The role and the functions of the Alternative Exchange (AltX) and its contribution to the development of the small and medium-sized enterprises (SMMEs) in South Africa

By

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A full thesis submitted in fulfilment of the requirement for the degree of Master of Commerce to the School of Business and Finance of the Faculty of Economic and Management Sciences at the University of the Western Cape.

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October 2019

Plagiarism Declaration

I, Xolisa Mtiki, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in fulfilment of the requirements for the degree of Master of Management in Finance and Investment in the University of the Western Cape, Cape Town. It has not been submitted before for any degree or examination in this or any other university.

Xolisa Mtiki

October 2019

Dedication

I dedicate this thesis to special woman in my life, my grandmother, Nobhejile Nomalungelo Mtiki.

Acknowledgement

I wish to extend my gratitude to:

- God for always being faithful to me, empowering me with strength, guidance and most needed leadership in my life.
- My research supervisor, Professor Heng-Hsing Hsieh for his guidance, patience and support. His experience and attitude towards excellence has been very helpful in making this research paper possible. Not leaving out his prolific colleague Professor Kathleen Hodnett, who co-supervised me. She also been an outstanding individual throughout my work.
- To my beloved and special parents, Mrs Nonzame Mtiki and Mrs Nobhejile Nomalunngelo Mtiki.
- To my family, Othembele Mtiki (wife) and Mpilwentle Mtiki (daughter).
- Last but not least, to School of Business and Finance at University of the Western Cape, Cape Town.

Abstract

Motivated by the number of firms that migrate from the Alternative Exchange (AltX) to the JSE main board, this research undertakes to examine the role and the functions of the AltX and its contribution to the development of the small and medium-sized enterprises (SMMEs) in South Africa over the period from January 2004 to December 2015. This study seeks to explore the performance of the firms that have migrated from the AltX to the JSE main board, as well as the attributes that contribute to a successful migration. The study emerges by computing risk, return, risk-adjusted performance and liquidity statistics of the firms that migrated from the AltX to the JSE main board over the period of the research since their respective listings on the AltX. In the preliminary tests conducted in this study, the excess returns of the sample firms were regressed against the market risk premium using ALSI as the market proxy. It is discovered that the beta coefficients estimated by the regressions are statistically insignificant. This indicates that the firms listed on the AltX have insignificant correlation with the firms listed on the JSE main board. Therefore, the ALSI could not be used as a performance benchmark for the sample firms in this research.

Subsequently, the research evaluates the market response before and after the announcement date and the actual migration date of the firms that have migrated from the AltX to the JSE main board. The reasons why this research investigates the impact of announcement and actual migration separately is due to the observation that the period between announcement date and migration date is usually more than a month and investors might have different reactions towards these two mentioned events. Moreover, this is the first research that has investigated the impact corporate reaction on both migration announcement date and the actual migration date of the firms from the AltX to the JSE main board. The results reveal that there are significant average abnormal returns and average abnormal turnovers reaction around migration announcement date/actual migration date. The findings suggest that both the migration announcement and actual migration of the firms from the AltX to the JSE main board have produced significant abnormal returns.

Moreover, the research evaluates the performance of the firms that have migrated from the AltX to the JSE main board against their comparable peers. The performance evaluation is conducted in two folds. Firstly, the evaluation is conducted in order to assess the financial

position of the AltX sample firms before their migration to the JSE main board. Secondly, the post migration performance evaluation is conducted in order to classify each of the sample firms either as a success or as a failure after their migration to the JSE main board. The results reveals that, out of 20 sample firms only 13 firms have been categorised as successful post their migration from the AltX to the JSE main board, while the remaining 7 firms are categorised as unsuccessful post migration.

Finally, this research investigates the attributes that differentiate the AltX firms that are likely to be successful and those that are unlikely to be successful after their migration to the JSE main board. To achieve this, Multivariate Discriminant Analysis (MDA) model developed by Altman (1968) is employed. The results reveals that, the model is able to classify 90% of the original cases and 85% of the cross-validated cases perfectly. Moreover, the model has identified net profit margin, current ratio and return on capital invested as the most important financial ratios in distinguishing the successful firms from unsuccessful firms post migration from the AltX to the JSE main board.

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Introduction

1.1 Research Background

Forerunners to the Alternative Exchange (AltX) board were the Development Capital Market (DCM) board in 1984 and the Venture Capital Market (VCM) board in 1989 of the JSE. These boards were launched with the intention of meeting the needs of less established firms, which were not qualified to be listed on the JSE main board. The firms listed on the DCM tend to enjoy less stringent rules compared to the listing requirements of the JSE main board (Mkhonza, 2007). Nevertheless, the creation of the DCM was not well received by the market due to a number of reasons. One of the major reasons that led to the DCM not to be well received by the market, is that it had no quality controls over the firms that were listed on it (Mkhonza, 2007). As a result, many firms were reluctant to apply for listing on the DCM and rather waited until they qualified for the listing on the JSE main board. In addition, it is argued that liquidity was one of the reasons that caused many investors to be wary of investing in the DCM listed firms, which eventually resulted in its closure on 30 July 2004 (Government Gazette, 2004). On the other hand, the VCM was established in 1989 with the intention of assisting firms that are specialising in capital projects such as venture capital conglomerates or single venture capital. Once again, the low liquidity levels resulted in the failure to attract investors to invest in the VCM listed firms and this also led to its closure on 30 July 2004 (Government Gazette, 2004). When these two boards closed there were only 13 firms listed on the VCM and 8 firms listed on the DCM (Vanek, 2007).

The DCM and the VCM boards were largely unsuccessful in meeting their main objectives. The primary reason for the failure of the DCM and the VCM were their inability to attract quality firms and investors. As a result, the AltX was established as a suitable replacement for both the DCM and the VCM. The AltX was formed on the basis that it would represent a parallel exchange to the main board of the JSE to ensure the development of SMMEs (Magliolo, 2007). Since its creation, the AltX has been more successful in attracting and developing SMMEs than its predecessors, the DCM and the VCM. It is argued that quality controls have ultimately made the AltX far better than its predecessors. The AltX advisory committee, the directors' induction programmes and the role of the designated advisers are all

focused on the quality controls of the firms that are listed on the AltX (Czepek, 2008). One of the major contributions of the AltX is its ability to provide a platform from which SMMEs are able to raise their profiles, raise capital, secure better quality deals and employ more people to make a greater contribution to the South African economy (BusinessTech, 2017). In October 2007, the JSE main board successfully introduced the FTSE/AltX 15 Index, which allows investors to track the performance of the AltX listed firms. The establishment of the FTSE/AltX 15 Index also led to the improvement in liquidity, visibility as well increase in tradability of the shares of firms listed on the AltX board.

In spite of the contribution and the role of the AltX in the development of SMMEs in South Africa, there is a lot that still needs to be done in order to improve the services of the markets for SMMEs. The government, private sector, and other stakeholders needs to partake in the development of the AltX into a successful SMMEs exchange. According to Harwood & Konidaris (2015), the government can offer various types of incentives and support, including tax incentives for issuers and investors, investing directly in the SMME markets and providing grants for issuers to cover listing costs which they incur in the SMME exchanges. In addition, the private institutions can assist by ensuring that there is more research coverage on the listed SMMEs, provide special training programs to educate SMMEs on the benefits of listing on the SMME markets, and on how to attract investors.

Motivated by the increasing number of the AltX listed firms that migrates to the JSE main board, the purpose of this research is to investigate whether the AltX does fulfill its intended purpose, which is primarily to ensure a successful transition of firms from the AltX to the JSE main board. This research undertakes to examine the market reactions to migration announcement and actual migration of the firms from the AltX to the JSE main board. The market reaction is assessed in terms of the change in stock returns, change in trading liquidity and change in risk characteristic of the migrated firms. Moreover, this study further investigates the attributes that constitutes a successful migration from the AltX to the JSE main board.

1.2 Problem Statement

Since the establishment of the AltX, the exchange has listed more than 100 firms and 29 have subsequently migrated to the JSE main board (Cheyne, 2016). Despite the significant importance and contribution of the AltX to the South African economy, it is faced with numerous challenges that obstruct its growth. One of the major questions raised about the AltX is its ability to fulfil its intended purpose, which is to prepare the readiness of the AltX firms to migrate to the JSE main board. As part of fulfilling its intended purpose, the AltX has to provide a platform for SMMEs to develop and improve their profiles and financial sustainability. In the process of measuring the success of migration of the firms from the AltX to the JSE main board, the following questions emanate:

- Are there tangible benefits for the migration of AltX listed firms to the JSE main board?
- How have the firms that migrated to the JSE main board from the AltX perform compared to their own performance prior to migration?
- How have the firms that migrated to the JSE main board from the AltX perform compared to the firms listed on the JSE main board?
- What are the attributes that contribute to the successful migration of the AltX firms to the JSE main board?

1.3 Research Objectives

This study develops a framework for explaining the challenges and success factors of the AltX in South African economy in an attempt to support the AltX in achieving its core functions successfully. The research objectives of this study undertakes to determine the critical factors for the AltX development in South Africa and includes:

- Comparing and contrasting the listing requirements of the AltX to the DCM, the VCM and the JSE main board and identifying critical improvements of the AltX from the DCM and the VCM.
- Analyse the performance of the AltX as a dedicated Exchange for SMMEs.
- Evaluating the market response before and after the announcement date and the actual migration date for the firms that migrated from the AltX to the JSE main board.
- Computing risk, return, risk-adjusted performance and liquidity statistics of the firms that migrated from the AltX to the JSE main board over the period of the research since their respective listings on the AltX until 31 December 2015.
- Evaluating the performance of the firms that migrated from the AltX to the JSE main board against the performance of the comparable benchmarks on the main board such as, the ALSI, FTSE/AltX 15 Index, and other comparable firms in the JSE main board.

This dissertation consists of six chapters. Chapter 1 describes the scope and purpose of the study. The chapter starts with the background of the study, followed by the definition of the problem, and the objectives of the study. Thereafter, the potential contribution of the study is discussed. Chapter 2 provides an overview of the theoretical framework underpinning the research, which includes the Efficient Market Hypothesis (EMH), Random Walk model (RW), Capital Asset Pricing Model (CAPM), Arbitrage Pricing Model (APT) as well as Behavioral Finance.

Chapter 3 presents the literature review that relates to the topic of this research. This entails discussion on the historical development of the JSE main board and the AltX as well as their contributions to the South African economy over the years. Furthermore, the Chapter discusses the JSE as an efficient market, the development of the AltX as a stock exchange, roles and function of the AltX, the importance of SMMEs exchanges in the emerging markets and the challenges of that are facing the exchanges for SMMEs globally.

Chapter 4 discusses the problem statement and the research objectives undertaken to answer the research problem. Furthermore, this chapter discusses the sample selection, research methodologies, and potential research biases and how they are mitigated in the research. Chapter 5 tests the existence of abnormal returns and abnormal volumes around migration announcement date. The chapter further examines the existence of the abnormal returns and abnormal volumes around actual migration date.

Chapter 6 evaluates the performances of the AltX board selected firms against their counterparts listed in the AltX board and in the JSE main board and subsequently classify each of the sample firms as either success or failure post migration. Chapter 7 investigates the attributes that distinguish between the AltX board firms that are likely to be successful and those that are unlikely to be successful after they have migrated to the JSE main board, over the period from 1 January 2004 until 31 December 2015.

1.4 Potential Contribution

The results of this research will contribute significantly to the existing literature on the development of the AltX as a stock exchange and its contribution to the SMMEs sector and South African economy.

1. Although significant research by Mlonzi, Kruger and Nthoesane (2011) and Kruger (2014) has been conducted on the migration of firms from the AltX to the JSE main board, including the various announcements by the AltX listed firms, however, none of these previous studies has examined the market reaction using both the actual migration date and migration announcement date. This research undertakes to investigate investor reactions using both the announcement date and actual migration date of firms from the AltX to the JSE main board. This will add to the investors' understanding about the effects of migration announcement date and actual migration date on stock prices of the AltX listed firms.

2. The research conducted by Ungerer, Gerber, and Volchok (2015) has brought a lot of insight regarding the performance of the AltX listed firms prior their migration to the JSE main board. Similarly, a study conducted by Kruger (2014) has documented a vital empirical evidence on the performance of the AltX listed firms prior and post their migration to the JSE main board. This research apply Multivariate Discriminant Analysis (MDA) to identify attributes that distinguish between the AltX firms that are likely to be successful and those that are unlikely to be successful after they have migrated to the JSE main board, over the period from 1 January 2004 until 31 December 2015. Interestingly, none of the previous studies that have been conducted on the AltX and JSE main board to measure the corporate events effects on firms' returns/volumes has used this approach for the same purpose that it has been used for in this research. This contribution will enable the investors to make informed decisions on which AltX listed firms to invest in based on the predictions by MDA model.

3. The effects of corporate reactions on stock return and trading volume of the AltX listed firms are well documented in the research conducted by Kruger (2014). On the other hand,

there are very few studies that have employed trading volumes to examine the corporate reactions on the AltX listed firms. In an attempt to contribute further into the existing literature about the effects of corporate reactions on AltX and JSE main board, this research investigates how the trading volume behaves prior to, during, and after corporate announcements. This will lead to a further understanding of how different kinds of investors react in situations when they encounter differences in terms of information.

4. Another significant contribution from this research is that, majority of corporate actions studies conducted on the AltX listed firms have employed the ALSI as a benchmark in measuring the performance of the AltX listed firms. After the author has computed risk, return, and risk-adjusted performance of the AltX listed firms against the ALSI, the findings reveal that, the majority of the AltX firms have very low unsystematic risk. In essence, the majority of the shares listed in the AltX are not sensitive to the ALSI changes or movements, contrasting the majority of the firms listed in the JSE main board. Based on this evidence the author concludes that, it will be irrelevant to measure the performance of the AltX migrated firms against the ALSI, as there is a vast difference between the two markets. Instead of using the ALSI as one of the benchmarks, the author has employed other comparable benchmarks in the JSE main board.

2

Theoretical Overview

2.1 Introduction

This chapter discusses the different finance theories, which relates to this study and often utilised as methods for testing the efficiency of the markets. Such theories includes Efficient Market Hypothesis (EMH), Random Walk model (RW), Capital Asset Pricing Model (CAPM), Arbitrage Pricing Model (APT) as well as Behavioral Finance.

Eakins and Mishkin (2012) states that a market can only be regarded as an efficient market when all the information available is being reflected on the stock prices. One of the fundamental arguments of the EMH is that, when an investor buys a stock, that particular investor cannot expect to earn an abnormal high return than what the market offers. This propose that an investor cannot outperform the market. The EMH is linked with the notion of RW, which according to Asif, Khwaja and Wali (2015) states that random changes on the current stock prices cannot be predicted based on the patterns of previous prices. On the other hand, the empirical evidence from various studies on EMH suggests that the market theory is not without faults.

The CAPM, as developed by Sharpe (1964), Lintner (1965) and Mossin (1966), it is a model that explains the correlation between risk and return for portfolios and individual stocks. According to Elbannan (2015), the CAPM is a finance model that employs a single risk factor known as market beta and various scholars have tested its relevance. Despite its extended use by many scholars and professionals the CAPM has its own shortcomings. One of the main criticisms against the CAPM is that it is based on unrealistic assumptions. The CAPM is built on several assumptions, however, the most controversial assumptions by CAPM is that of a perfect capital market (Bodie, Kane and Marcus, 2008).

Developed by Ross (1976), the APT is regarded as a suitable substitute of the CAPM. The theory claims to circumvent the shortcomings of the CAPM by introducing assumption that are more realistic compared to the CAPM. One of the APT model strengths is that it allows the

researcher to select more factors, unlike the CAPM which is one factor model.

In contrast to EMH, Behavioural Finance advocates that market participants are irrational and therefore acts irrational when making investment decisions, which may eventually cause them to over or under price stocks (De Bondt & Thaler, 1994). In essence, the Behavioural finance refers to a state where a stock or a group of stocks' performance deviates from the assumptions of the EMH due to various reasons.

2.2 Efficient Market Hypothesis and Random Walk Hypothesis

Fama (1965), the originator of the EMH, states that an efficient market refers to the market in which all the public available information is reflected in the stock prices such that there are no prospects to outperform the market. The notion of efficient market proposes that, it is impossible to outperform the market using publicly available information. If the latter holds, this will suggests that in an efficient market the stock prices follows a Random Walk Hypothesis (RWH). The RWH was formally introduced in the 1950s when Kendall & Hill discovered that stock prices tend to fluctuate randomly. The random walk hypothesis states that, the future stock price cannot be predicted based on the past stock price patterns. Al Ashikh (2012) proclaims that, in the market where the RWH exists then the weak-form EMH must also exists. If the random walk model holds in a particular market, it would then suggests that particular market as an efficient market and investor cannot be able to constantly earn abnormal returns. EMH argues that the market is efficient, and it further classifies the market into three different versions: weak, semi-strong and strong.

2.2.1 Weak-form efficiency

Weak-form of efficient market hypotheses suggests that all the historical market information is fully reflected on the current stock prices (Bodie *et al*., 2008). The basic augment of weak-form is that the current stock prices incorporate all the information of past prices such that it is impossible for an investor to predict future stock price using the past stock price patterns. It validates the RWH by assuming that, the information that affects the stock prices is entirely random and thus, it is impossible to predict future prices by researching the past prices. On the other hand, various studies conducted by scholars such as Urrutia (1995), Worthington and Higgs (2004), Mollik and Bepari (2009) suggest that, arbitrage occurs more often in the weak-form than the other two forms.

2.2.2 Semi-strong form efficiency

Semi-strong form of EMH asserts that the current stock prices does not only incorporate what is happening in the weak-form, but also new publicly available information such as earnings announcements, dividends announcement, politics and economical news (Bodie *et al*., 2008). The fundamental argument of semi-strong form is that the current stock price is calculated based on all publicly available information and therefore its impossible for the investors to

outperform the market using either technical or fundamental analysis. On the other hand, when the market prices incorrectly react to the new information, this will present an investor with a chance to make abnormal returns. According Ali, Mustafa and Zaman (2001) in order for the semi-strong form to hold, investors who are in possession of information that is not available to the public domain must not act upon that information for personal gain.

