub hypotheses for the testing of each factor.

Table 27: Hypothesis 8 Descriptives of the Earnout relative size test

Variable	Count	Median	95% LCL	95% UCL
CAR10LT51	23	-0.34687	-0.3789	-0.15385
CAR10GT51	8	-0.1017	-0.23998	3.782024
CAR5LT51	23	-0.16655	-0.21021	-0.0805
CAR5GT51	8	-0.077	-0.11269	1.957718
CAR1LT51	23	-0.03571	-0.06408	-0.01735
CAR1GT51	8	-0.00448	-0.03379	0.367506
ACAR10LT51	23	-0.01652	-0.01895	-0.00769
ACAR10GT51	8	-0.00497	-0.01143	0.180096
ACAR5LT51	23	-0.01514	-0.02084	-0.00776
ACAR5GT51	8	-0.007	-0.01024	0.177974
ACAR1LT51	23	-0.01786	-0.03204	-0.01011

Insufficient data points were available for an assumption of robustness or normality. In that knowledge, it was expected that non parametric testing would have to be relied upon. The descriptives above from the median section therefore clarify the number of data points available for analysis at the 51% earnout portion boundary. The medians are all negative while only the upper confidence limits for the data belonging to the bidders using smaller earnout percentages are positive.

Table 28: Hypothesis 8 T Test Results for Earnout relative size test

H_A	Z-Value	P Level	Reject H_0 (α= 0.10)
CAR10			
Diff<>0	2.0317	0.042182	Yes
Diff<0	2.0317	0.021091	Yes
Diff>0	2.0317	0.978909	No
CAR5			
Diff<>0	1.9866	0.04697	Yes
Diff<0	1.9866	0.023485	Yes
Diff>0	1.9866	0.976515	No
CAR1			
Diff<>0	2.0317	0.042182	Yes
Diff<0	2.0317	0.021091	Yes
Diff>0	2.0317	0.978909	No
ACAR10			
Diff<>0	1.9866	0.04697	Yes
Diff<0	1.9866	0.023485	Yes

Diff>0	1.9866	0.976515	No
ACAR5			
Diff<>0	2.0317	0.042182	Yes
Diff<0	2.0317	0.021091	Yes
Diff>0	2.0317	0.978909	No
ACAR1			
Diff<>0	2.0769	0.037814	Yes
Diff<0	2.0769	0.018907	Yes
Diff>0	2.0769	0.981093	No

Diff = Abnormal Returns smaller than 51% - Abnormal Returns larger than 51%

From the results above we can see that the null hypothesis testing for significant difference between the two data sets cannot be rejected for all periods.

The null hypothesis to investigate if the bidders using a larger earnout see a larger gain in their abnormal earnout can be rejected in all tests at 10% and 5% significance levels.

We can therefore state that from the results and data at hand, that the hypotheses testing if a large than 51% earnout may be received better by the investors in bidder stock is not supported.

Table 29: Hypothesis 9 Descriptives of the Earnout Period Test

Variable	Count	Median	95% LCL	95% UCL
CAR10LT18	12	-0.24251	-0.40819	-0.11061
CAR10GT18	18	-0.19692	-0.35148	1.105846
CAR5LT18	12	-0.14715	-0.28313	-0.0805
CAR5GT18	18	-0.10434	-0.20536	0.544209
CAR1LT18	12	-0.02164	-0.07201	-0.01387
CAR1GT18	18	-0.03475	-0.04575	0.096065
ACAR10LT18	12	-0.01188	-0.02041	-0.00553
ACAR10GT18	18	-0.00956	-0.01757	0.055292
ACAR5LT18	12	-0.01404	-0.02829	-0.00732
ACAR5GT18	18	-0.00949	-0.01867	0.054421
ACAR1LT18	12	-0.01227	-0.03601	-0.00694

The descriptive section for the data relevant to the testing of the second factor, i.e. the duration over which the earnout is evaluate, is shown in Table 29: Hypothesis 9

Descriptives of the Earnout Period Test. The sample sizes of the two sets do not exceed 20 points, and therefore cannot be considered robust. Non parametric testing was applied similar to the testing for earnout size factor previously. The following results were generated using NCSS.