2.2.3 Strong-form efficiency

Share prices in a strong form capital market is fully reflective of both public and private information such that no investor is able to generate abnormal rate of return (Bodie *et al.*, 2008). Scholars such as Keane (1983), Weston and Copeland (1992), Correia, Flynn, Uliana and Wormald (1993), Rees (1995) support this, and they further mentioned that the use of insider information cannot be used to earn abnormal returns in the strong form. On the other hand, the study conducted by Barnes (2009) reveals that, all the large markets have exhibited the existence of weak and semi-strong form of efficiency and none of them showed efficiency in the strong form. The author is of the view that, the market participants that are in possession of the inside information do profit from such information. In support of Barnes (2009) view, Ma (2004) suggests that, those who are likely to benefit out of inside information are portfolio managers, corporate insiders and stock analysts.

The EMH argument on market efficiency contradicts the emphasis placed by the technical and fundamental analysis. The technical analysis is a technique that attempts to use a previous stock price pattern and trends in order to predict the future value of that stock (Contreras, Hidalgo and Núñez-Letamendia, 2012). Thus, the technical analysts employ previous stock price trends and patterns in an attempt to generating abnormal returns. On the other hand, fundamental analysis is a method that attempts to determine the value of the firm's stock by investigating the various key value-drivers of the firm (Contreras *et al*. 2012). Consequently, fundamental analysis is a method that attempts to determine the intrinsic value of a stock by investigating factors related to macroeconomic, industry and firm valuation factors (Petrusheva, 2016).

2.3 Capital Asset Pricing Model

Building on the previous work of Harry Markowitz (1959) on modern portfolio theory, Sharpe (1964), Lintner (1965) and Mossin (1966) independently introduce the Capital Asset Pricing Model (CAPM). Harry Markowitz (1959) model advocates that, when it comes to portfolio selection the investors are risk-averse. The model asserts that an investor selects a portfolio that minimises the exposure of portfolio return, based on a particular level of expected return, or maximises expected return, based on a particular level of exposure. In an extension of work by Markowitz (1952), the CAPM is a single risk factor model that determines the relationship between risk and return for portfolios and individual stocks (Reilly and Brown, 2012). The expected return-risk relationship suggested by the CAPM is exhibited in Equation 2.1.

$$E(R)_{i,t} = R_f + \beta_i (R_{m,t} - R_f) \quad (2.1)$$

where:

$E(R_{i,t})$ is the expected return of share *i;*

$R_{m,t}$ is the return on the market proxy at;

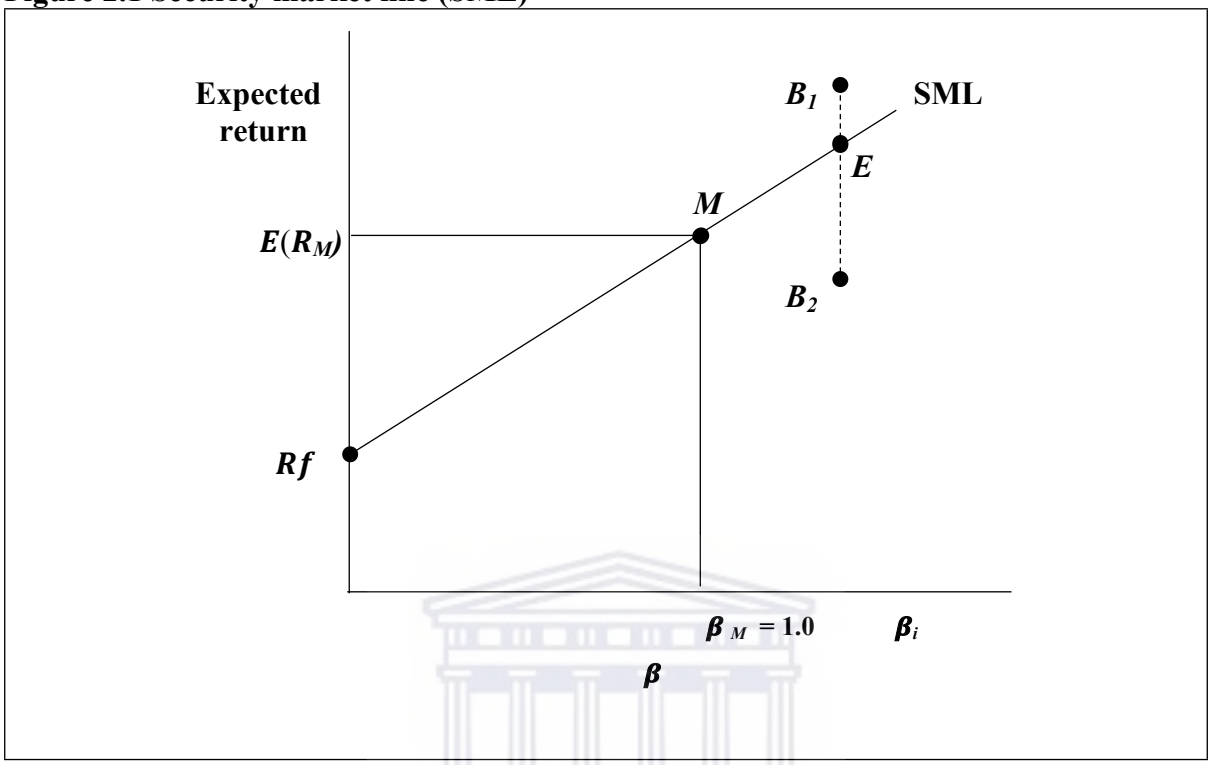
R_f is the risk-free rate; and

β_i is the beta for share *i.*

The relationship between risk and expected return that CAPM demonstrates in Equation 2.1 is graphically presented in Figure 2.1. This version of the risk- return relationship for individual stocks is called the Security Market Line (SML). The SML represents an equilibrium condition in which all the priced assets must lie on the SML and produce returns based on their corresponding systematic risk. All the assets that lie beyond the SML will be considered as undervalued as they exhibit returns that are higher than what is expected based on their corresponding risk to the market risk. On the other hand, the assets that lie underneath the SML will be viewed as overvalued as they generate lower expected returns compared to their required returns given their level of to market risk. In Figure 2.1, the y-axis represents both expected return and the risk free rate, while x-axis presents the systematic risk of both the market and the individual asset. As it graphically presented in Figure 2.1, assets B_1 and B_2 represents the overvalued asset and undervalued asset, respectively. Over time, the trading activities of the market participants will drive up the price of asset B_1 and push down the price of asset B_2 by buying asset B_1 and selling asset B_2. This will cause a decrease in the return of

asset B_1 and increase in the return on asset B_2, consequently the equilibrium point E on the SML will be attained.

Figure 2.1 Security market line (SML)



Source: Figure Modified from Hodnett and Hsieh (2012:855)

The market risk is represented by β_M, while the individual stock risk is represented by β_i. The general understanding is that the market risk is equivalent to 1.0, therefore suggesting that all the stocks that are plotted above point *M* will generate higher returns than what the market offers, given their level of systematic risk.

2.4 Critiques of the Capital Asset Pricing Model

Although the CAPM is widely used by various scholars and professionals as a measure of the expected rate of return of a stock in relation to its risk, on the other hand, its reliance on unrealistic assumptions have raised many questions regarding its practicality in the finance fraternity (Fama and French, 2004). According to Bodie *et al.* (2008), the CAPM is based on the assumptions that (1) all assets have a random probability distribution and follow a normal distribution. The normal distribution is well defined by its two factors namely; mean value (□) and variance *(*□^{2}). On the other hand, in the real world asset return are not normally distributed; (2) the entire market is full of investors that are risk-averse, who choose investments that will maximise their returns given a level of risk; (3) investor can borrow or lend unlimited amount of funds at risk free rate; (4) all investors have identical expectations about risk and return offered by all assets; (5) the market has a perfect competition in such that no purchases and sales by a single investor can affect prices and (6) all investors hold investments for the identical one-period of time.

Fama and French (2004) articulate the relation between the expected returns of a stock and the market portfolio return very well using the CAPM equation. Nevertheless, the impractical assumptions such as identical one-period investment horizon, and unlimited risk-free borrowing and lending on which the market portfolio is based on, have subjected the CAPM to a lot of criticism. Black (1972) contends that the likelihood of borrowing and lending unrestricted funds at a risk free is impractical. Apart from criticism posed by various scholars and professionals on the CAPM, Roll (1977) has questioned the applicability of the model itself. The author continue mentioning that the manner in which the market portfolio is formulated, it will be impossible to conduct a true test on the CAPM. It has thus, far been impossible to measure a market portfolio that comprises a complete list of the risky assets that are available in a market. Similarly, Haruna (2017) disputes that, in reality frictionless financial markets do not exist. For example, if an investor wants to execute a trade, it would require that particular investor to pay a commission to a broker that has to execute the trade on investor's behalf. Moreover, Nguyen, Stalin, Diagne and Aukea (2017) contend that the existence of a perfect market where there are no restrictions on investments in terms of income taxes, transaction costs is far from the reality. Despite the empirical evidence, which proposes the failure of the CAPM and the challenges concerning the model's assumptions, the CAPM remains a useful tool in the finance fraternity in many ways.

2.5 Arbitrage Pricing Theory

Introduced by Ross (1976) as an appropriate alternative model to the CAPM model, the Arbitrage Pricing Model (APT) claims to overcome the CAPM weaknesses. Unlike the CAPM, which places more emphasis on a single risk factor, the APT model considers several macroeconomic aspects that determine the risk and return of the specific asset. The theory asserts that at times, the stock prices are not fairly priced by the market and therefore suggesting that over time the stock prices are mispriced. Although the market will eventually correct the mispriced stock by moving the stock price back to its fair market value, on the other hand, an arbitrageur will perceive the temporarily mispriced stock as a short-term opportunity to profit. Ross (1976) discovered that if there are no arbitrage opportunities in the equilibrium price, then the expected return on assets have a linear relation to the factor loadings.

According to Bodie *et al.* (2008), the APT model is based on the assumptions that (1) all the market participants trade with intention of profit maximisation and are risk averse; (2) the capital markets are perfectly competitive and frictionless such that there are no taxes neither transactions costs; (3) No existence of arbitrage and if it occurs the participants will engage to benefit out of it and bring back the market to equilibriums levels and (4) investors can create an asset portfolio whereby the specific risk will be eliminated through diversification. The APT as a linear regression model is expressed in Equation 2.2.

$$E(R)_{i,t} = R_f + \beta_{j1}RP_1 + \beta_{j2}RP_2 + \beta_{j3}RP_3 + \beta_{j4}RP_4 + \beta_{jn}RP_n \quad (2.2)$$

where:

$E(R_{i,t})$ is the expected return of share i;

R_f is the risk-free rate;

β_j is the sensitivity of the asset's return to the particular factor; and

RP is the risk premium associated with the particular factor.

Chen, Roll and Ross (1986) investigate the degree to which the APT explains the cross-sectional variation in assets' mean returns. Their empirical results reveal that the APT explicates the cross-sectional variation in assets' mean returns very well compared to the CAPM. The arbitrage pricing theory is often viewed as a substitute for the CAPM.

2.6 Critiques of the Arbitrage Pricing Theory

Although the APT claims to circumvent the shortcomings of the CAPM, however, the model itself is not without faults. The APT model is built on the philosophy that stock prices should be influenced by the macroeconomic factors that represent the economy. In spite of its attractiveness, Paavola (2006) asserts that, the APT model does not reveal the identity of its microeconomics factors neither their numbers. Similarly, Gilles & LeRoy (1990) argues that the model does not have any clear restrictions concerning its common factors. In addition, Azhar (2011) claims that the manner in which the model determines the common factors that influences the expected returns is too general. Elbannan (2015) points out that even though the APT claims to circumvent the CAPM's shortcomings, on the other hand, the CAPM theories that defines the investors' behavior do not support the model.

One of the important assumptions of the APT model is that, there is a linear relationship between stock returns and set of unstipulated microeconomics factors such that there are no arbitrage opportunities. On the other hand, Rime, Schrimpf and Syrstad (2017) asserts that an arbitrage opportunity exists when an investor generates proceeds without exposure to risk. Shleifer and Vishny (1997) postulates that the market inefficiencies results to the existence of the arbitrage opportunities. The authors further explain that in reality the arbitrage opportunities are not simple as APT portrays to be. Koutmos, Negakis, Theodossiou (1993) states that the generality of the APT has brought a lot uncertainty about its test methods. Cheng (1996) points that a microeconomics factor could be significant when is tested using a multivariate analysis, however, the same factor might not be significant when tested using a univariate model. According to Acheampong and Swanzy (2016), the model require less and more realistic assumptions and its illustrative power is better compared to CAPM since it is a multifactor model.

Despite the criticism pose by various scholars and professionals on APT, the main empirical strength of this model is that it allows the researcher to choose unlimited relevant factors and provides the better explanation regarding the sample at hand (Groenewold and Fraser, 1997). The APT is often viewed as the CAPM alternative as it has the potential to circumvent the CAPM's shortcomings.

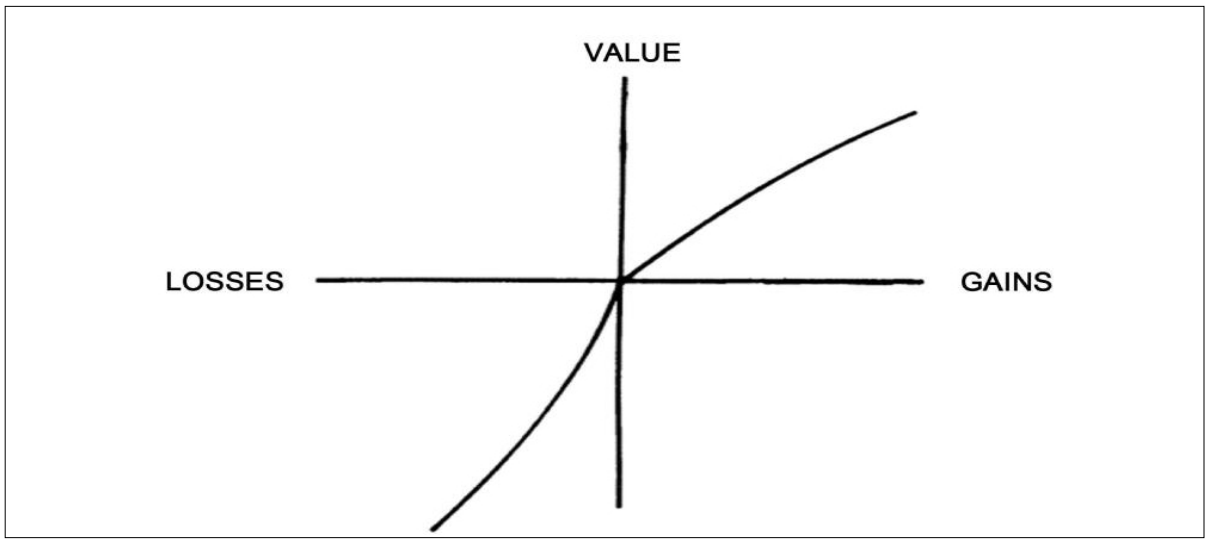
2.7 Behavioural Finance

Behavioural finance is the study of how human psychology influences financial decision-making process and subsequently the financial markets. Behavioural finance is of importance to financial practitioners and academics because of its capacity to explain markets inefficiencies. It is based on the notion that investors' acts normally not rationally; markets are not fully efficient; investors create portfolios based on the behavioural portfolio theory, and not according to mean-variance portfolio theory. This is contrary to the EMH which states that, the markets are efficient and no investor can outperform the market on a risk-adjusted basis. In essence, behavioural finance is the explanatory model that analyses the market participants' psychological decision-making processes and subsequently the anomalies that are detected by the market. The empirical evidence from studies conducted by Kiyilar and Acar (2009), Sewell (2010), Nair and Antony (2013), Chaffai and Medhioub (2014) on behavioural finance postulates that, the financial markets anomalies exist as a results of the cognitive biases such as overconfidence, anchoring bias, representative bias and information bias.

2.7.1 Prospect theory

The prospect theory asserts that individuals tend to assign more value on losses and gains rather than the outcome when making decisions. The theory is widely regarded as alternative to the well known expected utility theory. Introduced by Daniel Bernoulli (1738) the expected utility theory (EUH) specialises with the analysis of circumstances where people must make decisions under conditions of uncertainty. Furthermore, the EUH proposes that investors act rational when making investment decisions. Kahneman and Tversky (1979) have criticise the manner in which the EUH explains the choices that are taken under the conditions of uncertainty and establish prospect theory as an alternative. The authors have empirically discovered that in general people tend to place less potential weight on results that are likely to happen compared to the results that are certain to happen. This propensity is known as the isolation effect, and it results to unpredictable preferences when the identical choice is presented in different forms. The value function of the prospect theory is graphically illustrated in Figure 2.2 as an S-shaped curve. The shape of the prospect theory depicts that the function places more weights on changes of value rather than the final value. The function is concave towards gains suggesting risk aversion, while at the same time it is convex towards losses, which implies risk seeking.

Figure 2.2: Prospect Theory Value Function



Source: Kahneman and Tversky (1979; 263-291)

Thaler (1990) highlights two implications of loss aversion. The first implication is that when investors' places less value on their investments, they tend to accept risk very easy. Secondly, when the investors are optimistic that the possible payoffs from an investment will be more than the possible losses, they will seek more risk. According to Kahneman and Tversky (1979) the loss aversion is a cornerstone of prospect theory, as the theory asserts that the disutility from the possible loss tend to carry much weight than that of a possible gain. The prospect theory has done well in explaining what causes individuals to make decisions that appear to be irrational. On the other hand, Sebora and Cornwall (1997) argues that leaving out elements such as decision context, sampling frame and decision makers characteristics may lead to inaccurate prediction outcomes by the prospect theory.

2.8 Conclusion

The Efficient Market Hypothesis (EMH) is based on the notion that the market prices incorporates all available information and thus, it is impossible to outperform the market on a continuous basis. The EMH relates with the notion of Random Walk Hypothesis (RWH), which asserts that future assets price cannot be predicted using the past assets price movements. The EMH further divides the market into three forms of efficiency namely the weak, semi-strong and strong form. The three forms of the EMH collectively rule out the possibility of the investor to outperform the market using any particular predicting tool.

Building on the work of Harry Markowitz on portfolio choice model, Sharpe (1964), Lintner (1965) and Mossin (1966) individually developed the capital asset pricing model (CAPM) as a single factor model. The model provides a formula that computes the expected return on a stock based on its level of systematic risk, since other risks can be eliminated through diversification. Despite the CAPM extensive use in the finance fraternity, on the other hand, its unrealistic assumptions has resulted to numerous criticism against the model. In 1977, Richard Roll proclaims that the CAPM holds theoretically but is difficult to test empirically. To circumvent the challenges of the CAPM, Ross (1976) suggests an alternative model known as arbitrage pricing theory (APT) that allows the researcher to incorporate more factors.

Behavioural finance asserts that the psychological biases and cognitive errors influences the market participants when conducting investing decisions. As such, market participants do act irrationally when making investing decisions, which partially explains the existence of some the market anomalies. The behavioural finance is linked with prospect theory which states that investors places more weight on losses than gains. Under prospect theory, Kahneman and Tversky (1979) establish that in the positive domain the market participants are risk averse and in the negative domain the market participants are risk seekers. In contrast, the expected utility hypothesis (EUH) asserts that investors act rationally under the risky and uncertain conditions. Based on the EUH, investors do act normal because they examine all the possibilities of individual prospects that could results to the maximisation of their total utility.

3

A Review of Prior Literature

3.1 Introduction

3.1.1 A brief history of the Johannesburg Stock Exchange (JSE)

After gold discovery in 1886, there was a need for a central facility that can assist the investors with mining information and access to primary capital. On the 8 November 1887, Benjamin Minors Wollan establish the JSE as the first central facility for trading in South Africa. The first firm to lists on the JSE is the Johannesburg Chambers and Company in 1887.

In 1947, the JSE introduce the Stock Exchange Control Act to govern the operation of the stock market. The Stock Exchange Control Act entails the rules and regulations that deals with capital requirements for investors and the conduct for the traders. In 1963, the JSE became the member of World Federation of Exchanges, an international association that heads the operation of financial markets worldwide. Between 1978 and 1979, the JSE amends the Stock Exchange Control Act and permits incorporation of the broking firms. In addition, the Stock Exchange Control Act has also integrated firms with unlimited liability of shareholders and directors. In the year subsequent to 1979, the JSE initiates the JSE Schools Challenge which allows all the South African schools and universities to participate in the competition.

In 1993, the JSE joins the African Stock Exchanges Association (ASEA), which currently represents 27 Exchanges from 32 African countries. The ASEA aims at developing the exchanges of its affiliates and create network platforms for its members. In 1995, the JSE introduce the amended Stock Exchange Control Act of 1985, which allows the firms with limited liability of shareholders and directors to participate in the market. This amendment became a gateway for foreign investors as it allows them to participate in the South African markets. In 1996, the JSE introduce the new trading platform called Johannesburg Equities Trading (JET) system, replacing the open outcry trading floor system which has been in operation for 108 years. A major improvement on the JSE operation systems took place 1997 when it introduces the shares Transactions Totally Electronic (Strate) and the Stock Exchange News Service (SENS). Strate aims at facilitating the electronic transactions of stocks in South Africa and ensures a safety keeping of the transactions records, while the SENS provides real

time news relating to the listed firms and price sensitive information. On the 1 May 2001, members of the JSE approved the acquisition of South African Futures Exchange (Safex) as a future exchange subsidiary of the JSE. A year later, the JSE launch the FTSE/JSE Africa Index which enables the investors to track the performance of the JSE listed firms.

In October 2003, the JSE introduce Alternative Exchange (AltX) as a suitable replacement of its forerunners, the Developmental Capital Market (DCM) and the Venture Capital Market. The AltX is establish mainly to provide smaller firms that are unable to list on the main board of the JSE with an opportunity to raise capital, issue new shares, widen investors' base and to make firm shares available for trading on a regulated market. Recently the JSE has launch its fourth developing board known as the Black Economic Empowerment (BEE) board, which allows the separate listing of the BEE shares and better facilitation of these shares with regard to trade transparency of the secondary market.

In 2004, the Socially Responsible Investment (SRI) Index that deals with the triple bottom line criteria compliance of JSE listed firms came into effect. A year later, the JSE officially launches the Yield-X, a market that allows the trading of the interest rate driven products such as spot and derivative interest rate products. On the 28 February 2018, the JSE has 810 listed securities with the market cap of R14 791.7 billion. The JSE is the largest stock exchange in Africa and ranked among the top 20 globally in terms of market capitalisation (World Economic Forum Global Competiveness, 2016).

3.2 JSE as an efficient market

Many empirical studies are conducted on the efficiency of the South African financial markets, which provide substantial evidence against and for the EMH. Such studies, which provides the argument for and against the EMH, includes that of Jammine and Hawkins (1974), who tested for the existence of random walk on the JSE over the period from 1966 to 1973 using weekly changes in price indices. The authors concludes that, the JSE does not follow random walk hypothesis (RWH) and therefore investors can employ the technical analysis to benefit out of the market. Affleck-Graves and Money (1975) employ the autocorrelation to test the independence in the industrial weekly stock price changes, over the period from 1968 to 1973. However, the findings are in contrast with the study conducted by Jammine and Hawkins (1974), which states that the JSE is not weak form efficient. Haddassin (1976) used daily changes instead of weekly industrial share prices used by Affleck-Graves and Money (1975) over the period from 1968 to 1973. The results suggest that, the share prices of the listed industrial firms are inconsistent with the RWH. Although Haddassin (1976) find the JSE to be inconsistency with the RWH, however, Gilbert and Roux (1977) discover that, dependencies in the industrial share prices changes are too small to be regarded as profitable. The author concludes that, there is not enough evidence to reject the EMH. In support of the findings documented by Gilbert and Roux (1977), the results of the study conducted by Brummer and Jacobs (1981) further reveals that, dependencies in price changes are too small to be used in predicting future prices. In contrast to the findings by Brummer and Jacobs (1981), the results of the study conducted by Du Toit (1986) rejects the RWH and claims that one third of the industrial shares show significant dependence.

Knight and Affleck-Graves (1983) examine efficiency of the JSE by observing price patterns of 21 listed firms that have announces a transition from first-in, first-out (FIFO) to last-in, first-out (LIFO). The results reveal that, the aforementioned change has negative impact on the share prices. The results shows that, the JSE is inefficient due to its reaction on accounting policy. Bhana (1990) investigates the efficiency of the JSE, the results shows that the stock prices do not adjust efficiently to public information as it is announced. On the other hand, Smith and Jefferis (2002) employ multiple variance ratio tests on the weekly stock price to test the existence of a RWH on the JSE ALSI, over the period from 1990 to 1998. The authors'

findings show that, the JSE ALSI follows a RWH. In contrast, Appaih-Kusi and Menyah (2003) employ the exponential generalised and autoregressive conditional heteroscedasticity (EGARCH) model to test the efficiency of African stock markets and find that the JSE is not weak form efficient. On the other hand, Jefferis and Smith (2005) use the GARCH model with time varying parameters to establish a test of developing efficiency in the JSE, over the period from 1990 to 2001.The results reveal that, the JSE is in weak form efficient. Morris, van Vuuren and Styger (2009) employ the Wavelet analysis to investigate the efficiency of the JSE. Unlike the findings by Jefferis and Smith (2005) the results show that the JSE is not weak form efficient. A year later, Bonga-Bonga and Makakabule (2010) employ a smooth transition regression (STR) model to tests the efficiency of the JSE. Authors conclude that, the JSE violates the tests for weak-form efficiency. Bonga-Bonga (2012) employ a time varying and fixed effects GARCH model to investigate the efficiency of the JSE. However, the findings are in contrast with the study by Bonga-Bonga and Makakabule (2010), which shows that the JSE is not weak-form efficiency. A year later, Almudhaf and Alkulaib (2013) employ the Dickey-Fuller and Phillips-Perron tests as well as variance ratio tests to investigate the efficiency of the JSE. Authors conclude that, the JSE follows a RWH. Chitenderu (2014) employ unit root tests, autocorrelation and ARIMA models to explore the existence of weak-form efficiency on the JSE. The results confirm the existence of the weak-form efficiency within the JSE.

Given the amount of research conducted to investigate the efficiency of the JSE, the empirical evidence shows that there are mixed results as to whether the market is efficient or not. Phiri (2015) state that, the majority results of the research conducted on the efficiency of the JSE provide the evidence of the semi-strong form efficiency. On the other hand, Thompson and Ward (1995) conduct an extensive literature review on the efficiency of the JSE. The authors' conclusion from the literature is similar with that of Gilbert and Roux (1977), Brummer and Jacobs (1981) which states that, there are some stock price dependencies but are not significant to be profitably exploited. Based on the mixed evidence that the literature provides it is not advisable to generalise about the efficiency of the JSE.

3.3 The development of the AltX as a Stock Exchange

3.3.1 Historical background

In October 2003, the JSE launch the Alternative Exchange (AltX) as its sub-market. The AltX functions as a corresponding market along with the JSE main board, but focuses on Small, Medium and Micro Enterprises. It offers similar benefits with that of the JSE main board, permitting firms to raise capital and to list publicly, while enjoying less stringent rules and regulation compared to firms that lists on the JSE main board (Kruger, 2014). On the other hand, the firms that desire to list on AltX will have to go through a stringent assessment and endorsement process, including a review and approval by the AltX advisory committee intended to ensure a proper listing. One of the main objectives of the AltX is to provide high quality migratory platform to the main board of the JSE. In addition, the two essential roles that the AltX ought to perform are as follows:

- To provides a capital market for small, medium and micro-sized enterprises and start-up companies, whereby these companies can raise capital and;
- To provide a secondary market whereby the securities of these companies can be traded.

As a division of the JSE main board, the AltX provides similar service to the exchanges such as AIM in the UK, TSX Venture Exchange (in Toronto Stock Exchange), Mothers (in Tokyo Stock Exchange), NASDAQ (in USA), BSE and NSE boards for SMMEs (in India).

3.3.2 The listing requirements of the AltX versus the JSE, DCM and VCM

The major regulations for the listed firms in the JSE markets are display in Table 3.1. As indicated in Table 3.1, the JSE main board listing requires a minimum share capital of R25 million, at least 3 years profit history and a minimum pre-tax profit of R8 million per annum. Comparatively, listing on the AltX requires a minimum share capital of R2 million and no records of profit history is required. On the other hand, the DCM and VCM requires a minimum share capital of R1 million and R500 000, respectively. In addition, the DCM requires a minimum of 2 years of profit history and a pre-tax profit of R500 000. The AltX has its own designated advisor, while both DCM and VCM use the JSE sponsor. The AltX designated advisor functions as a regulatory board of the AltX listed firms. One of the special requirements of listing on the AltX is that, each listed firm must appoint its financial directors. In contrast,

listing on the JSE main board, DCM, and VCM does not require the appointment of financial directors. Moreover, the AltX requires that the firm must be managed by an appointed financial direct who has the relevant skills and experience. It also specifies that the directors must have accomplished the Directors Induction Programme. Table 3.1 depicts that, listing on the AltX can be achieved at a lower cost compare to JSE main board, the DCM, and the VCM listing and it requires fewer procedural requirements. Furthermore, the benefits of the firms that lists on AltX include reduced listing fees and less requirement to publish firm news in the press. On the other hand, the JSE main board and DCM are compel to disclose information publicly making the use of the press.

Table 3.1 Listing regulations of AltX verses JSE, DCM and VCM

Categories	JSE main board	AltX board	DCM board	VCM board
Share capital	R25 million	R2 million	R1 million	R500 000
Profit history	3 years	None	2 years	None
Pre-tax profit	R8 million	N/A	R500 000	N/A
Sponsor/DA	Sponsor	JSE Sponsor	JSE Sponsor	Designated advisor
Publication in the press	Compulsory	Voluntary	Compulsory	Voluntary
Special requirements	N/A	N/A	N/A	Appoint financial directors
Annual list fee	0.04% of average market cap	0.04% of average market cap	0.04% of average market cap	R22000 (including VAT)
Education requirements	N/A	N/A	N/A	All directors to attend Directors Induction Programme

Source: JSE (2003)

Based on the information presented in Table 3.1, the AltX has less stringent listing requirements compared to the JSE main board, the DCM, and VCM. Nonetheless, all the firms that want to list on the AltX have to go through a stringent assessment and endorsement process through the designated adviser. Notwithstanding the advantages of listing on the AltX, its lack of liquidity is of a significant concern for investors (Haselau, 2014). The limited ability to sell shares when it is necessary and the limited free float makes it difficult for investors to take significant stakes on AltX listed firms. In 2016 financial year, the AltX market had a liquidity ratio of 13 percent compare with 39.2 percent of its main board (JSE, 2016). According to Kulkarni and Chirputkar (2014), the lack of liquidity in the secondary market remains as

unresolved challenge for most SMME exchanges in emerging markets countries, and this affects investor appetite for SMMEs. In most cases, SMME equity will not trade like equities of larger companies due to the lack of research information as well as liquidity in the exchanges for SMME.

3.4 Roles and Functions of the AltX in the South African economy

3.4.1 Introduction

The less stringent rules and regulation of listing on the AltX has potentially allow the exchange to become one of the most important sources capital for the small and medium-sized (SMMEs) businesses in South Africa. Established in October 2003, the main objective of the AltX is to provide a developmental platform for the firms that are not yet ready to be listed on the JSE main board. Listing on the AltX can benefit a firm in many ways, this includes increase in transparency, visibility, firm's profile and access to numerous opportunity that a firm would have not been expose to have it not listed. Ultimately, the AltX contributes not only by providing funding for the SMMEs but by also creating employment and sustainable economic growth in South Africa. This section discusses essential roles and functions of AltX in the South African economy.

3.4.2 Allows the SMMEs to have access to investment capital

The establishment of the AltX has contributed in the South African economy in many ways, which include job creation and development of small businesses. One of the aims of establishing the AltX is to provide smaller firms that are unable to list on the JSE main board with a developmental platform and access to corporate funding. An increase in the number of firms that migrates from the AltX to the JSE main board is a clear evidence that the exchange is meeting some of its intended purposes. In support of such evidence, Cheyne (2013) states that a listing on AltX has provided many firms with great opportunities such as access to a large pool of investors, increase in firm's profile and a clear growth path. The research conducted by JSE (2013) amongst the executives of the firms that lists on the AltX reveals that, many of their firms' objectives have been achieved through the listing on the exchange.

3.4.3 Provides investors with a chance to invest in small high-growth firms

One of the characteristics that set the AltX apart from other JSE developing boards is that it offers the investors with opportunity to invest in high-growth firms (Cheyne, 2013). It boost investor's confidence to lists on the exchange that comply with the rules and regulations of a formal stock exchange such as the AltX. In September 2013, World Economic Forum Global Competiveness released a report on regulation of securities exchanges and ranked South Africa

as number one for the fourth consecutive year (JSE, 2013). The JSE has a large pool of investors which includes both domestic and international investors. As a result, foreign firms that lists on the JSE are regarded as local firms for trading purposes. This benefits the South African institutional investors, as they do not have to purchase foreign shares that are listed locally through the use of foreign allowance. In addition, this also opens opportunity for these foreign companies to be included in the JSE indices.

3.4.4 Provides AltX firms with a clear growth path to listing on the JSE

After its establishment in October 2003, the AltX acted as a developmental board, particularly for the firms that want to gain access to corporate capital, improve firm's profile and credibility. Moreover, as the developmental board the AltX ensures that it prepare the readiness of its listed firms to migrate to the JSE main board. One of the important requirements of listing in the AltX is that, each listed firm must have its own designated advisor that is assigned to it, in order to easy its listing process. The AltX requires all the directors of the listed firms to attend the director's induction program which provides the attendees with the skills of managing a listed firm. These actions are clearly the indication that the JSE is committed to the development of the markets for SMMEs and therefore of a greater South African economy.

Given current difficulties faced by South African economy, it is becoming more necessary to promote other forms of external financing of SMMEs as alternatives to the banking channel. Credit access has become more critical to SMMEs due to the stringent regulations imposed by banks after the financial crisis that erupted in August 2007. It becomes apparent that, there is a need for the dedicated Stock Exchanges in South Africa such as the AltX for the SMMEs sector, in order to cater for their special needs better.

3.5 A global overview of other SMME Capital Markets

SMMEs plays a very important role in the development of the economy and job creation globally. They provide more than 60% of overall employment worldwide and approximately 80% of jobs in the developed world (Peterhoff, Romeo & Calvey, 2014). Despite their economic importance, on the other hand, the SMMEs often struggle to get access to funding. According to Freeman (2015), the SMMEs mainly uses short-term funding options such as overdraft, and bank credits. Such sources of funding can be considered as vital in the start-up phase, but unlike the long-term finance, it cannot ensure financial sustainability of SMMEs. As a result, many of the SMMEs are forced to change their funding sources.

Dlova (2017) advocates that capital markets can be a suitable alternative to bank lending as many SMMEs struggle to acquire loans. According to Oteh (2015), the promotion of capital markets is imperative as it provides alternative sources of funding for SMMEs. Nassr and Wehinger (2015) supports that, the equity financing can be used as an alternative source of finance for the SMMEs that lacks collateral. On the other hand, raising funds through private equity markets is challenging as it involves a stringent listing rules and complex legal and regulatory frameworks.

Globally, the SMME exchanges have the ability to provide a platform for fast-growing and innovative enterprises to raise capital, build profiles, and to provide liquidity to the investors of the listed companies (Harwood and Konidaris, 2015). In addition, by encouraging more SMMEs in the SMME capital markets will not only assists the SMMEs to get access to finance, but also it will also stimulate growth and job creation with in the economy of a country. Yoo (2007) highlights that, the SMME exchanges provides services that are aimed at nurturing young businesses, boosting the visibility of the listed companies, and raising public awareness of available alternative investments. The exchanges for SMMEs contributes significantly on the creation and distribution of wealth in the economy (Kulkarni & Chirputkar 2014). According to the Organisation for Economic Co-operation and Development (OECD) (2000), the growth of private equity markets globally is significantly cultivating the access of SMMEs to venture capital globally. Mbhele (2012) support that, the listing on the SMME exchanges assists the SMMEs in attracting the investments from large investors such as venture capital funds and private equity players. According to the African Securities Exchanges Association (2015) report, the SMME exchanges generally offer more cost effective and longer term capital

compared to the banks.

On the other hand, internationally, there are very few countries that have managed to develop successful exchanges for SMMEs. Such international markets with successful SMME exchanges includes; the London Stock Exchange (LSE), which has establish the Alternative Investment Market (AIM) in 1995 as its sub-market. The AIM allows the SMMEs to raise capital on a public market with less stringent rules and regulations compare to the LSE. The AIM has been fast growing since its establishment, as it has listed more than 3500 firms with the market cap more than £90 billion in 2015 financial period (Chen, 2015). It has attracted a number of firms from various sectors both locally and internationally since its establishment because of its flexible regulations compare to the main market.