Table 30: Hypothesis 9 T Test Results of the Earnout Period Test

H_A	Z-Value	P Level	Reject H_0 (α= 0.10)
CAR10			
Diff<>0	-0.5927	0.55336	No
Diff<0	-0.5927	0.27668	No
Diff>0	-0.5927	0.72332	No
CAR5			
Diff<>0	-0.7197	0.471681	No
Diff<0	-0.7197	0.23584	No
Diff>0	-0.7197	0.76416	No
CAR1			
Diff<>0	-0.4657	0.641417	No
Diff<0	-0.4657	0.320708	No
Diff>0	-0.4657	0.679292	No
ACAR10			
Diff<>0	-0.5927	0.55336	No
Diff<0	-0.5927	0.27668	No
Diff>0	-0.5927	0.72332	No
ACAR5			
Diff<>0	-0.7197	0.471681	No
Diff<0	-0.7197	0.23584	No
Diff>0	-0.7197	0.76416	No
ACAR1			
Diff<>0	-0.5081	0.611413	No
Diff<0	-0.5081	0.305707	No
Diff>0	-0.5081	0.694293	No

Diff = Abnormal Returns smaller than 18 months - Abnormal Returns larger than 18 months

Null hypothesis, testing for the difference in abnormal returns for the two samples, cannot be rejected in any of the cases.

Chapter 6: Discussion of Results

The value added to earnout literature from this research is in relation to two factors/attributes of an earnout namely, the relative size of the earnout component in comparison to the total transaction value, as well as the period of time in months that performance may be measured to allow/disallow the additional payments. The impact of these factors is tested on the bidder returns to gauge if these factors are taken into account by an investor or shareholder.

The earnout serves a number of objectives for both the bidder and the target. Very clearly, having an earnout component allows the bidder to reduce the initial payment for an acquisition. This stems from bidder's need to mitigate the risk of information asymmetry which often makes the valuation of an acquisition that much more difficult (Cain, Denis, & Denis, 2010, p. 6). Postponement of a part of the payment to the future may allow for new financing options and more control on the financial liabilities. Since firms prefer debt to equity when it comes to financing their investments, earnout can allow more flexibility into the whole equation. This is especially relevant since the bidder's ability to get debt finance is dependent largely on their tangible assets and earnings growth (Hovakimian, Opler, & Titman, 2001, pp. 7 - 8). A highly leveraged firm could find itself with limited financing options when faced with an attractive opportunity. We also know from previous research that earnouts are more popular in the acquisition of firms involving a small number of shareholders, private enterprises and subsidiaries rather than public companies with fragmented ownership (Kohers & Ang, 2000, p. 446). It stands to reason therefore that the mean transaction size of

earnouts would be lower than the mean acquisition value of transactions not utilising earnouts.

6.1 Are earnouts used in relatively smaller value M&A transactions?

Based on the above reasoning and the arguments made earlier in the report, hypothesis one was stated as follows:

$$H_0: \mu_E <> \mu_{NE}$$

$$H_A: \mu_E < \mu_{NE}$$

where:

μ_E is the mean of total value of transactions utilising an earnout contingent

μ_{NE} is the mean of total value of transactions not utilising an earnout contingent

Hansen (1987) stated in his work on methods of exchange in M&A that the probability of stock being the method of payment in an M&A transaction is directly proportional to the relative size of the acquisition versus the acquirer value. This is because, even though stock may be considered as a contingent pricing alternative, this attribute of a stock payment depends largely on the "target's assets being a significant addition to the acquirer" (Hansen, 1987, p. 77). We may interpret this to state that as the target size decreases relative to the bidder value, stock payments become less and less attractive as the means of exchange.

Based on our understanding of the drivers behind the use of earnouts, we also know that smaller bidders are more likely to utilise an earnout method of payment for their needs as their acquisitions are more likely to be relatively larger than for a large

company (Kohers & Ang, 2000, pp. 449, 457). It therefore stands to reason that the mean transaction size for the earnout portfolio should be much lower than the mean transaction size of a non earnout (all other methods of payment) transaction. In our hypothesis one, we have therefore tested this assumption and shown that there is a moderately significant difference between the two portfolios transaction sizes. We can prove to the 90% confidence level that the earnout transactions size is different from the normal M&A transaction size and that the transaction size is in general smaller than the non earnout M&A transaction.