Similarly, on the 11 November 1999 the Tokyo Stock Exchange (TSE) launched the Mothers market for the development of the SMMEs. Mothers has attracted many SMMEs because of its less stringent listing requirements compare to the TSE. Although the Mothers has flexible rules and regulations compare to the main market, on the other hand, it requires that any firm that list with it to demonstrate potential for sustainable growth. As of 2014, 15 years after its 1999 launch, Mothers has listed more than 365 firms and more than 99 firms has migrated to the TSE (Hayase, 2015). Since its inception the Mothers has been operating as a parallel market to the TSE and it has done well in providing funding prospects to firms with potential for sustainable growth.

The ChiNext is another platform for SMMEs established by Shenzhen Stock Exchange (SZSE) in October 1999. The purpose of ChiNext establishment is to assist high-growth firms to have an access to the Chinese capital markets. The ChiNext places, more emphasis on the economic growth and development stimulation in the emerging industries of strategic importance. The ChiNext has less stringent listing standards compared to the Shenzhen Stock Exchange. As of April 2016, there were 501 firms listed on ChiNext with the market capitalisation of $754, 5 billion (Shenzhen Stock Exchange, 2016).

Similarly, the Australia establish its Australian Security Exchange (ASX) in 1987. The ASX has been a successful platform to the needs of SMMEs such as, mid-cap and micro-cap firms, which represent the majority of the listings on the ASX. Listing on the ASX offers investors with benefits such as raising capital, public recognition, raising firm profile, and for the

broadening of the shareholder base. ASX listed more than 2200 companies and issuers from across the globe, since its establishment. In 2015, the ASX has 2238 listed companies with a market capitalisation of $1.6 million (Australian Security Exchange, 2015).

On the 29 November 1999, the Toronto Stock Exchange (TSX) has launch the TSXV as its sub-market, which caters for SMMEs that seeks to raise capital from the public market. TSXV provides various opportunities to its listed firms such as visibility to potential investors, more liquidity and accessibility (Ma and Chakrabarty, 2016). The TSXV has lower listing costs and less stringent regulation requirements compared to its counterparts. One of the benefits of listing on the TSXV is that it offers various programmes, which provides SMMEs access to the markets with the support of experienced directors and officers. Such programmes includes a Capital Pool Company (CPC) program which introduces the entrepreneurs of the developing businesses to the pool to potential investors. In 2015, the TSXV has listed 1791 firms from across the world with a market capitalisation of $2.3 million (TSX Venture Exchange, 2015).

The establishment of the Bombay Stock Exchange (BSE) SME Exchange and the National Stock Exchange (NSE) EMERGE Exchange in 2012 created a good platforms for SMMEs to be listed on the public markets. Since its establishment, the BSE SME has listed more than 117 firms and 10 out of these firms have migrated to the BSE main board (Thakur, 2016). On the other hand, since its inception, the NSE EMERGE has listed 11 firms and only 1 out of these firms has migrated to the main board (NSE MERGE, 2016). In 2015, the BSE SME listed 107 companies with a market capitalisation of 6896.49 crore rupees (BSE SME, 2015). On the other hand, the NSE MERGE listed 10 companies with a market capitalisation of 484.18 crore rupees in November 2015 (NSE EMERGE, 2016).

Similarly, in 2009, the Bursa Malaysia has setup the ACE Market as its sub-market for SMMEs. The regulations for listing in the ACE market are less stringent compared to the Bursa Malaysia, which is the main board. However, the lack of clear regulatory platform has been a challenging issue for companies listed on the ACE Market. In 2015, the ACE Market had listed 107 companies with a total market capitalisation of RM 10.7 billion (Lumpur, 2015). The ACE Market has been performing well and 30 percent of the companies listed have been transferred to the main market (Li Lee, 2015).

Finally, in South America the Brazil's Bovepas Mais (BM) & Bolsa de Valores, Mercadorias

& Futuros de São Paulo (FBOVESPA) is regarded as the largest exchange. As of 2014, there were 363 companies listed on the BM & FBOVESPA with the market capitalisation of $ 844 billion (BM & FBOVESPA, 2014). In 2005, the FBOVESPA introduce the Bovespa Mais as its parallel exchange, in order to foster growth among small and medium size companies via the capital market (BM, 2015). The fundamental objective of the BM is to allow firms an access to a stock market which is attractive to the investors who places more emphases on high returns than liquidity (BM, 2016). Companies listed on BM tend to attract investors who are more interested in the potential development of the business. On the other hand, liquidity has been one of the challenges of the companies listed at the BM. As of 17 June 2015, there were 9 companies listed at Bovespa Mais (BM & FBOVESPA).

The access to finance has been one of the main challenges that obstructs the growth and development for SMMEs globally. The SMMEs are regarded as the key drivers of economic growth, innovation and job creation in many countries around the world. The stringent rules and regulations that the banking sector introduced post 2008 financial crisis have limited the amount of bank lending to SMMEs. This has necessitated a need for diversified funding alternatives beyond bank lending that promotes financial inclusion. Thus, the development of the exchanges for SMMEs can be regarded as a better alternative platform for the financing needs of the SMMEs and in ensuring their financial sustainability. A successful market for SMMEs will enables the high-growth small firms to have access to a pool of potential investors and access to public equity capital. In addition, listing the exchange for SMMEs can increase the firm's profile, visibility, transparency and expose the firm to opportunities that it would have not access to had it not listed.

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3.6 Major challenges of the SMMEs Exchanges globally

3.6.1 Introduction

The firms that lists on the SMME exchanges tend to have less stringent rules and regulations compared to the firms that lists on the main board. On the other hand, there are numerous instances where rules and regulations of exchange for SMMEs obstruct the flow of funding to the SMMEs. According to Chartered Financial Analyst (CFA) Institute (2013) challenges that are facing the SMMEs in acquiring public finance are not limited to cost such as admission fees, advisors, broker commission, red tape and reporting requirements. This section discusses the global challenges that are facing the exchanges for SMMEs.

3.6.2 High regulatory obligation

Some of the regulations that governs the exchange for SMMEs have become an obstruct to the development of the firms that lists on these exchanges. The firms that list on the exchanges for SMME are faced with extensive and complex paperwork, exorbitant compliance costs and economic regulations that obstructs certain activities (Pahwa, 2006). The record of accomplishment of special policies to encourage new SMMEs has not been encouraging. A red tape reduction and easing of regulatory burden will enable many SMMEs to list in the exchanges for SMME and create more job opportunities.

3.6.3 Escalating Cost

Despite the significant contribution by SMMEs to economic growth and job creation, however, they continue to face more challenges, especial the one of rising costs (Dhanah, 2016). The cost for listing on the exchange for SMME should be reasonable to make it a good platform for raising capital by good quality issuers. These costs consist of both direct costs such as initial and ongoing listings fees and advisers as well as indirect costs such as time spent by the management ensuring compliance with the relevant listings requirements (World Federation of Exchanges, 2014).

3.6.4 Lack of liquidity

Some of the investors are of the view that the exchanges for SMME tend to suffer from lower

levels of liquidity compared to their main boards. Many institutional investors are reluctant to invest in the exchanges for SMME due to their low liquidity levels (Kruger, 2014). The lack of liquidity can be also characterised to the SMMEs asset class. Other factors that affect liquidity of the exchanges for SMME includes the investor's interest in the listed companies which is typically based on the industry in which these companies operates, the track record of management and growth prospects (Haselau, 2015). On the other hand, Šestanović (2016) argue that the relative low volume of shares on the exchanges for SMME compared to the main board and limited free floating that small cap often offer , are all the sources of the illiquidity. Without liquidity, professional investors tend to shift their assets away from SMMEs into larger capitalisation stocks.

3.6.5 Information dissemination

The use of quality business information can assists the SMMEs to attain a long-term and sustainable growth (Rungani and Potgieter, 2018). The SMMEs need to have a sufficient information in order to improve productivity and to access the market. The exchanges for SMME also need to provide the public with adequate information such as financial performance, creditworthiness and performance record of accomplishment to enable the public to make informed decisions. Lack of research information on the exchanges for SMME discourages many investors who would like to invest in those SMMEs.

3.7 Conclusion

The evidence from the literature shows that there is a need for diversified funding alternatives beyond bank lending that will promote financial inclusion for SMMEs. It is apparent not only in the South African economy, but also globally that there is an urgent need for the development of exchanges for SMME that will cater for the needs of the SMMEs. Globally, various countries have successfully managed to establish the exchanges for SMME. Such dedicated exchanges for SMME includes AIM in London Stock Exchange, TSX Venture Exchange in Toronto Stock Exchange, Mothers in Tokyo Stock Exchange, NASDAQ in USA , The ChiNext in Shenzhen Stock Exchange, SE and NSE boards for SME in India and ACE Market in Bursa Malaysia Stock Exchange. The development of SMME capital markets can assist in the expansion of investor base and promote the establishment of more SMMEs within the economy of a country. Due to the lack of credit history and relevant information, investors often view the SMMEs as risky investments. Listing on the SMMEs exchange can increase the firm's profile, visibility, credibility and expose the firm to various opportunities of a formal exchange. Part of the South Africa's National Development Plan (NDP) is to decrease the unemployment by 6 percent in 2030. The SMMEs are the key drivers in assisting the South African economy to achieve this 2030 vision. According World Bank (2015) formal SMMEs contributes approximately to 45 percent of total employment and up to 33 percent of gross domestic product (GDP) in the developing countries. In October 2003, the AltX was established as the developmental platform which caters for the needs of the SMMEs that are not yet ready to be listed on the JSE main board. Despite the AltX contribution to the SMMEs development in South African economy, some of the investors are weary to invest in the exchange citing the lack of liquidity as one of the main causes. Globally, the lack of liquidity, research coverage and credit history of the firms that lists on the exchanges for SMME remains unresolved.

4

Data and Methodology

4.1 Introduction

This study is motivated by the empirical evidence documented by various studies on the efficiency of the South African capital markets. This research focuses on the evaluation of the role and the functions of the AltX on the JSE and its contribution to the development of the Small, Medium and Micro-Enterprises (SMMEs) in South Africa. This research undertakes to examine the performance of the firms that have migrated from the AltX to the JSE main board, as well as the attributes that contribute to a successful migration.

The study commences by computing risk, return, risk-adjusted performance and liquidity statistics of the firms that migrated from the AltX to the JSE main board over the period of the research since their respective listings on the AltX. Subsequently, the study evaluates the performance of the firms that have migrated from the AltX to the JSE main board against their comparable peers. The study further evaluates the market response before and after the announcement date and the actual migration date of the firms that have migrated from the AltX to the JSE main board. The reasons why this research investigates the impact of announcement and actual migration separately is due to the observation that the period between announcement date and migration date is usually more than a month and investors might have different reactions towards these two mentioned events.

Finally, this research investigates the attributes that differentiate the AltX firms that are likely to be successful and those that are unlikely to be successful after their respective migration dates.

This chapter discusses the process of data collection and provides a detailed explanation of methodologies used in this study. The chapter starts by discussing an overview of the research problem and the objectives to be carried out to answer the research problem. The chapter proceeds to explain the process of data collection, sample selection and the methodology used in order to achieve the objectives of this study. Finally, the chapter concludes with the potential biases that might have been encountered in this research process as well as how they are alleviated.

4.2 Problem Statement and Research Objectives

Motivated by the number of small and medium firms that migrates from the AltX to the JSE main board, this study investigates the role and the functions of the AltX and its contribution to the development of the SMMEs in South Africa. One of the main objectives of the AltX is to provide a platform for SMMEs to develop and improve their profiles and financial sustainability. This study attempts to examine the ability of the AltX in fulfilling its intended purpose, which is to prepare the readiness of the firms listed on the AltX to successfully migrate to the JSE main board. If this objective is achieved satisfactorily, one needs to determine if there are any tangible benefits for the migration from the AltX to the JSE main board. Thus, the research further investigates the attributes that contribute to the successful migration of the firms listed on the AltX to the JSE main board. In order to understand the role and the functions of the AltX and its contribution to the development of the SMMEs in South Africa, the following objectives need to be achieved:

- Compare and contrast the listing requirements of the AltX to the DCM, the VCM and the JSE main board and identify critical improvements of the AltX from the DCM and the VCM.
- Compare and contrast the role and the functions of the AltX as a dedicated Exchange for SMMEs relative to other global Exchanges for SMMEs.
- Evaluate the market response before and after the announcement date and the actual migration date for the firms that migrated from the AltX to the JSE main board.
- Compute risk, return, risk-adjusted performance and liquidity statistics of the firms that migrated from the AltX to the JSE main board over the period of the research since their respective listings on the AltX.
- Evaluate the performance of the firms that migrated from the AltX to the JSE main board against the performance of the comparable peers before and after their migration.
- Investigate the attributes that contribute to a successful migration from the AltX to the JSE main board.

The first two objectives have been achieved under the discussion in the previous chapter. It is found that the AltX provides similar benefits as the JSE main board, however, it has less stringent rules and regulations compare to the main board. The discussion in chapter Three further reveals that the AltX quality controls and various development programmes has enables it to attract more SMMEs compare to its predecessors, the VCM and the DCM.

4.3 Data and Sample Selection

4.3.1 Data

The membership list for the AltX listed firms as well as the information regarding the firms that have migrated to the JSE main board since the establishment of the AltX in October 2003 were provided by the personnel from the JSE. The daily closing share prices and volume traded as well as dividends of the sample firms were downloaded from the I-Net BFA database at the University of the Western Cape.

4.3.2 Sample selection

The initial sample includes all the firms listed on the AltX since its establishment in October 2003. This initial sample consists of 64 firms. The 30 firms that have migrated from the AltX to the JSE main board were subsequently extracted from the initial sample. From the list of the 30 firms that have migrated from the AltX to the JSE main board, firms that have inadequate data, suspended firms and delisted firms were further excluded from the sample. The remaining sample consists of 20 shares, including 15 small caps and 5 mid caps from a wide range of industries. The announcement date, migration date and relevant industries of the AltX firms are listed in Table 4.1.

4.3.3 Performance benchmarks

In the study conducted by Kruger (2014), the ALSI was used as a market proxy, which the performance of the AltX firms were measured against to compute the abnormal returns. In the preliminary tests conducted in this research as it is reflected in Appendix D, the excess returns of the sample firms were regressed against the market risk premium using ALSI as the market proxy. It is found that the beta coefficients estimated by the regressions are statistically insignificant. This indicates that the firms listed on the AltX have insignificant correlation with the firms listed on the JSE main board. Therefore, the ALSI cannot be employed as a performance benchmark for the sample firms in this research. On the other hand, when the JSE-AltX index was employed as the market proxy in the regressions, similar results were obtained, in that the beta coefficients estimated from the regressions were statistically insignificant. This implies that the risks inherent in the firms listed on the AltX are idiosyncratic in nature, and hence there is no common benchmark that exists for the firms listed on the AltX as each firm has its unique risks and challenges. In order to determine whether the migration is a success or a failure, the performance of the AltX firms and market perceptions two years after migration are evaluated against those of their comparable peers.

Table 4.1 List of Sample Firms

No	Name	Market Cap Category	Announcement date	Migration date	Industry
1.	Esor Ltd	Small Cap	24-06-2009	25-06-2009	Civil Engineering
2.	1 Huge Group Ltd	Small Cap	04-02-2016	01-03-2016	Mobile Telecommunication
3.	Calgro M3 Holdings Ltd	Small Cap	08-02-2012	23-02-2012	Construction
4.	Curro Holding Ltd	Mid Cap	14-05-2012	03-07-2012	Private Education
5.	Cognition Holding Ltd	Small Cap	27-10-2007	03-11-2014	Technology
6.	Ellies Holding Ltd	Mid Cap	17-11-2010	26-11-2010	Manufacturing
7.	Finbond Group Ltd	Small Cap	03-03-2014	24-03-2014	Banking
8.	Insimbi Refractory-Alloy Supply Ltd	Small Cap	08-12-2011	20-01-2012	Resources
9.	Interwaste Holding Ltd	Small Cap	07-11-2014	18-11-2014	Services
10.	Mas Real Estate Inc.	Mid Cap	10-12-2014	18-12-2014	Real Estate
11.	Mazor Group Ltd	Mid Cap	07-07-2008	14-07-2008	Construction
12.	Onelogix Group Ltd	Small Cap	07-06-2008	18-06-2013	Logistic
13.	Pan African Resources Plc	Small Cap	26-11-2009	01-12-2009	Mining
14.	Rockcastle Global Estate Co. Ltd	Mid Cap	17-11-2014	25-11-2014	Real Estate
15.	Rolfes Technology Holdings Ltd	Small Cap	02-11-2011	21-11-2011	Chemicals
16.	Santova Ltd	Small Cap	28-10-2011	02-11-2011	Logistics
17.	Stenprop Ltd	Small Cap	23-09-2015	05-10-2015	Real Estate
18.	Wescoal Holdings Ltd	Small cap	08-03-2010	24-04-2010	Mining
19.	Taste Holdings Ltd	Small Cap	28-06-2011	08-07-2011	Services
20.	Consolidated Infrastructure Group Ltd	Small Cap	25-02-2009	06-09-2009	Manufacturing

From the list of sample firms demonstrated in Table 4.1, one can see that most of the AltX firms migrated to the JSE main board between 2008 and 2015. The research sample includes firms from a wide range of industries, including, civil engineering, construction, private education, technology, manufacturing, banking, resources, real estate, logistics, mining, chemicals and services.

4.4. Research Methodology

To investigate the market response to share migration from the AltX to the JSE main board, the event study methodology proposed by Fisher, Jensen and Roll (1969) is employed to estimate the abnormal returns of sample shares on announcement date and the migration date. This methodology has been employed by various scholars such as Jenkinson and Ramdorai (2013), Ikram and Nugroho (2014), Kruger (2014) and Abbas (2015) to investigate the impact of corporate actions on stock returns. The estimation period is from day -120 to day -21 relative to the announcement date. Since the asymmetrical nature of the information environment in the AltX, it is possible that the market reaction starts before the announcements. The use of a broad event window (of -20, +20) is made in order to capture possible pre-event reaction, that is, from 20 trading day before the dividend announcement to the 20 trading day after the event. In addition, Brown & Warner (1985) states that, a parameter estimation period of 120 days is adequate since daily returns data for the 120 days prior to the event date are sufficient in formulating a benchmark for normal returns. The abnormal return is defined as the difference between the actual return and the benchmark return. This research first investigates the impact of the announcement of migration on share prices and liquidity. The research further investigates the behaviour of share prices and turnover before and after the actual date when the migration took place. As discussed in Section 4.3.3, the benchmark returns employed by this research is the historical performance of the sample shares instead of the expected return computed by the CAPM, due to the fact that the beta coefficients estimated from the CAPM are statistically insignificant. The benchmark returns are estimated as the arithmetic returns of the sample shares from t-120 to t-21 relative to the announcement date and the actual migration date. The event window consists of 41 days, that is, 20 days prior to the announcement/migration date (t-20) to 20 days after the announcement/migration date (t+20) along with the announcement/migration day itself (that is, t = 0). Similarly, to evaluate the impact of the migration on liquidity, the arithmetic mean of turnover from t-120 to t-21 relative to the announcement/migration date is used as the benchmark and the abnormal turnovers are estimated over the event window of 41 days, that is, 20 days prior to the announcement/migration date to 20 days after the announcement/migration date along with the announcement/migration day itself. This study employs daily closing prices to compute the actual return for each stock and for the benchmark index using the following Equation 4.1:

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1} + D_{i,t}}{P_{i,t-1}} \quad (4.1)$$

where

$R_{i,t}$ is the return of share *i* on day *t;*

$P_{i,t}$ is the closing price of stock *i* on day *t;*

$P_{i,t-1}$ is the closing price of stock i on day *t*-1 and

$D_{i,t}$ is the dividend payable for firm *i* at time *t,*

Although Equation 4.1 includes $D_{i,t}$, none of the sample shares has announced or paid dividends during their respective period of evaluation. The average daily return between t = -120 and t = -21 before the announcement/migration date for sample share *i* ($\overline{R}_i$) is employed as the benchmark return using Equation 4.2:

$$\overline{R}_i = \frac{\sum_{t=-120}^{t=-21} R_{i,t}}{100} \quad (4.2)$$

The benchmark return $\overline{R}_i$ in Equation 4.2 is compared with the actual return (R_{it}) to determine the daily abnormal return during an event window of 41 days. The abnormal return (AR_{it}) for share *i* at day *t* during the 41-day event window is calculated using Equation 4.3 as follows:

$$AR_{i,t} = R_{it} - \overline{R}_t \quad (4.3)$$

where

$R_{i,t}$ is the actual return for share *i* in day *t*; and

$\overline{R}_i$ is the benchmark return estimated between t-120 and t-21.

Once the daily abnormal return for each sample share is computed in the event window, the average abnormal return (AAR) can be calculated by averaging the abnormal return for all sample shares for each day in the event window. The average abnormal return for day *t* in the event window is calculated using Equation 4.4 as follows:

$$AAR_t = \frac{1}{N}\sum_{t=1}^{N} AR_{it} \quad (4.4)$$

Subsequently, the daily average abnormal returns can be accumulated to compute the cumulative average abnormal return (CAAR) for each day in the event window using Equation 4.5. The CAAR is a useful statistical measure in addition to the AAR to provide an indication of the aggregate effect of the abnormal returns.

$$CAAR_t = \sum_{t=1}^{T} AAR_t \quad (4.5)$$

Finally, the Student's *t* test is conducted to determine the statistical significance of AAR*t* and CAAR*t*, respectively. The test statistic for each AAR*t* is computed using Equation 4.6, where σ_{AAR} is the cross-sectional standard deviation of abnormal returns at day *t*; and *n* is the number of sample shares at day *t.*

$$t = \frac{AAR_t}{\sigma_{AAR}/\sqrt{n}} \quad (4.6)$$

Following the methodology of Abbas (2015), the test statistic for CAAR*t* is computed using Equation 4.7, where *d* is the total number of days in which CAAR is calculated.

$$t = \frac{CAAR}{\sigma_{AAR}/\sqrt{d}} \quad (4.7).$$

In an event whereby the average abnormal return or the cumulative abnormal of return before the announcement date is significantly different from zero, this could be an indication that the event has a significant impact on the share price. This implies that there was information leakage before the announcement date due to inside information. Those who have access to inside information can potentially gain out of that information at the expense of those investors who are not aware of such information before the announcement. On the other hand, if significant average abnormal returns are observed after the announcement date, this could mean that share prices do not fully reflect the information that is already in the public after the announcement. Therefore, investors can earn abnormal returns after the information is officially availed to the public, which will serve as evidence against the EMH. Since the actual migration takes place after the announcement, it should not have significant impact on the share

price if the market is efficient.

After the impact of announcement/migration on share prices is evaluated, this study applies the methodology suggested by Ajinkya and Jain (1989) to investigate the liquidity of shares sample around the announcement/migration date. The initial measure of daily turnover for each sample share *i* at each period *t* ($T_{i,t}$) is calculated using Equation 4.8. Following the methodology of Ajinkya and Jain (1989), a constant of 0.000255 is introduced in the equation to remove the skewness that characterises turnover.

$$T_{i,t} = Log\ (Trading\ Volume_{i,t} /\ Outstanding_{i,t}) + 0.000255 \quad (4.8)$$

where

$Trading\ Volume_{i,t}$ is the number of shares that are traded at day *t*; and

$Outstanding_{i,t}$ is the number of share that are outstanding at day *t,*

The average daily turnover between t = -120 and t = -21 before the announcement/migration date for sample share *i* ($\overline{T}_i$) is employed as the benchmark turnover using Equation 4.9:

$$\overline{T}_i = \frac{\sum_{t=-120}^{t=-21} T_{i,t}}{100} \quad (4.9).$$

Subsequently, the benchmark turnover is compared with the actual turnover ($T_{i,t}$) to determine the daily abnormal turnover during an event window of 41 days, that is, 20 days before the announcement/migration day and 20 days after the announcement/migration day along with announcement/migration day. The abnormal turnover for share *i* (AT_i) at day *t* during the 41-day event window is calculated using Equation 4.10:

$$AT_{i,t} = T_{i,t} - \overline{T}_i \quad (4.10)$$

Once the daily abnormal turnover for each sample share is computed in the event window, the average abnormal turnover (AAT) can be calculated by averaging the abnormal turnover for all the sample shares for each day in the event window. The average abnormal turnover for day *t* in the event window is calculated using Equation 4.11:

$$AAT_t = \frac{1}{N}\sum_{t=1}^{N} AT_{it} \quad (4.11)$$

Subsequently, the daily average abnormal turnover can be accumulated to compute the cumulative average abnormal turnover (CAAT) for each day in the event window using Equation 4.12 to measure the aggregate effect of the abnormal turnovers.

$$CAAT_T = \sum_{t=1}^{T} AAT_t \quad (4.12)$$

The Student's *t* test is conducted to determine the statistical significance of AAT*t* and CAAT*t*, respectively. The test statistic for each AAT*t* is computed using Equation 4.13, where σ_{AAT} is the cross-sectional standard deviation of abnormal returns at day *t*; and *n* is the number of sample shares at day *t.*

$$t = \frac{AAT_t}{\sigma_{AAT}/\sqrt{n}} \quad (4.13)$$

The test statistic for CAAT*t* is computed using Equation 4.14, where *d* is the total number of days in which the CAAT is calculated.

$$t = \frac{CAAT}{\sigma_{AAT}/\sqrt{d}} \quad (4.14).$$

When significant abnormal turnover is detected before the announcement date, it implies that some degree of insider trading is present in the market. On the other hand, when significant abnormal turnover is observed around the migration date, it indicates that the market failed to absorb all the information relating to the announcement at an earlier stage.

In an attempt to evaluate the performance of the firms that migrated from the AltX to the JSE main board against the performance of the comparable peers before and after their migration, this research has adopted five financial ratios that have been historically used in bankruptcy prediction. The main objective of using bankruptcy prediction ratios is due to the fact that AltX firms represent start-up SMMEs that are prone to financial distress. The adopted financial ratios

are discussed in more details in Chapter 7. However, Henry, Robinson and van Greuning (2012) states that, financial reports do not contain all the information needed to perform effective financial analysis. Kaplan and Norton (1992 (Kaplan & Norton, 1992)) concluded that, financial measures alone are not sufficient to measure performance. Hence, the use of financial ratios alone will not be sufficient to measure the overall performance of each firm before and after migration to the JSE main board. Therefore, information such as company and market news, share price performance and the financial positions will also be taken into consideration. With regard to the evaluation of the firm's financial position, this research will take into account information contained in the latest financial statements.

In essence, this research undertakes to conduct a short-term performance evaluation to get an understanding of the trends in business operation, financial performance and financial position of sample firms in comparison with their peers.

Finally, this research employs the Multivariate Discriminant Analysis (MDA) model of Altman (1977), which also referred to as the Z score function model to identify the important financial ratios that determine the success or failure of the sample firms after migration to the JSE main board. The MDA model is also known the Z score model that is used to find the linear combination of financial ratios that best discriminate the successful firms from the failed firms after their migration. This study classifies the sample firms the successful and failed firms after their migration to the JSE main board as Group 1 and Group 0 respectively. The employment of the MDA model is discussed in detail in Chapter 8. The basic form of the MDA model is displayed in Equation 4.15 as follows:

$$Z_{i,k} = \beta_0 + \beta_i X_{1,k} \ldots + \beta_{j,i} X_{j,k} \quad (4.15)$$

where,

$Z_{i,k}$ is the discriminant score of discriminant function *i* (*i =1, 2… G -1*) for object *k*;

$X_{j,k}$ is the independent variables *j (j=1, 2… J)* for object *k;*

$\beta_{j,i}$ is the discriminant coefficient for independent variable *j* and discriminant function *i;*

β_0 is the constant of discriminant function *i.*

Equation 4.15 converts each of the independent variables (that is financial ratios employed in

this study) into a single discriminant score or Z-value for each sample firm. Subsequently, each sample firm's Z-value is compared to a cut-off point, which is computed in order to minimise any possible misclassification of the firms. In the situation whereby the sample firm's Z-score is more than that of a cut-off number, the firm will be classified into the success group post its migration to the JSE main board. By contrast, when the Z-score is less than the cut-off number, the firm will be classified as unsuccessful post its migration to the JSE main board. The two assumptions that are critical to the adoption of the ADM highlighted by Yakubu, Dinye, Buor and Iddrisu (2017) are as follows; (1) the multivariate normality of independent variables within the different groups; and (2) the equal variance-covariance matrices of the two groups.

4.5 Potential Research Biases

As it has been prespecified, the sample used in the study excludes firms without adequate data and delisted firms during examination period. According to Reisinger (2012), the exclusion of firms from the study sample as a result of insufficient information as well as delisting, could lead to survivorship bias. After a critical selection process was implemented in this research, only 20 AltX firms survived to be part of this study sample data. Therefore, the sample used in this research only includes the AltX firms which are viewed as the only survivors from selection process, thus the results established in this study may be bias. However, the survivorship bias effect may not be substantial on the findings of this study due to little number firms that were excluded in this study sample. There are numerous studies have been conducted on how potential survivorship biases may affect the research results. Blake, Elton, and Gruber (1993) investigate the effects of survivorship on bonds funds, and finds that the survivorship bias raises return by 27 basis points per annum for bond funds. The investigation is conducted by taking the variance in excess risk adjusted return among those funds that survive and those that did not survive. On the other hand, Grinblatt and Titman (1989) employ quarterly equity holdings in order to measure the effect of survivorship bias. The results reveal several estimates of bias ranging between 10 and 30 basis points. Malkiel (1995) studies the performance of all mutual funds between 1976 and 1988 and finds that survivorship bias improve the return on the surviving mutual funds by 150 basis points.

On the other hand, various studies have been conducted on how to mitigate potential survivorship biases in a research. In the study conducted by Gilbert and Strugnell (2008), all delisted shares were included up until their respective delisting dates in order to mitigate the effects of survivorship bias. Similarly, in the study conducted by Mans-Kemp (2014) includes both listed and delisted firms with an attempt to avoid the effects of survivorship bias. Huynh and Smith (2015), examine the effects of delisting on the performance of the momentum trading strategy in Australia. In an attempt to reduce the effects of survivorship, the authors requested that in order for the individual stock to be included in the sample data it must have at least 24 valid returns over the past 60 months.

5

Market Reaction on Stock Returns and Trading Volumes

5.1 Introduction

Although numerous empirical studies have been conducted to investigate the impact of corporate actions on stock returns of the firms that lists on the JSE main board, few studies have been conducted to investigate the impact of market reaction on returns of the firms listed on the AltX. Mlonzi, Kruger and Nthoesane (2011) examine the existence of significant abnormal returns around the public announcement of earnings for the firms that lists on the AltX. The authors find that there were significant negative abnormal returns after the earnings announcements, which indicates the existence of an inefficient market. Kruger (2014) investigates the impact of corporate reaction on returns and trading volumes of the firms that lists on the AltX. The author's study focuses on the impact actual migration on the stock returns and trading volumes of the firms that have migrated from the AltX to the JSE main board. The author finds that there were significant abnormal turnovers and significant abnormal returns before and after the firms have announced their migration from the AltX to the JSE main board. Once again, the author's results demonstrate the evidence of market inefficiency on the AltX. This research will be the first study to investigate the impact of both migration announcement and actual migration on stock returns and on trading volumes at the same time. This investigation is based on the rationale that the observed period between announcement date and migration date is usually more than a month and investors might have different reactions towards these two mentioned events.

5.2 Data and Methodology

The sample consists of 20 AltX listed firms that have announced migration between the period between 2004 and 2015. The sample includes firms from a wide range of industries as it is displayed in Table 4.1. The daily closing stock prices and daily trading volumes were downloaded from the I-Net BFA database at the University of the Western Cape for the period covered by the study. Moreover, the migration announcement and actual migration dates of the sample firms from the AltX to the JSE main board were obtained from the firms' respective websites. As mentioned in Section 4.3.3, the historical performance of the sample shares is employed as the benchmark returns instead of the expected return computed by the CAPM, due to the fact that the beta coefficients estimated from the CAPM are statistically insignificant. The benchmark returns are estimated as the arithmetic returns of the sample shares from t-120 to t-21 relative to the announcement date and the actual migration date. The event window consists of 41 days, that is, 20 days prior to the announcement/migration date (t-20) to 20 days after the announcement/migration date (t+20) along with the announcement/migration day itself (that is, t = 0). Similarly, to evaluate the impact of the migration on liquidity, the arithmetic mean of turnover from t-120 to t-21 relative to the announcement/migration date is used as the benchmark and the abnormal turnovers are estimated over the event window of 41 days, that is, 20 days prior to the announcement/migration date to 20 days after the announcement/migration date along with the announcement/migration day itself.

5.3 Empirical Results and Discussion

5.3.1 Stock price reaction around the migration announcement date

Table 5.1 depicts the average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) around migration announcement date measured by the historical performance of the sample shares with the corresponding t-statistic values for each day in the event window.

The results in Table 5.1 show that during the 20 days pre-announcement window, which starts from day t-20 to day t-1, there is a pattern of positive and negative average abnormal returns. There are 11 positive and 9 negative price reactions prior migration announcement, that is, positive reactions are more than negative. During the 20 days pre-announcement window the abnormal returns are observed approximately three weeks before the migration announcement date, that is, day t-20 and day t-13 and statistically significant at 10 percent and 5 percent level respectively. The observations on abnormal returns before the migration announcement indicate the existence of insider trading and consequently provides a supporting evidence against the strong-form of market efficiency.

Similarly, during the post-announcement window from day t+1 to day t+20, there is a pattern of negative and positive average abnormal returns. There are 16 positive and 4 negative price reactions post-migration announcement, that is, positive reactions are more than negative. The abnormal returns are experienced in day t+2, t+10 and t+13 and statistically significant at 10 percent, 5 percent, and 10 percent level respectively. Consequently, the observation on abnormal returns post-migration announcement suggest that the market is not information-efficient in the semi-strong form of the efficient market hypothesis (EMH). Investors' delayed reaction to the migration announcement provides evidence of market inefficiency on the AltX.

Table 5.1 presents the cumulative average abnormal returns (CAARs) for each day during the 41-day event window and their corresponding t-statistic values. The results indicate that the CAAR accumulated positively as from day t-18 before the migration announcement and stays mainly positive until day t+20. Moreover, the CAAR values are highly significant at 1 percent on day t+4, t+5, t+10, t+13, t+15, t+16, t+17, t+18, t+19, and t+20. The maximum CAAR value is 14 percent and highly significant in day t+19 and t+20 making these the most important days of the event window.

Table 5.1 AAR and CAAR around the migration announcement date

Table 5.1 presents the daily abnormal returns of the AltX sample firms around migration announcement dates between 2004 and 2015. AAR is the average abnormal return, and CAAR is the cumulative average abnormal return. Averaging was carried out across sample firms. The event window period is comprised of 41 days, that is, 20 days before the announcement day (-20) and 20 days after announcement day (+20) along with the announcement day itself (t = 0).