The information in Table 11: Earnout Portfolio at a glance shows the total values and earnout payments for the transactions included in the earnout portfolio. These values range from as low as 4% of total value (the up front cost as well as all the expected payouts over the evaluation period of the earnout agreement) to as high as 100% in more than one case. Just like a payment in cash may signal the value of the acquisition to the target, it is possible that the agreement to an earnout arrangement, may also signal a similar confidence in its own performance capability by the target. The latter claim was not tested in this study and was not found to have been tested in the past research uncovered for this work.

One of the limitations of this study has been its failure to control for all methods of payments relative to public/private acquisitions. Failing that, it is reasonable to expect that the results in case of our analysis for hypothesis one have been moderated to a large extent. Controlling for the methods of payment is likely to bring more clarity and stronger results through.

6.2 Does the bidder realise any abnormal gains?

Myers and Majluf (1984) opined in their paper that asymmetric information about firm value could be a stronger driver of financing behaviour than the asymmetric information about risk (Myers & Majluf, 1984, p. 32). In the author's opinion however, the two are closely related as the more immediate risk for the bidder in an M&A transaction situation is the risk of overpayment for an asset. The choice of the method of payment that allows the bidder to contain this risk should be received well by the shareholders (Kohers & Ang, 2000, p. 449). This however is made more complex by what is termed as the signalling hypothesis. Although issuing stock in the combined entity as a method of exchange allows the bidder to put contingent payments/rewards in place, the choice is not so straightforward. The choice of method of payment sends a signal to the target; the competitors who may be watching; as well as the shareholders both old and new. Some of the information that may be signalled by such a decision is for example the value of the target for the bidder as well as the management's own perception of their own stock value. We know from past research that the use of own stock as a method of payment can be read as 'bad' sign by the observers, while the use of cash seems to have little impact (Myers & Majluf, 1984, p. 47). So how then must the bidder mitigate the very real risk of overpayment?

An earnout condition can allow the bidder that manoeuvrability and flexibility to mitigate the risk of overvaluation even when using cash as the means of exchange. Based on this reasoning, it would be expected that the inclusion of an earnout in a mergers or acquisition terms would be agreeable to the shareholders and investors at large. It should also be noted for further discussion, that some past research attempts

at studying the returns for the bidder in the M&A concluded on insignificant or inconclusive results, which were later attributed to these studies not having taken account of and controlling the methods of payment (Travlos, 1987, p. 943)

Hypotheses two to four searched for any significant difference in the bidder returns (in the form of Cumulative Abnormal Returns; Average Cumulative Abnormal Returns and Average Abnormal Returns) from normal. The hypotheses were stated as follows:

Hypothesis 2. ACAR Hypothesis

$$H_0: \mu_{ACAR_{BE}} = 0$$

$$H_A: \mu_{ACAR_{BE}} \neq 0$$

where:

$\mu_{ACAR_{BE}}$ is the mean of ACAR of transactions utilising an earnout contingent

Hypothesis 3. CAR Hypothesis

$$H_0: \mu_{CAR_{BE}} = 0$$

$$H_A: \mu_{CAR_{BE}} \neq 0$$

where:

$\mu_{CAR_{BE}}$ is the mean of CAR of transactions utilising an earnout contingent

Hypothesis 4. AAR Hypothesis

$$H_0: \mu_{AAR_{BE}} = 0$$

$$H_A: \mu_{AAR_{BE}} \neq 0$$

where:

$\mu_{AAR_{BE}}$ is the mean of AAR of transactions utilising an earnout contingent

The means of the abnormal returns were tested as an event study around the announcement date for three range of days. The tests were conducted for ±10 days; ±5 days and ±1 day around the event. Average Abnormal Returns (AAR) was tested around 14 days around the announcement date.

P values for the two hypotheses testing significant difference from zero, were not small enough to reject the null hypotheses at the 10% significance level. The abnormal returns, in cumulative or average cumulative form for transactions utilising the earnout contingent payment method, were not significantly different from zero. The Average abnormal returns for the portfolio overall however did suggest that the null hypothesis be rejected. Probability levels for the AAR data are zero.

From the results above, it may seem that there are not clear benefits to the bidder for using an earnout in the transaction terms. This should however be viewed in the light of the fact that a number of these transactions were stock based in some form or another. Based on past research we know that issuing of stock, dilution of old shareholder control and earnings do not sit well with the market and issuing stock for the purposes of investment results in a downward stock price change (Myers & Majluf, 1984, pp. 3-4). The breakdown of the earnout portfolio in terms of the method of payment can be seen in the Table 31: Portfolios by Method of payment below. It is

clear from this information that almost 50% of the transactions involved the use of stock in one form or another. Remembering that the use of cash as a method of payment does not guarantee a positive stock price response for the bidder, we can say that the results support the view that earnouts have a positive impact on the bidder share price. This can be controlled in a future study to provide a more conclusive proof of the same (Travlos, 1987, p. 943).

Travlos (1987) also cite Dodd, Firth and Eger claiming that bidding firms earn either significant negative abnormal returns or insignificant positive abnormal returns (Travlos, 1987, p. 943). The problem with the past research and these analysis was that they had not controlled for other methods of payment. Our result therefore manages to recreate the same solution since we had not controlled for other methods of payment either. Kohers and Ang (2000) found significant abnormal returns around the event which was not similar to the results of this work. This discrepancy in results was attributed to the lack of control over the methods of payment types as well as the public/private categorisation of the acquisitions.

Table 31: Portfolios by Method of payment

Portfolio	Cash	Cash and Shares	Linked Units	Share Swap	Shares	(blank)	Grand Total
Control	19	7	2	7	1		36
Earnout	17	16			4		37

Another look at the data also reveals that even though the returns in both the control and earnout group were not significant for the most part, the abnormal returns for the earnout portfolio remained positive while the control portfolio returns were consistently negative. In comparison to each other, the returns in case of the AAR

were so far apart that the two sample T test analysis revealed no overlap of the data at all. This is also apparent from Table 25: Question 2 One Sample T Test Results from the UCL and the LCL of the two AAR tests.

The comparative analysis was stated in the following way.

Hypothesis 5. Comparative ACAR Hypothesis

$$H_0: \mu_{ACAR_{BE}} = \mu_{ACAR_B}$$

$$H_A: \mu_{ACAR_{BE}} \neq \mu_{ACAR_B}$$

where:

$\mu_{ACAR_{BE}}$ is the mean of ACAR of transactions for the bidder utilising an earnout contingent

μ_{ACAR_B} is the mean of ACAR of transactions for the bidder not utilising an earnout contingent

Hypothesis 6. Comparative CAR Hypothesis

$$H_0: \mu_{CAR_{BE}} = \mu_{CAR_B}$$

$$H_A: \mu_{CAR_{BE}} \neq \mu_{CAR_B}$$

where:

$\mu_{CAR_{BE}}$ is the mean of CAR of transactions utilising an earnout contingent

μ_{CAR_B} is the mean of CAR of transactions not utilising an earnout contingent

Hypothesis 7. Comparative AAR Hypothesis

$$H_0: \mu_{AAR_{BE}} = \mu_{AAR_B}$$

$$H_A: \mu_{AAR_{BE}} \neq \mu_{AAR_B}$$

where:

$\mu_{AAR_{BE}}$ is the mean of AAR of transactions utilising an earnout contingent

μ_{AAR_B} is the mean of AAR of transactions not utilising an earnout contingent

The test results reveal that the difference between the positive returns for the earnout portfolio and the negative returns on the control portfolio was only moderately significant for the cumulative abnormal returns ±5 and ±10 day periods. Tests were not conducted to investigate which values were higher as from the earlier one sample results we can see the earnout data is all positive while the control returns are all negative. This can be reasonably expected since this study did not control for the method of payments and the post announcement impact of stock based transactions is likely to have a negative impact. As mentioned earlier, it is likely that the earnout component adds value here by reducing the negative impact due to the method of exchange. This change is however not significant as shown by the results here.

The null hypothesis can be rejected for Cumulative Abnormal returns for periods ±5 days; ±10 days and ±1 day around the event only since it shows a moderately significant difference between the earnout and control abnormal returns.