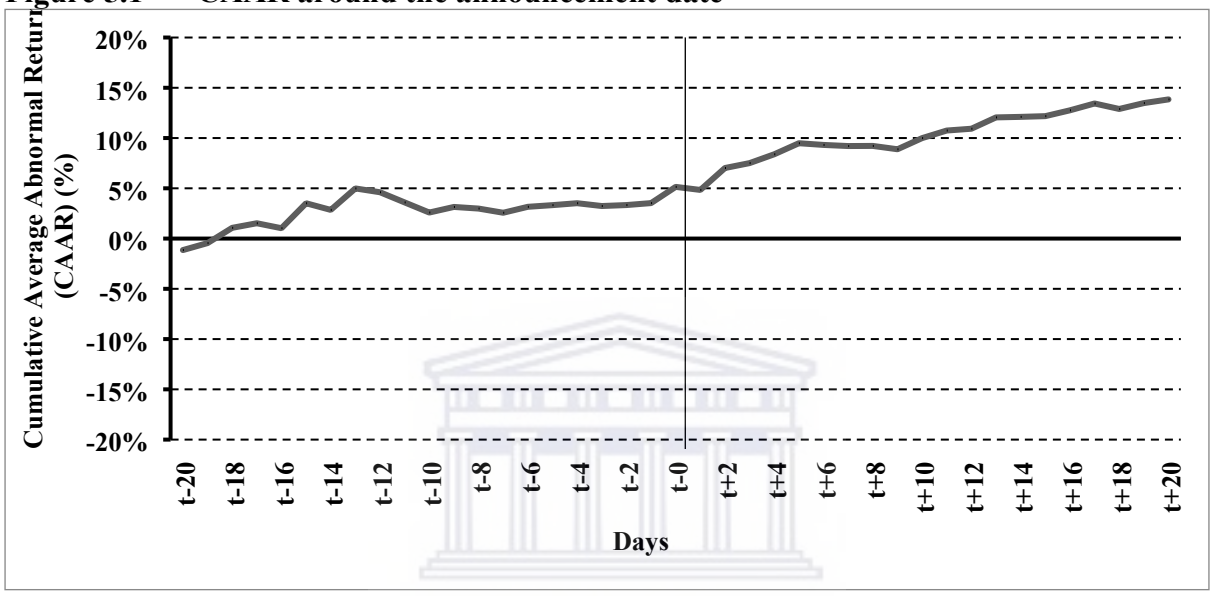
Market Proxy = Excess Return (R*i* – R*m*)									
					Announcement				
Pre-announcement					Post-announcement				
Days	**AAR**	**t-test**	**CAAR**	**t-test**	**Days**	**AAR**	**t-test**	**CAAR**	**t-test**
t-20	-0.01	-1.82*	-0.01	-1.82*	t = 0	0.01	1.22	0.05	0.32**
t-19	0.00	1.51	-0.01	-0.72	t+1	0.00	0.37	0.05	1.92*
t-18	0.02	1.08	0.01	0.71	t+2	0.02	2.13*	0.07	2.57**
t-17	0.01	0.67	0.02	1.00	t+3	0.01	0.61	0.08	2.67**
t-16	-0.01	-0.77	0.01	0.69	t+4	0.00	0.96	0.08	3.38***
t-15	0.03	2.32	0.04	1.38	t+5	0.02	1.40	0.10	3.27***
t-14	-0.01	-0.41	0.03	1.37	t+6	-0.01	-0.34	0.09	2.92**
t-13	0.02	2.53**	0.05	2.35**	t+7	0.00	-0.16	0.09	3.20**
t-12	0.00	-0.78	0.05	2.16**	t+8	0.00	0.02	0.09	3.00**
t-11	-0.01	-1.77	0.04	1.77	t+9	0.00	-0.56	0.09	2.91**
t-10	-0.01	-1.75	0.03	1.20	t+10	0.01	2.51**	0.10	3.21***
t-9	0.00	0.53	0.03	1.46	t+11	0.01	1.09	0.11	3.08**
t-8	0.00	-0.19	0.03	1.30	t+12	0.00	0.37	0.11	2.96**
t-7	0.00	-0.87	0.03	1.06	t+13	0.01	1.95*	0.12	3.17***
t-6	0.00	0.79	0.03	1.22	t+14	0.00	0.11	0.12	3.07**
t-5	0.00	0.17	0.03	1.30	t+15	0.00	0.10	0.12	3.24***
t-4	0.01	0.36	0.04	1.53	t+16	0.01	0.58	0.13	3.34***
t-3	-0.01	-0.52	0.03	1.38	t+17	0.00	1.22	0.13	3.63***
t-2	0.00	0.18	0.03	1.42	t+18	0.00	-0.58	0.13	3.58***
t-1	0.01	0.32	0.04	1.45	t+19	0.01	1.20	0.14	3.81***
t = 0	0.01	1.22	0.05	0.32**	t+20	0.00	0.89	0.14	3.80***

Note: *,**,*** indicate p-value significant at 10%, 5% and 1% level, respectively.

In order to assess the accumulated impact of the announcement, the cumulative average abnormal returns (CAARs) for each day during the 41-day event window are examined. In general, CAAR in Table 5.1 supports the observation of AAR values in Table 5.1. The results in Figure 5.1 indicate that the CAAR accumulated positively from day t-18 until it settles at 14

percent on day t-19 and day t-20. The positive trend, which was built up long before the actual announcement (t-18 to t-1), supports the evidence of insider trading activities. At the same time, the accumulation of positive abnormal returns persists since the announcement until t+20 is an indication of underreaction due to the delayed response to the announcement. These observations (the possibility of insider trading and market underreaction) provide evidence against the semi-strong form as well as strong form of market efficiency.

Figure 5.1 CAAR around the announcement date



5.3.2 Trading volume reaction around the migration announcement date

Table 5.2 illustrates the average abnormal turnover (AAT) and cumulative average abnormal turnover (CAAT) around the migration announcement date with their corresponding t-statistic values. Table 5.2 reveals the existence of an inconsistent pattern of AAT throughout the event window with the most insignificant t-values before the migration announcement date. There are 13 positive and 7 negative turnover reactions prior migration announcement, that is, positive reactions are more than negative. During the 20 days pre-announcement window the abnormal turnovers are observed approximately one weeks before the migration announcement date, that is, day t-7, t-6 and day t-5 and statistically significant at 10 percent level respectively. Once again, the observations on abnormal turnovers prior migration announcement indicate the existence of insider trading and consequently provides evidence against the strong-form of market efficiency.

During the post-announcement window from day t+1 to day t+20 the turnovers are positive for 11 days, while the remaining days have negative turnovers. The abnormal returns are

experienced in day t+2, t+10 and t+13 and statistically significant 10 percent, 5 percent, and 10 percent level respectively. Once again, the investors' delayed reaction to the migration announcement provides an evidence against the semi-strong form of market efficiency.

Table 5.2 presents the cumulative average abnormal turnovers (CAATs) for each day during the 41-day event window and their corresponding t-statistic values. The results indicate that the CAAT accumulated positively as from day t-16 before the migration announcement and stays mainly positive until day t+20. It can be observed that all the CAAT values post-announcement are positive and statistically insignificant. In general, the results indicate that the investors perceive the migration announcement to be beneficial for them.

Table 5.2 AAT and CAAT around the migration announcement date

Table 5.2 presents the daily abnormal turnover around migration announcements of sample firms from the AltX between 2004 and 2015. AAT is the average abnormal turnover, and CAAT is the cumulative average abnormal turnover. Averaging was carried out accros sample firms. The event window period is comprised of 41 days, that is, 20 days before the announcement day (-20) and 20 days after announcement day (+20) along with the announcement day itself (t = 0).

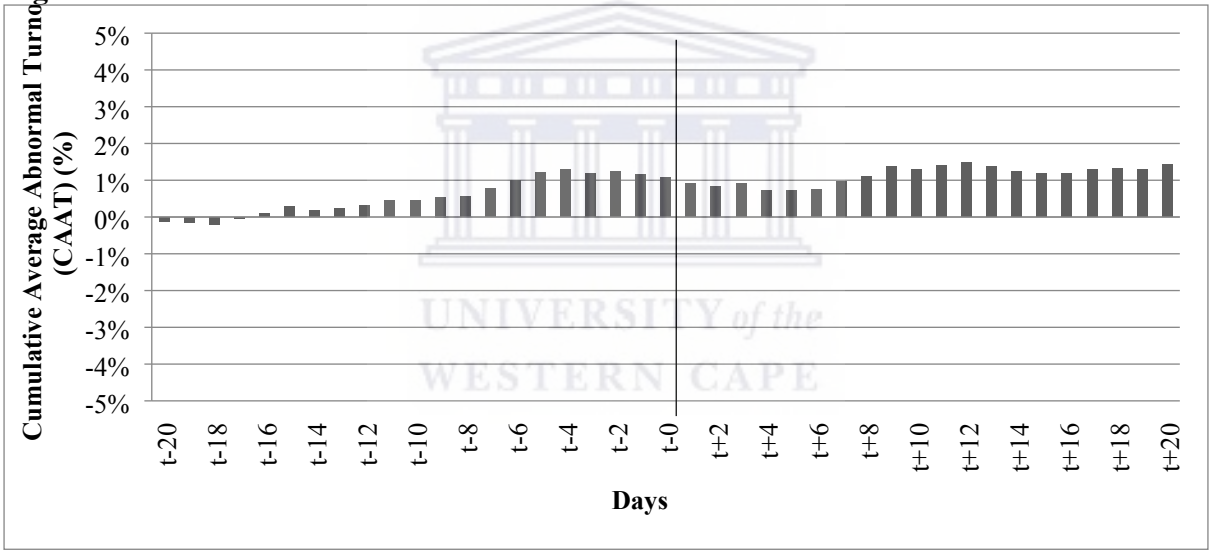
Market Proxy = Access Turnover (T_i - AT_i)									
				Announcement					
Pre-announcement					Post-announcement				
Days	**AAT**	**t-test**	**CAAT**	**t-test**	**Days**	**AAT**	**t-test**	**CAAT**	**t-test**
t-20	-0.12	-0.84	-0.12	-0.84	t = 0	-0.09	-0.77	1.06	0.77
t-19	-0.02	-0.16	-0.14	-0.54	t+1	-0.16	-1.01	0.90	0.63
t-18	-0.07	-0.47	-0.21	-0.67	t+2	-0.07	-0.47	0.83	0.57
t-17	0.15	1.53	-0.06	-0.13	t+3	0.08	0.68	0.91	0.62
t-16	0.16	1.28	0.10	0.23	t+4	-0.19	-1.03	0.72	0.48
t-15	0.19	1.70	0.29	0.65	t+5	0.01	0.04	0.73	0.47
t-14	-0.11	-0.63	0.18	0.33	t+6	0.02	0.16	0.75	0.47
t-13	0.05	0.34	0.23	0.38	t+7	0.20	1.69	0.95	0.58
t-12	0.08	0.56	0.31	0.47	t+8	0.16	1.27	1.11	0.65
t-11	0.15	1.47	0.46	0.63	t+9	0.27	2.79**	1.38	0.81
t-10	-0.01	-0.09	0.45	0.62	t+10	-0.08	-0.36	1.30	0.72
t-9	0.09	1.04	0.54	0.71	t+11	0.09	0.77	1.39	0.74
t-8	0.03	0.16	0.57	0.69	t+12	0.09	0.67	1.48	0.79
t-7	0.19	1.76*	0.76	0.87	t+13	-0.09	-0.52	1.39	0.72
t-6	0.22	1.81*	0.98	1.07	t+14	-0.14	-0.82	1.25	0.62
t-5	0.23	1.82*	1.21	1.23	t+15	-0.06	-0.42	1.19	0.58
t-4	0.08	0.50	1.29	1.20	t+16	0.00	0.00	1.19	0.58
t-3	-0.12	-0.59	1.17	1.05	t+17	0.11	1.16	1.30	0.63

t-2	0.06	0.28	1.23	0.98	t+18	0.02	0.10	1.32	0.64
t-1	-0.08	-0.33	1.15	0.86	t+19	-0.02	-0.10	1.30	0.61
t = 0	-0.09	-0.77	1.06	0.77	t+20	0.13	1.00	1.43	0.66

Note: *,**,*** indicate p-value significant at 10%, 5% and 1% level, respectively.

Figure 5.2 presents the cumulative average abnormal turnovers (CAATs) associated with different event windows around the migration announcement period. It can be observed that insignificant negative reactions are experienced on day t-20, t-19, t-18 and t-18. The results indicate that the CAAR accumulated positively from day t-16 before the migration announcement and remains positive until day t+20. Moreover, one can observe that the CAAR values after the announcement day are positive, but also insignificant. Overall, the results indicate positive investors' sentiment about the migration announcements.

Figure 5.2 CAAT around the announcement date



5.3.3 Stock price reaction around the actual migration date

The average abnormal return (AAR) and the cumulative average abnormal return (CAAR) for 41 days window are reported in Table 5.3. The statistical results in Table 5.3 exhibit the presence of positive and negative abnormal returns before the migration event window, which starts from day t-20 until day t-1. There are 16 positive and 4 negative price reactions prior to actual migration which implies that there is more positive reaction than the negative reaction. During the 20 days pre-migration window the abnormal returns are observed approximately three weeks before the actual migration date, that is, day t-16 and day t-11 and statistically significant at 10 percent level respectively. It is also observed that on the actual migration day

the market has experienced a positive insignificant reaction. The results suggest that there is insider trading before the actual migration and that provides a supporting evidence against the strong-form of market efficiency.

Similarly, during the post-migration window from day t+1 to day t+20, there is a pattern of negative and positive average abnormal returns. There are 14 positive and 6 negative price reactions post-migration, that is, positive reactions are more than negative. It is observed that the abnormal returns are experienced in three weeks after the actual migration day, that is, day t+19, and statistically significant at 10 percent level. In general, this result indicates the market underreaction due to the delayed response to the actual migration and that provides a sufficient evidence against the semi-strong form of market efficiency.

Table 5.3 presents the cumulative average abnormal returns (CAARs) for each day during the 41-day event window and their corresponding t-statistic values. The results indicate that the CAAR accumulated positively from day t-20 before the actual migration day and stays mainly positive until day t+20. It can be observed that the positive significant CAAR values are experienced four days before the actual migration day and twenty days after actual migration. The maximum CAAR value is 16 percent and highly significant in day t+19 and t+20 making these the most important days of the event window.

Table 5.3 AAR and CAAR around actual migration date

Table 5.3 presents the daily abnormal returns around actual migration from the firms in the AltX between 2004 and 2015. AAR is the Average Abnormal Return, and CAAR is the Cumulative Average Abnormal Return. Averaging was carried out across sample firms. The event window period is comprised of 41 days, that is, 20 days before the migration day (-20) and 20 days after migration day (+20) along with the actual migration day itself (t=0).

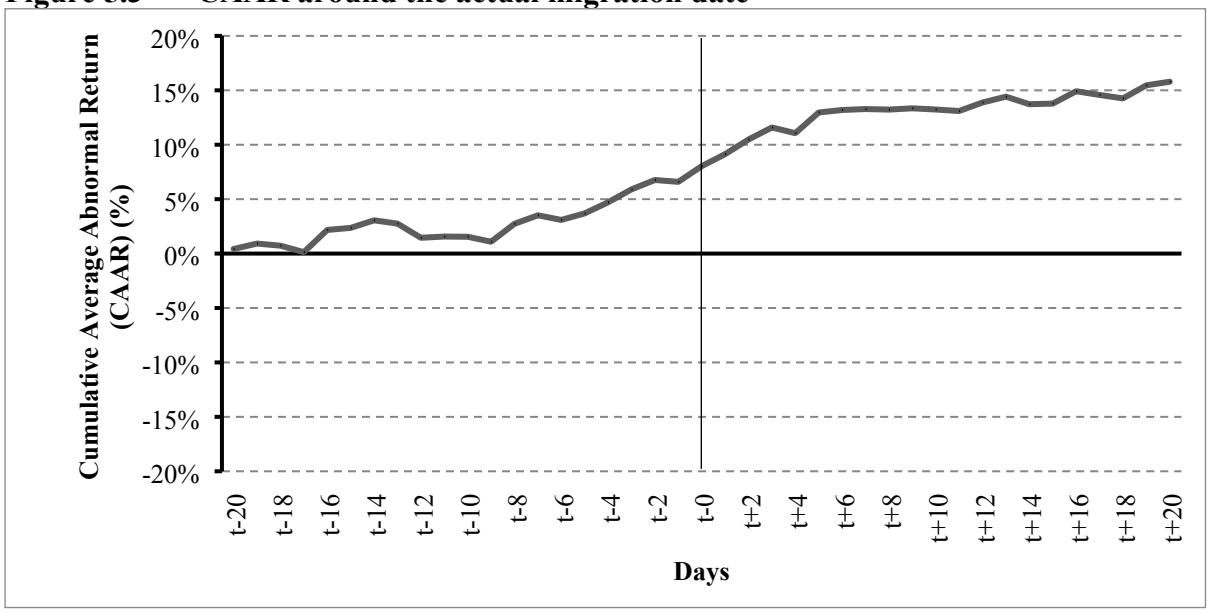
Market Proxy = Excess Return (R*i* – R*m*)									
				Migration					
Pre-migration					Post-migration				
Days	**AAR**	**t-test**	**CAAR**	**t-test**	**Days**	**AAR**	**t-test**	**CAAR**	**t-test**
t-20	0.00	1.51	0.00	1.02	t = 0	0.01	1.31	0.08	3.91***
t-19	0.01	0.06	0.01	1.46	t+1	0.01	1.01	0.09	3.92***
t-18	0.00	1.11	0.01	0.73	t+2	0.02	0.90	0.11	3.83***
t-17	-0.01	-0.34	0.00	0.10	t+3	0.01	1.12	0.12	3.81***
t-16	0.02	2.10*	0.02	1.58	t+4	-0.01	-0.17	0.11	3.81***
t-15	0.00	0.69	0.02	1.48	t+5	0.02	1.44	0.13	4.30***
t-14	0.01	1.11	0.03	1.67	t+6	0.00	0.21	0.13	4.63***
t-13	0.00	0.39	0.03	1.46	t+7	0.00	0.17	0.13	4.54***

t-12	-0.01	-0.94	0.02	0.74	t+8	0.00	0.19	0.13	4.21***
t-11	0.00	1.82*	0.02	0.76	t+9	0.00	0.39	0.13	4.16***
t-10	0.00	0.57	0.02	0.70	t+10	0.00	-0.04	0.13	4.83***
t-9	-0.01	-1.46	0.01	0.47	t+11	0.00	-0.43	0.13	3.68***
t-8	0.02	1.04	0.03	1.20	t+12	0.01	0.75	0.14	4.00***
t-7	0.01	1.73	0.04	1.48	t+13	0.00	0.60	0.14	4.22***
t-6	-0.01	-0.03	0.03	1.21	t+14	0.00	-1.35	0.14	3.86***
t-5	0.01	0.46	0.04	1.62	t+15	0.00	-0.07	0.14	4.13***
t-4	0.01	1.62	0.05	2.08*	t+16	0.01	1.73	0.15	4.18***
t-3	0.01	1.64	0.06	2.49**	t+17	0.00	0.52	0.15	4.16***
t-2	0.01	1.74	0.07	3.02**	t+18	-0.01	-0.48	0.14	3.80***
t-1	0.00	-0.22	0.07	3.36***	t+19	0.02	1.99*	0.16	4.02***
t = 0	0.01	1.31	0.08	3.91***	t+20	0.00	0.04	0.16	4.13***

Note: *,**,*** indicate p-value significant at 10%, 5% and 1% level, respectively.

The results in Figure 5.3 indicates that the CAAR does not exhibit any consistent pattern throughout the event window, however, it is also observed that the CAAR accumulated positively from day t-20 and remains positive until t+20. The positive trend, which was built up long before the actual migration (t-4 to t-1), supports the evidence of insider trading activities. At the same time, the accumulation of significant positive abnormal returns persists since the event day t = 0 until t+20 is an indication of underreaction due to the delayed response to the actual migration. These findings provide sufficient evidence against the semi-strong and strong form of market efficiency.