6.3 Does the structure of an earnout have any impact on the bidder returns?

Although significant research was found in the area of M&A and the methods of exchange for these transactions, very limited detailed analysis was uncovered to provide background to this question. We know at a high level from Kohers and Ang study how the earnout size relates to the private and public acquisitions (Kohers & Ang, 2000, p. 454). From the same study we also know how earnouts serve as a tool to retain and extract performance from the owner/managers of the acquired firms. While establishing how the foundational theory on these issues may apply to the South African context, Hypothesis eight and nine in this study sought to find some evidence of the impact of the size of an earnout as well as the duration of the earnout evaluations on the bidder/acquirer stock price.

Kohers and Ang (2000), in their work on drivers of earnout tested if the size of an earnout is driven by the two well understood objectives of earnouts. In turn, hypotheses eight and nine take this a step further to figure out if the size and the period of earnout evaluation has any impact on the bidder abnormal results (Kohers & Ang, 2000, p. 458). While Kohers and Ang conducted a Tobit regression to figure out the level of dependency between the abnormal returns for the bidder and their independent variables, no such dependent variable were hypothesised in this study due to time constraints on the study.

Each hypothesis was further subdivided into multiple sub-hypotheses to gain a clear understanding of the results to the highest confidence levels possible. Only the ACAR and CAR Returns were tested as Average Abnormal returns cannot be related to each

security easily. Both ACAR and CAR data were tested for differences between the earnout and control portfolio as well as for the relative sizes. This was achieved with the definition of 12 hypotheses, six for each of the hypotheses and three for each of the data types (ACAR and CAR). All the tests were conducted at the 10% significance level. ACAR and CAR data for the three event intervals was applied to this testing, namely the ±10 days; ± 5 days and ±1 day around the announcement date.

Hypothesis eight and nine were stated as follows.

Hypothesis 8. Impact of earnout size on bidder returns

a. *Are ACAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically different from the ACAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?*

$$H_0: ACAR_{LT51} = ACAR_{GT51}$$

$$H_A: ACAR_{LT51} \neq ACAR_{GT51}$$

b. *Are ACAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically smaller than the ACAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?*

$$H_0: ACAR_{LT51} \geq ACAR_{GT51}$$

$$H_A: ACAR_{LT51} < ACAR_{GT51}$$

c. *Are ACAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically larger than the ACAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?*

$$H_0: ACAR_{LT51} \leq ACAR_{GT51}$$

$$H_A: ACAR_{LT51} > ACAR_{GT51}$$

where:

$ACAR_{GT51}$ is the Average Cumulative Abnormal Returns for the bidding company where earnout value greater than or equal to 51% of the total transaction have been used

$ACAR_{LT51}$ is the Average Cumulative Abnormal Returns for the bidding company where earnout value less than 51% of the total transaction have been used

d. *Are CAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically different from the CAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?*

$$H_0: CAR_{LT51} = CAR_{GT51}$$

$$H_A: CAR_{LT51} \neq CAR_{GT51}$$

e. *Are CAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically smaller than the CAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?*

$$H_0: CAR_{LT51} \geq CAR_{GT51}$$

$$H_A: CAR_{LT51} < CAR_{GT51}$$

f. *Are CAR returns for bidders paying less than 51% of the total transaction value as earnouts statistically larger than the CAR returns for bidders paying more than or equal to 51% of the total transaction value as earnouts?*

$$H_0: CAR_{LT51} \leq CAR_{GT51}$$

$$H_A: CAR_{LT51} > CAR_{GT51}$$

where:

CAR_{GT51} is the Cumulative Abnormal Returns for the bidding company where earnout value greater than or equal to 51% of the total transaction have been used

CAR_{LT51} is the Cumulative Abnormal Returns for the bidding company where earnout value less than 51% of the total transaction have been used

6.4 Hypothesis 8 Discussion

The 6 sub hypotheses were rejected in all cases at both 10% and 5% significance levels. From the data it seems that the larger than 51% earnout portion is well received by the market. This can be for a number of reasons. As discussed previously, an earnout component may provide multiple advantages to the bidder, some of which may have a

direct impact on the existing shareholders as well as the new ones. For instance the following known effects of earnouts have been studied in literature:

- Management incentivisation
- Allows the acquisition to be performance managed
- Serve as a vehicle to defer tax

Hypothesis 9. Impact of earnout period on bidder returns

a. *Are ACAR returns for bidders using earnout periods less than 18 months statistically different from the ACAR returns for bidders using earnout periods more than or equal to 18months?*

$$H_0: ACAR_{LT18} = ACAR_{GT18}$$

$$H_A: ACAR_{LT18} \neq ACAR_{GT18}$$

b. *Are ACAR returns for bidders using earnout periods less than 18 months statistically smaller than the ACAR returns for bidders using earnout periods more than or equal to 18months?*

$$H_0: ACAR_{LT18} \geq ACAR_{GT18}$$

$$H_A: ACAR_{LT18} < ACAR_{GT18}$$

c. *Are ACAR returns for bidders using earnout periods less than 18 months statistically larger than the ACAR returns for bidders using earnout periods more than or equal to 18months?*

$$H_0: ACAR_{LT18} \leq ACAR_{GT18}$$

$$H_A: ACAR_{LT18} > ACAR_{GT18}$$

where:

$ACAR_{LT18}$ is the Average Cumulative Abnormal Returns for the bidding company where earnout periods less than 18 months have been used

$ACAR_{GT18}$ is the Average Cumulative Abnormal Returns for the bidding company where earnout periods greater than or equal to 18 months have been used

d. *Are CAR returns for bidders using earnout periods less than 18 months statistically different from the CAR returns for bidders using earnout periods more than or equal to 18months?*

$$H_0: CAR_{LT18} = CAR_{GT18}$$

$$H_A: CAR_{LT18} \neq CAR_{GT18}$$

e. *Are CAR returns for bidders using earnout periods less than 18 months statistically smaller than the CAR returns for bidders using earnout periods more than or equal to 18months?*

$$H_0: CAR_{LT18} \geq CAR_{GT18}$$

$$H_A: CAR_{LT18} < CAR_{GT18}$$

f. Are CAR returns for bidders using earnout periods less than 18 months statistically larger than the CAR returns for bidders using earnout periods more than or equal to 18months?

$$H_0: CAR_{LT18} \leq CAR_{GT18}$$

$$H_A: CAR_{LT18} > CAR_{GT18}$$

where:

CAR_{LT18} is the Cumulative Abnormal Returns for the bidding company where earnout periods less than 18 months have been used

CAR_{GT18} is the Cumulative Abnormal Returns for the bidding company where earnout periods greater than or equal to 18 months have been used

6.5 Hypothesis 9 Discussion

If earnout size had such an impact on the investor behaviour then this can be explained by the advantage of delayed payment which allows the bidder to pay only for its expectations of the deal. All other premiums and surpluses are postponed to a future time when either the target would have performed beyond expectations, in which case, the acquirer would enjoy the unexpected gains, or the target would have failed in its endeavour, in which case, the acquirer would not lose out on any more than it bargained for in the first place. The expectation from the results of this analysis was that the shareholder may see earnout duration as an important factor in making investment decisions. The result however did not lend any support to the hypothesis at the 10% significance level for the 18 month boundary. It may be possible that an analysis of a larger set of data with or without a different boundary results in a more

favourable result, but in this study, the null hypothesis could not be rejected. We can therefore state that with the data at hand, there is insufficient evidence to claim that transaction with earnout periods of 18 months or less generate any different bidder abnormal returns than those where earnout periods are more than 18 months.

Chapter 7: Conclusion and Recommendations

7.1 Background and Objectives

Previous studies going as far back as Myers and Majluf (1984) investigating the various methods of exchange in an merger or tender scenario have demonstrated a difference in the abnormal returns of cash based and stock based transactions. Myers and Majluf in their study of financing options for investments (Corporate financing and investment decisions when firms have information that investors do not have, 1984) noted that investments financed with stock issue are received as 'bad news' while cash investments from surplus balance sheet funds have no such reaction from the investor (Myers & Majluf, 1984, p. 47). No distinction on methods of payment was made in this study and therefore the returns on the control portfolio are as expected. The abnormal returns would have been reduced marginally by the stock issue for these investments or if the stock has been used as currency for these transactions.