Figure 5.3 CAAR around the actual migration date



5.3.4 Trading volume reaction around the actual migration date

Table 5.4 indicates that during the 20-day pre-migration window, which starts from day t-20 to day t-1, there is a pattern of positive and negative average abnormal turnovers. There are 8 positive and 12 negative turnover reactions prior actual migration, that is, negative reactions are more than positive. During the 20 days pre-migration window the abnormal turnovers are observed approximately three weeks before the actual migration date, that is, day t-18, t-16, t-15 and day t-14 and statistically significant at 10 percent, 5 percent, 5 percent and 10 percent level respectively. In general, the results indicate the existence of insider trading and consequently provides evidence against the strong-form of market efficiency.

During the post-migration window from day t+1 to day t+20 the turnovers are positive for 8 days, while the remaining days have negative turnovers. It can observed that the the abnormal returns are experienced in day t+15, t+16 and t+19 and statistically significant 5 percent, 5 percent, and 1 percent level respectively. The results suggest an investors' delayed reaction to the actual migration and that consequently provides an evidence against the semi-strong form of market efficiency on the AltX.

Table 5.4 presents the cumulative average abnormal turnovers (CAATs) for each day during the 41-day event window and their corresponding t-statistic values. The results indicate that the CAAT accumulated positively for two days before the actual migration day and four days after the actual migration day. It can be observed that on day t+20 the CAAT value is positive and statistically significant at 1 percent level. Overall, results exhibit mixed reactions before and after the actual migration day.

Table 5.4 AAT and CAAT around actual migration date

Table 5.4 presents the daily abnormal turnover around actual migration from the firms in the AltX between 2004 and 2015. AAT is the Average Abnormal Turnover, and CAAT is the Cumulative Average Abnormal Turnover. Averaging was carried out across sample firms. The event window period is comprised of 41 days, that is, 20 days before the migration day (-20) and 20 days after migration day (+20) along with the actual migration day itself (t=0).

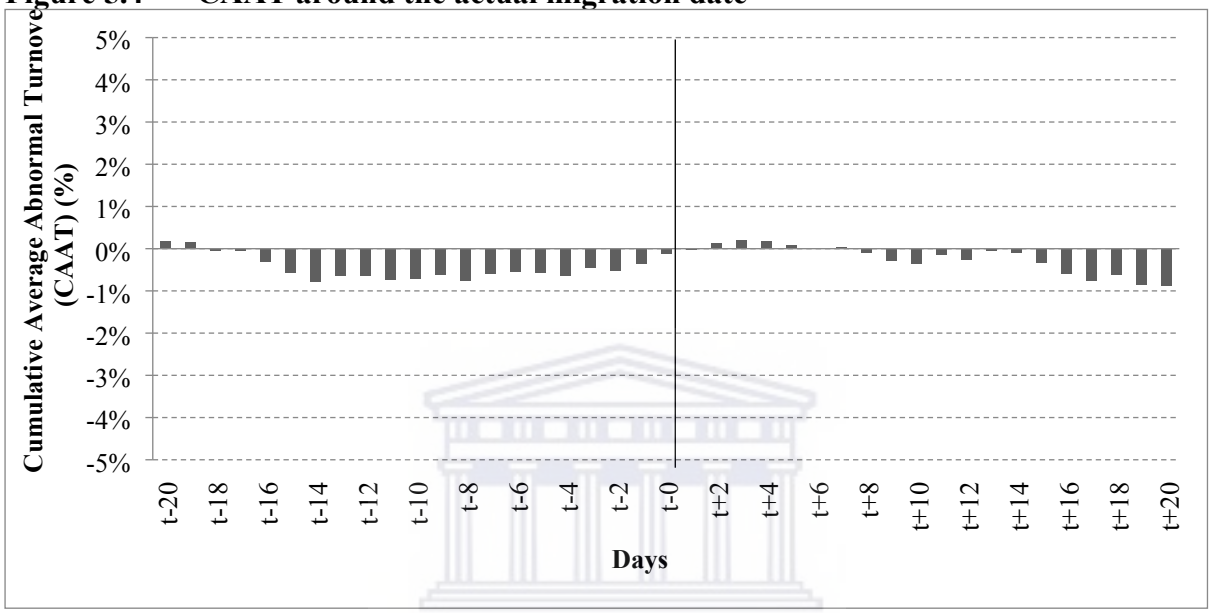
Market Proxy = (T_i - AT_i)									
Migration									
Pre-migration					Post-migration				
Days	AAT	t-test	CAAT	t-test	Days	AAT	t-test	CAAT	t-test
t-20	0.19	1.01	0.19	1.01	t = 0	0.24	1.62	-0.12	-0.09
t-19	-0.03	-0.18	0.16	0.60	t+1	0.10	0.78	-0.02	-0.06
t-18	-0.66	-2.06*	-0.50	-0.15	t+2	0.14	0.90	0.12	0.08
t-17	0.44	-0.07	-0.06	-0.16	t+3	0.09	0.50	0.21	0.13
t-16	-0.25	-2.73**	-0.31	-0.81	t+4	-0.03	-0.23	0.18	0.11
t-15	-0.25	-2.20**	-0.56	-1.31	t+5	-0.10	-0.86	0.08	0.05
t-14	-0.22	-1.78*	-0.78	-1.56	t+6	-0.09	-0.59	-0.01	0.00
t-13	0.15	1.01	-0.63	-1.17	t+7	0.05	0.32	0.04	0.02
t-12	-0.01	-0.04	-0.64	-1.11	t+8	-0.14	-1.30	-0.10	-0.06
t-11	-0.09	-0.71	-0.73	-1.31	t+9	-0.19	-1.47	-0.29	-0.16
t-10	0.01	0.12	-0.72	-1.17	t+10	-0.06	-0.55	-0.35	-0.19
t-9	0.10	0.52	-0.62	-0.90	t+11	0.21	0.86	-0.14	-0.08
t-8	-0.15	-1.12	-0.77	-1.01	t+12	-0.11	-0.70	-0.25	-0.13
t-7	0.18	0.73	-0.59	-0.65	t+13	0.19	0.99	-0.06	-0.03
t-6	0.04	0.36	-0.55	-0.59	t+14	-0.04	-0.26	-0.10	-0.05
t-5	-0.02	-0.13	-0.57	-0.59	t+15	-0.23	-2.25**	-0.33	-0.16
t-4	-0.07	-0.74	-0.64	-0.59	t+16	-0.27	-2.66**	-0.60	-0.29
t-3	0.19	0.86	-0.45	-0.39	t+17	-0.17	-1.33	-0.77	-0.37
t-2	-0.07	-0.63	-0.52	-0.43	t+18	0.15	0.97	-0.62	-0.30
t-1	0.16	1.06	-0.36	-0.27	t+19	-0.24	-3.1***	-0.86	-0.41
t = 0	0.24	1.62	-0.12	-0.09	t+20	-0.02	-0.11	-0.88	4.13***

Note: *,**,*** indicate p-value significant at 10%, 5% and 1% level, respectively.

Figure 5.4 presents the cumulative average abnormal turnovers (CAATs) for each day during the 41-day event window. The results in Figure 5.4 indicates that the CAAT pattern is not a consistent pattern throughout the event window. During the pre-migration window, an insignificant negative reaction is experienced at day t-18 and stays mainly negative until

day t+1. This pattern of a negative trading activity reaction is followed by the positive pattern from t+2 until t+7. The pattern of negative reaction on trading activities persists from t+8 until t+19 with day t+20 positive and significant at 1 percent level. Overall, this result shows the investors' delayed reaction to the actual migration and consequently provides a strong evidence against the semi-strong form of market inefficiency on the AltX.

Figure 5.4 CAAT around the actual migration date



5.4 Conclusion

The purpose of this study is to investigate the existence of significant abnormal returns/turnovers around migration announcement/actual migration dates for listed firms in the AltX over the period from 1 January 2004 to 31 December 2015. The significant average abnormal returns and significant average abnormal turnovers reaction around migration announcement date/actual migration date suggest that both the migration announcement and actual migration of the firms from the AltX to the JSE main board have produced highly informative contents. The magnitude of the average abnormal returns prior-migration announcement/actual migration date is prompted by trading activities in the twenty days before the announcement/actual migration. The significant average abnormal returns reaction post-migration announcement/actual migration date indicates the underreaction which is due to the investors' delayed response to migration announcement/actual migration. Similarly, the magnitude of the average abnormal turnovers prior to the migration announcement/actual migration date suggests that there is systematic evidence of informed trading before the migration announcement/actual migration. Moreover, the significant average abnormal turnovers reaction post-migration announcement date/actual migration date indicates the underreaction, which is due to the investors' delayed response to migration announcement/actual migration. Overall, these findings (the prospect of insider trading and market underreaction) provide strong evidence against both the semi-strong and strong form of market efficiency.

6

Performance evaluation and classification of the AltX firms

6.1 Introduction

The purpose of this chapter is to examine the performance of the AltX sample firms against their comparable peers before and after their migration to the JSE main board and subsequently classify each firm either as a success or as a failure post its migration. The classification of each sample firm carried out in this chapter will be compared to Multivariate Discriminant Analysis (MDA) results in Chapter 7. In essence, Chapter 6 is not a meticulous analysis but a justification for Chapter 7. The classification of the sample firms (either classified as a success or a failure) will be employed as the dependent variables in MDA, while the selected financial ratios will be used as the independent variables in MDA. The main objective of conducting the MDA is to identify the key financial ratios that are critical in determining the success or failure of the AltX firms after their migration to the JSE main board.

The empirical evidence from numerous studies conducted on performance the South African capital markets tend to focus more on the JSE main board rather than its development boards, such as AltX, DCM and VCM. In the entire history of the AltX existence, there are very few studies that have been conducted on the SMMEs listed on the AltX. Such studies include a study conducted by Scholtz and Smit (2015), Harwood and Konidaris (2015), Sebastian and Kransdorff (2017). Scholtz and Smit (2015) investigate the various factors that influence the level of conformance with corporate governance recommendations for firms listed on the AltX in South Africa. As part of their findings, the authors discover that the average debt levels of the AltX firms are almost equal to 57% of their assets. The higher levels of debt in the AltX firms may be an indication of financial distress and a greater probability of default. On the other hand, Sebastian and Kransdorff (2017) investigate the key factors that promote the development of the SMMEs in the emerging economies. The authors finds that the lack of institutional investors and liquidity are the main reasons why the AltX market is not growing. Harwood and Konidaris (2015) examines the capital structure of the AltX firms in comparison with the firms that lists on the JSE main board. The authors discover that the AltX firms may

experience greater liquidity risk, as they appear to rely more on current liabilities than their counterparts on the JSE main board. Furthermore, authors document that the average profitability of firms listed on the AltX is negative indicating that most firms on the AltX are loss making and considerably less profitable than firms on the JSE main board. Most studies conclude that the firms that lists on the AltX can expect to have lower tradability compared to their peers that lists in the JSE main board because of these prespecified reasons.

6.2 Data and Methodology

The latest financial statement (financial ratios) of the sample firms and their comparable peers as well as the information regarding the firms that have migrated to the JSE main board since the establishment of the AltX in October 2003 were downloaded from the I-Net BFA database at the University of the Western Cape. The sample consists of 20 AltX firms with their respective comparable peers. Moreover, each of the sample firms is compared against two peers. The employed criteria in selection of comparable peers for each of the sample firms is based on two attributes namely; industry and business description. Based on the employed criteria the comparable peers must have come from the same/similar industry and have the same/similar business description as the sample firm. Ultimately, 40 comparable peers that met the specified criteria were identified.

6.2.1 Profitability ratios

- **Profit margins**

One of the fundamentals and important objectives of the running a business is to make a profit. The study conducted by Sebastian and Kransdorff (2017) has revealed that, the majority of the AltX firms struggle to maintain positive short-term profitability, particularly after they have migrated to the JSE main board, which negatively affects their operations. As a result, some of the potential investors are reluctant to invest in the AltX firms after they have migrated to the JSE main board due to their very low or negative profit margins that these firms generates compared to their peers in the JSE main board (Harwood & Konidaris, 2015).
The net profit margin is shown in Equation 6.1.

$$\textbf{Net Profit Margin} = \frac{\textbf{Net Profit}}{\textbf{Revenue}} \times 100 \qquad 6.1$$

- **Return on Capital Employed**

Steyn (2012) states that return on capital employed (ROCE) is an important measure of business performance since it expresses the relationship between the earnings before interest and taxes generated throughout a period and the average long-term capital invested in the business during that period. The investors regards the ROCE as one of important profitability ratios of a business. Hence, the examination of the ROCE of the AltX firms will be conducted

and compared to their peers in the JSE main board. The return on capital employed is defined in Equation 6.2.

$$\textbf{Return on Capital Employed} = \frac{\textbf{EBIT}}{\textbf{Total Capital}} \textbf{ x 100} \qquad 6.2$$

6.2.2 Liquidity ratio

- **Current ratio**

The current ratio is a liquidity ratio that measures a firm's capability to settle its short-term debts should they become due. The accessible cash resources that the firm employs to satisfy these short-term debts should come predominantly from cash or cash as the results of other current assets conversion (Fraser & Ormiston, 2004). According to Haselau (2014), one of the investor's predominance concern around the AltX listed firms is the lack liquidity. Hence, this study will examine how liquid are the AltX listed firms compared to their peers in the JSE main board. The current ratio is defined by Equation 6.3.

$$\textbf{Current ratio} = \frac{\textbf{Total Current Assets}}{\textbf{Total Current Liabilities}} \qquad 6.3$$

6.2.3 Leverage ratio

- **Debt/Equity ratio**

Total debt to equity ratio is a fraction of creditors finance for each rand investment made by shareholder. Chadha and Sharma (2015) asserts that, the total debt to equity ratio determines the firm's ability to service its long-term debts. The study conducted by Sebastian and Kransdorff (2017) has revealed that, the majority of firms that are listed on the AltX have higher levels of debt compared to their peers that are listed on the JSE main board. As a result, the some of the AltX firms may experience greater financial leverage, as they appear to rely more on current liabilities compared to their counterparts on the JSE main board. The debt to equity ratio is depicted in Equation 6.4.

$$\textbf{Debt to Equity ratio} = \frac{\textbf{Total Debt}}{\textbf{Total Equity}} \textbf{ x 100} \qquad 6.4$$

6.2.4 Efficiency ratio

Day's sales in inventory measures of the average number of days that a firm takes to sell its inventory (Brigham & Houston, 2009). Ignoring the significance of inventory by any firm can have serious repercussions on that firm's operations, particularly when the production factors are not managed appropriately, to ensure to customers' expectations are met. Day's sales in inventory is defined by the following Equation 6.5.

- **Days Sales in Inventory = $\frac{\text{Ending Inventory}}{\text{Cost of Goods Sold}} \times 365$** 6.5

6.2.5 Methodology

The evaluation will be conducted over the period of three years that is, a year prior and two years post migration to the JSE main board. The rationale behind one year prior migration is to use the latest financial statements to assess the most recent financial position of both the sample firms and their comparable peers' prior migration to the JSE main board. One of the main purposes of the AltX establishment is to prepare the readiness of its listed firms to migrate to the JSE main board. The choice of two years evaluation (that is good or bad performance) post migration will be sufficient to determine how well the sample firms were prepared for the listing on the JSE main board. The analysis of the performance of the sample firms takes into account the share price performance, financial ratios (bankruptcy prediction ratios) that reflect their financial positions and relevant press release. The main objective of using bankruptcy prediction ratios is due to the fact that AltX firms represent start-up SMMEs that are prone to financial distress.

6.3 Performance evaluation and classification of the AltX firms results

6.3.1 Stenprop Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2014**) and Post – Migration (**2016 & 2017**)
Announcement Date: 23-09-2015
Migration Date: 05-10-2015

(a) Net Profit Margin

Table 6.1 (a) shows that, Stenprop has experience a negative net profit margin a year before its migration to the JSE main board. In 2015 financial period, Stenprop net profit margin has improve significantly by 128% compare to the previous period loss of -51%. Nonetheless, Stenprop net profit margin continue declining including after its migration to the JSE main board in 2015. Furthermore, the Stenprop net rental income for the period 2016 financial period has slightly decline by -1.15% to EUR9.66 million compare to the previous period of EUR9.77 million, while profit attributable to equity holders has weakens by -5.71% to EUR6.69 million in 2016 financial period compare to the prior period of EUR7.10 million (Stenprop Ltd annual report, 2016). In comparison with Stenprop, Table 6.1 (b) illustrates that, Capital and Counties Properties net profit margin has been declining over the presented periods, except in 2017, where it has sharply increase by 113.90% compare to the previous period. Moreover, Table 6.1 (c) demonstrates that, Attacq net profit margin has plunge sharply by -55.03% in 2017 compare to the prior period.

(b) Return on Capital Invested

Table 6.1 (a) explains that, Stenprop return on capital invested has been declining over the presented periods. Furthermore, profit attributable to equity holders has weakens to EUR6.694 million in 2016 financial period compare to the prior period of EUR7.099 million (Stenprop Ltd annual report, 2016). According to eProp Commercial Property News (2015), the SA Listed Property Index (SAPY) has recorded a negative total return (-0.50%) for the month ended 30 November 2015. The decline in the SAPY had negatively affected Stenprop and Capital & Counties Properties returns on capital invested in 2015 financial period as both firms experienced a decline of -2.92% and -4.18% respectively in 2015 financial period. On the other

hand, Table 6.1 (b) depicts that, Capital and Counties Properties return on capital invested has been declining over the presented periods, except in 2017 financial period, where it has increase by 3.25% compare to the previous period. Moreover, Table 6.1 (c) shows that, Attacq return on invested capital has been inconsistent over the presented periods.

(c) Current ratio

Table 6.1 (a) depicts that, Stenprop current ratio has been inconsistent over the presented periods. Furthermore, Stenprop total current assets have increase by 345.81% to R192.5 million in 2017 financial period compare to the prior period of R43.18 million, while its total current liabilities have decline by -40.79% to R122.61 million in 2017 financial period compare to the previous period of R207.06 million (Stenprop Ltd annual report, 2017). On the other hand, Table 6.1 (b) shows that, Capital and Counties Properties current ratio has been declining over the presented years, except in 2014 financial period, where it has slightly climb by 0.04 compare to the prior period. Moreover, Table 6.1 (c) illustrates that, Attacq current ratio has been increasing over the presented periods, except in 2017 financial period, where it has decline by -2.61 compare to the previous period.