In another study done by Travlos (Corporate Takeover Bids, Methods of Payment, and Bidding Firms' Stock Returns, 1987), it was noted similarly that returns/results in bygone studies were inconclusive on the issue of the 'signalling effect' of the method of payment because those investigations failed to control for the methods of payment (Travlos, 1987, p. 943). This study has done likewise within the constraints of the data available. An investigation to cater for the different methods of payment would require a larger sample of earnout transactions which after the split would still allow for certain robustness and reliable results.

The main objectives of this study were to verify a number of conclusions from the foundation work of Kohers and Ang (2000) while adding value to the literature by

exploring deeper into the earnout structure. Although no research or study was discovered that may have already investigated the earnout attributes such as the relative size of the earnout to the total transaction value, or the earnout period and their impact on the bidder stock returns, the report here does not claim to be the seminal work on the topic. It is however possible that these issues may not have been explored in the South African context and in that light they may add some real value to the South African literature on this topic.

7.2 Findings and Results

The findings of this study can be summarised in tabular form as shown in Table 32: Hypotheses and Results

Table 32: Hypotheses and Results

Hypothesis	Reject H_0 $\alpha = 0.10$	Reject H_0 $\alpha = 0.05$
Hypothesis 1	Yes	No
Hypothesis 2	No	No
Hypothesis 3	No	No
Hypothesis 4	Yes	Yes
Hypothesis 5	Yes (Partially for 10 and 5 days)	No
Hypothesis 6	No	No
Hypothesis 7	Yes	Yes
Hypothesis 8	Yes	Yes
Hypothesis 9	No	No

Dissimilar to the studies that this investigation was attempting to mimic, the abnormal returns trend for the bidder did not match the 1 day around announcement date that had been noticed by Kohers & Ang. The reasons for this are likely to be the failure to control for some other variables in the data, such as method of payment and type of acquisition. As for the core objective of the study, which was to add new knowledge to

the literature, it was noted that earnout size relative to the full transaction value plays a significant role in the investor decision making process. As per the findings in this study, it is possible to state that investors seem to react more positively to higher than 51% earnout size than below that limit.

7.3 Summary

Objectives of the study were achieved as a number of findings made in the Kohers and Ang study were selected and verified. In addition to that new information was added to the literature for the South African context. Investors on the JSE view the earnout size as a good determinant of risk mitigation, which has been tested in this study, in relation to the abnormal returns for the bidder stock.

7.4 Further Recommendations

As per the limitations of this report, which were highlighted earlier, there is a wide scope of manoeuvrability and prospects with continued enhancement of this study. Some of the key controls not established in this study were the controls for methods of payment other than earnout. Although data was collected for most of the instances of transactions, it was not sufficient in volume to justify inclusion in the analysis. Furthermore, data was also collected for most part for type of acquisition per transaction. The categorical variable 'Acquisition' could be reviewed with little effort and elaborated for inclusion in the analysis on the basis of the Kohers and Ang results.

A number of other options that have come to light as progress was made with the objectives at hand can be listed as follows:

- Investigation of the value of the target acquisition versus the premium paid for that acquisition. This could also be tied in with the hubris hypothesis for a more in depth research investigation
- According to Kohers and Ang (2000) "While bidder runs the risk of overpayment, the seller runs the risk of not getting the true expected worth, consequently, some mutually advantageous mergers may not occur (Kohers & Ang, 2000, p. 447). The role of earnouts in the successful completion of mergers is worth investigating further.
- The data for Technology and Services attributes was captured for the Earnout portfolio. This would allow a study of the relationship of earnouts to industries that have little or no tangible assets. Further data for a control portfolio or all the other transactions would allow for a worthwhile comparative analysis in the South African context
- We also find that targets in earnout mergers are more likely to operate as separate subsidiaries of the acquirer after the merger occurs, which facilitates the ability to measure target performance. This may imply that targets are likely to see the offer as being more flexible and thereby be more responsive to it. Does such an Earnout arrangement imply more control for the target? This would also be worth investigating.

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