(d) Debt/Equity ratio

Table 6.1 (a) illustrates that, Stenprop debt to equity ratio has been inconsistent over the presented periods, however, in 2016 financial period it has decrease by -0.57 compare to the prior period. Moreover, Stenprop total stockholders' equity has climb by 5.17% to R457.63 million in 2016 financial period compare the prior period of R435.13 million, while its total liabilities have increase by 0.74%% to R399.66 million compare to the prior period of R396.72 million (Stenprop Ltd annual report, 2016). On the other hand, Table 6.1 (b) present that, Capital and Counties Properties debt to equity ratio has been increasing over the present periods, except in 2017, where it has slightly decline by -0.02. Similarly, Table 6.1 (c) depicts that, Attacq debt to equity ratio has been increasing over the presented, except in 2017 financial period, where it has slightly decrease by 0.20 compare to the prior period.

(e) Days Sales in Inventory

Table 6.1 (a) shows that, there has been a decline in the number of days it takes Stenprop to sell its inventory over the presented periods. The lesser it takes Stenprop to sell out its inventory, the better, because it saves the firm additional cost that comes with the keeping of the inventory for a long time. Similarly, both Table 6.1 (b) and Table 6.1 (c) illustrate that, Capital and Counties Properties and Attacq day's sales in inventory have been decreasing over the presented periods.

(f) Share Price Performance

Stenprop headline earnings per share has plunge to EUR2.36 cents per share in 2016 financial period compare to the prior period of EUR3.05 cents per share. (Stenprop Ltd annual report, 2016). Figure 6.1 displays that, Stenprop cumulative return has been on downward trend as of January 2016, few months after its migration to the JSE main board. Nonetheless, Stenprop cumulative return has pick an upward trend as of April 2017. On other hand, Figure 6.1 depicts that, Capital and Counties Properties cumulative return has reach a peak in December 2015, since then it has been on downward trend, while Attacq cumulative return has been on downward trend as from March 2015. Moreover, Attacq cumulative return has pick an upward trend in February 2016 until it reaches a peak again in April 2016, and thereafter started declining.

(g) Conclusion

The perceived evidence from the evaluation shows that, Stenprop Ltd has not been performing well over the presented periods, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. This information may have cause a negative influence on investors' sentiment about the firm's future. In addition, the increase in debt to equity ratio may give an impression that Stenprop Ltd is using more debt to pursue its growth. Stenprop cumulative return has been on downward trend as of January 2016, after its migration to the JSE main board. Based on the evaluation results of two years post migration, Stenprop Ltd is assessed and classified as a failure post migration to the JSE main board.

Table 6.1 (a): Stenprop Ltd

Ratio category	2014	2015	2016	2017
Net Margin (%)	-51.00	**179.00**	115.80	51.38
Return on Capital Invested (%)	12.39	**9.47**	7.31	3.31
Current ratio	1.00	**1.00**	0.20	2.80
Debt/Equity ratio	0.40	**0.96**	0.39	0.59
Days Sales in Inventory	439.98	**140.62**	76.32	26.42

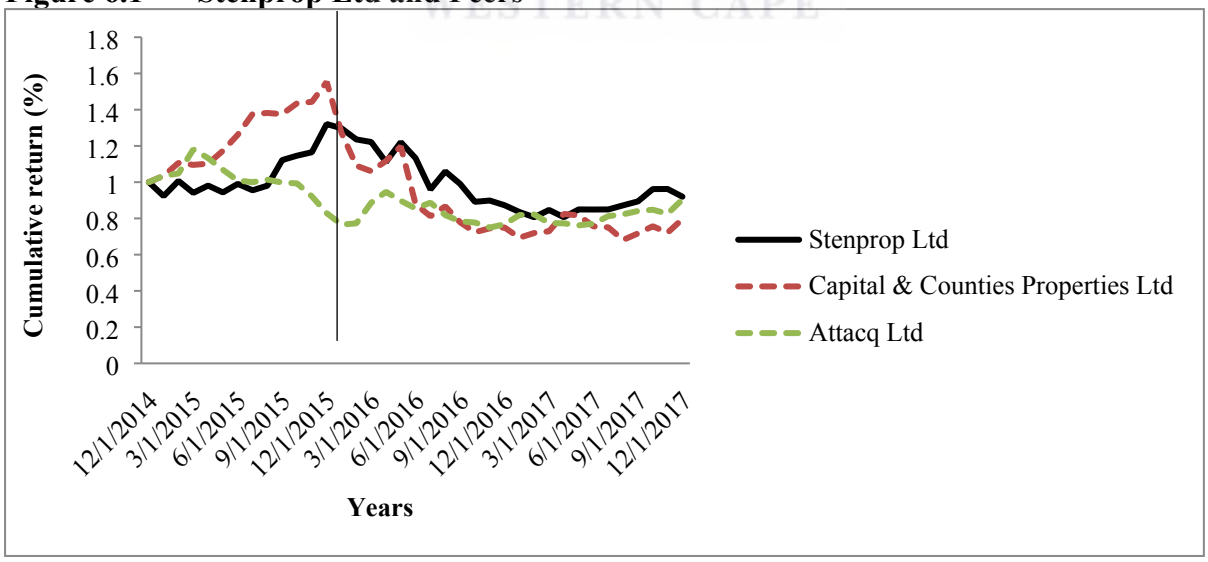
Table 6.1 (b): Capital & Counties Properties Ltd

Ratio category	2014	2015	2016	2017
Net Margin (%)	447.26	**432.40**	-114.40	-0.50
Return on Capital Invested (%)	18.03	**13.85**	-2.79	0.46
Current ratio	1.30	**1.00**	0.80	0.84
Debt/Equity ratio	0.17	**0.21**	0.30	0.28
Days Sales in Inventory	826.97	**281.23**	152.64	40.40

Table 6.1 (c): Attacq Ltd

Ratio category	2014	2015	2016	2017
Net Margin (%)	88.79	**74.54**	85.61	30.58
Return on Capital Invested (%)	8.98	**6.92**	7.74	5.05
Current ratio	1.20	**2.60**	3.32	0.71
Debt/Equity ratio	0.63	**0.75**	0.78	0.58
Days Sales in Inventory	50.98	**23.25**	14.22	12.43

Figure 6.1 Stenprop Ltd and Peers



6.3.2 Calgro M3 Holdings Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2011**) and Post – Migration (**2013 & 2014**)
Announcement Date: 08-02-2012
Migration Date: 23-02-2012

(a) Net Profit Margin

Table 6.2 (a) illustrates that Calgro M3 Holdings has been generating positive profit margins before and after its migration to the JSE main board in 2012. Calgro M3 Holdings profit margin increase by 2.03% in 2013 financial period compare to the previous period. Calgro M3 Holdings revenue has increase by 55.06% to R798.40 million in 2013 financial year compare to the prior year of R514.90 million, while its gross profit has jump to R148 million in 2013 financial year compare to the prior year of R79.50 million (Calgro M3 Holdings Ltd annual report, 2013). In addition, Calgro M3 Holding operating profit has more than double to R89.40 million in 2013 financial year compare to the prior year of R43.2 million. Calgro M3 Holdings continue mentioning that, the solid operating performance from the Fleurhof project has boosted its share of profits from joint ventures to R66 million after tax. On the other hand, Table 6.2 (b) shows that, as of 2012 financial period, Group Five net profit margin has been increasing, while Table 6.2 (c) depicts that, Wilson Bayly Holmes – Ovcon net profit margin has been declining over the presented periods.

(b) Return on Capital Invested

According to Table 6.2 (a), Calgro M3 Holdings return on capital invested has been declining as of 2012 financial period. Moreover, Calgro M3 Holding's profit attributable to equity holders has soar by 39.60 % to R91.30 million in 2013 financial period compare to the previous period of R65.40 million. This could mean Calgro M3 Holdings has been doing well in generating cash flow relative to the capital it has invested in its businesses. On the other hand, Table 6.2 (b) illustrates, that Group Five return on capital invested has been increasing as of 2012 financial period, while Table 6.2 (c) depicts that, Wilson Bayly Holmes – Ovcon return on capital has been declining over the presented periods.

(c) Current ratio

Table 6.2 (a) illustrates that, Calgro M3 Holdings current ratio has been inconsistent over the presented periods. Calgro M3 Holdings total current assets have slightly increase by 0.67% to R81.06 million in 2013 financial period compare to the prior period of R 80.52 million, while its total current liabilities have slightly decline by -1.59% to R56.19 million in 2013 financial period compare to the previous period of R57.10 million (Calgro M3 Holdings Ltd annual report, 2013). On the other hand, Table 6.2 (b) shows that, Group Five current ratio has been increasing over the presented periods, except in 2014 financial period, where it has slightly decline by -0.04 compare to the prior period. Moreover, Table 6.2 (c) depicts that, Wilson Bayly Holmes – Ovcon current ratio has been declining as of 2012 financial period.

(d) Debt/Equity ratio

Table 6.2 (a) illustrates that, Calgro M3 Holdings debt to equity ratio has been inconsistent over the presented periods. Calgro M3 Holdings total stockholders' equity has climb by 2.15% to R40.46 million in 2013 financial period compare the prior period of R 39.61 million, while its total liabilities have weaken by -1.41% to R59.54 million in 2013 financial year compare to the prior period of R60.39 million (Calgro M3 Holdings Ltd annual report, 2013). Calgro M3 Holdings continue mentioning that, it has settled R458 million of debt and joint venture debt and successfully raised R252 million of unsecured three and four-year maturity bonds on the corporate capital market. On the other hand, Table 6.2 (b) present that, Group Five debt to equity ratio has been declining as of 2012 financial period, while Table 6.2 (c) depicts that, Wilson Bayly Holmes – Ovcon debt to equity ratio has been increasing over the presented periods.

(e) Days Sales in Inventory

Table 6.2 (a) illustrates that, there has been a decline in the number of days it takes Calgro M3 Holdings to sell its inventory over the presented periods, except in 2014, where the number of days have surge by 34.40 days compare to the previous period. The lesser it takes Calgro M3 Holdings to sell out its inventory, the better, because it saves the firm additional cost that comes with the keeping of the inventory. On the other hand, Table 6.2 (b) depicts that, as of 2012 financial period Group Five day's sales in inventory has been decreasing, while Table 6.2 (c)

shows that, Wilson Bayly Holmes – Ovcon day's sales in inventory has been declining over the presented periods, except in 2014 financial period, where it has slightly increase by 0.33 days.

(f) Share Price Performance

Calgro M3 Holdings headline earnings per share has increase by 225% to 43.36 cents per share in 2014 financial period compare to the prior period of 13.34 cents per share (Calgro M3 Holdings annual report, 2014). As presented in Figure 6.2, Calgro M3 Holdings cumulative return has been on upward trend as of January 2011, before its migration to the JSE main board. Even after, Calgro M3 Holdings migration to the JSE main board, its cumulative return continued with the upward trend. On other hand, Figure 6.2 depicts that, both Group Five and Wilson Bayly Holmes – Ovcon cumulative returns have been consistent over the presented periods.

(g) Conclusion

The results from the valuation demonstrates that, Calgro M3 Holdings performance has been consistently good over the presented years, particularly with regard to critical ratios such as profitability, efficiency as well as liquidity ratios compare to its peers. In addition, the firm's share price has been appreciating as of January 2011. Based on the evaluation results of two years post migration, Calgro M3 Holdings is assessed and classified as a success post migration to the JSE main board.

Table 6.2 (a): Calgro M3 Holdings Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	6.02	**12.70**	11.44	13.47
Return on Capital Invested (%)	5.24	**31.89**	15.88	12.62
Current ratio	1.49	**1.41**	1.44	1.43
Debt/Equity ratio	0.01	**1.52**	1.47	1.53
Days Sales in Inventory	324.60	**172.40**	118.40	152.80

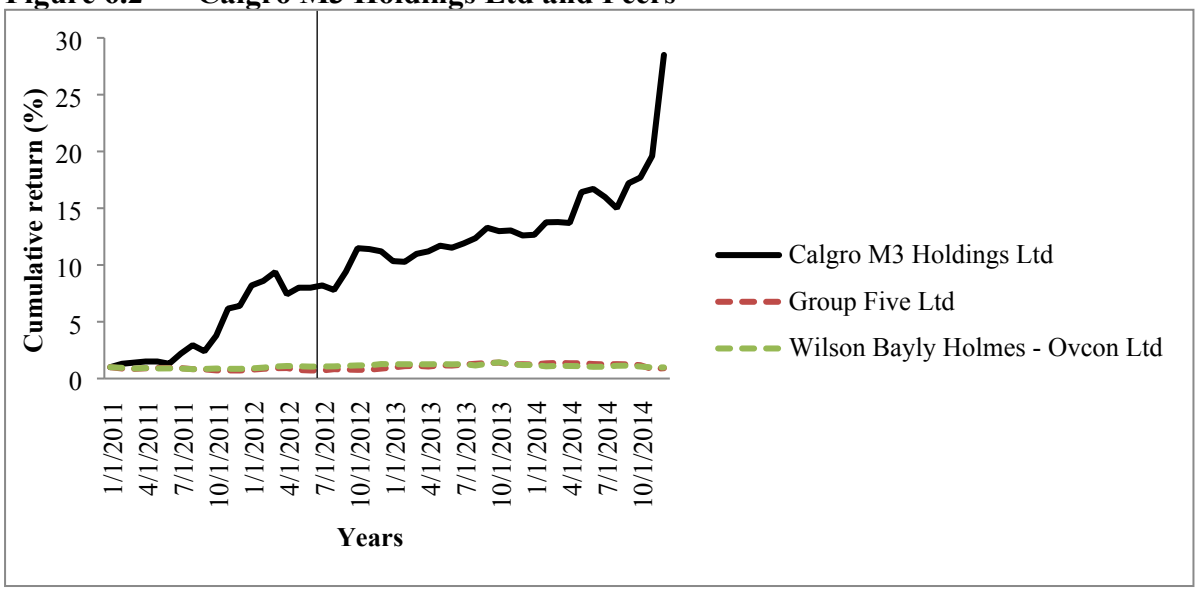
Table 6.2 (b): Group Five Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	-2.37	**-3.17**	2.45	2.62
Return on Capital Invested (%)	-8.10	**-11.12**	9.96	12.35
Current ratio	1.12	**1.21**	1.23	1.19
Debt/Equity ratio	0.11	**0.34**	0.32	0.19
Days Sales in Inventory	10.30	**11.10**	9.50	7.60

Table 6.2 (c): Wilson Bayly Holmes – Ovcon Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	4.97	**3.63**	2.57	1.64
Return on Capital Invested (%)	22.96	**16.88**	13.80	8.70
Current ratio	1.23	**1.21**	1.18	1.17
Debt/Equity ratio	0.02	**0.03**	0.03	0.04
Days Sales in Inventory	6.10	**4.20**	3.14	3.47

Figure 6.2 Calgro M3 Holdings Ltd and Peers



6.3.3 Cognition Holdings Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2013**) and Post – Migration (**2015 & 2016**)

Announcement Date: 27-10-2007

Migration Date: 03-11-2014

(a) Net Profit Margin

Table 6.3 (a) depicts that, Cognition Holdings net profit margin has been increasing over the presented periods, except in 2016 financial period, where it has decline sharply by -14.48% compare to the prior period. Moreover, Cognition Holdings revenue has decrease by -1.31% to R62.4 million in 2015 financial period compare to the previous period of R63.3 million, while gross profit has increase by 3.68% to R37.8 million in 2015 financial period compare to the prior period of R36.5 million (Cognition Holdings Ltd annual report, 2015). Cognition Holdings continue mentioning that, the decline in revenue is primarily due to the reduced faxing average rate per user (ARPU). On the other hand, Table 6.3 (b) illustrates that, Net 1 UEPS Technologies net margin has been increasing over the presented periods, except in 2016, where it slightly decline by -1.46% compare to the previous period. Furthermore, Table 6.3 (c) shows that, Metrofile Holdings net profit margin has been declining as of 2014 financial period.

(b) Return on Capital Invested

According to Table 6.3 (a), Cognition Holdings return on capital invested has been declining as of 2014 financial period. Cognition Holdings profit attributable to owners has decline by -6.82% to R25.6 million in 2015 financial period compare to the previous period of R27.5 million. Cognition Holdings continue mentioning that, it has made investments in associate firms to the value of R8.00 million, after the firm has acquire a significant portion in the BMi Sport Group to the value of R16.00 million and have internally develop key assets to the value of R3.60 million. On the other hand, Table 6.3 (b) illustrates, that Net 1 UEPS Technologies on capital invested has been declining as of 2014 financial period. Similarly, Table 6.3 (c) depicts that, Metrofile Holdings return on capital has been declining as of 2014 financial period.

(c) Current ratio

Table 6.3 (a) illustrates that, Cognition Holdings current ratio has been declining as of 2014 financial period over, but still above general acceptable norm of 1. Furthermore, Cognition Holdings total current assets have plunge by -5.11% to R73.11 million in 2016 financial period compare to the prior period of R 77.05 million, while its total current liabilities have decrease by 17.47% to R47.76 million in 2016 financial period compare to the previous period of R57.87 million (Cognition Holdings Ltd annual report, 2016). On the other hand, Table 6.3 (b) shows that, Net 1 UEPS Technologies current ratio has been increasing over the presented periods, while Table 6.3 (c) depicts that, Metrofile Holdings current ratio has been over the presented periods, except in 2016, where it has decline slightly by -0.50 compare to the previous period.

(d) Debt/Equity ratio

Table 6.3 (a) depicts that, Cognition Holdings debt to equity ratio has been declining over the presented periods. High debt to equity ratios are generally not recommended as it may possibly results to liquidity problems in the future, however, low debt to equity ratios may also indicate that a firm is not taking advantage of the profit increase that financial leverage may bring. Moreover, Cognition Holdings total stockholder's equity has climb by 13.73% to R37.19 million in 2015 financial period compare the prior period of R32.70 million, while its total liabilities have decline by 6.67% to R62.81 million compare to the prior period of R67.30 million (Cognition Holdings Ltd annual report, 2015). Cognition Holdings is not highly leveraged and has the capacity to take on a significant amount of debt for making more acquisitions within the next few years. On the other hand, Table 6.3 (b) present that, Net 1 UEPS Technologies debt to equity ratio has been declining over the presented periods, while Table 6.3 (c) depicts that, Metrofile Holdings debt to equity ratio has been inconsistent over the presented periods.

(e) Days Sales in Inventory

Table 6.3 (a) illustrates that, as from 2014 financial period, there has been a decline in the number of days it takes Cognition Holdings to sell its inventory over the presented periods. The shorter it takes Cognition Holdings to sell out its inventory, the better, because it saves the firm additional cost that comes with the keeping of the inventory. On the other hand, Table 6.3

(b) depicts that, Net 1 UEPS Technologies day's sales in inventory has been decreasing over the presented periods, while Table 6.3 (c) shows that, Metrofile Holdings day's sales in inventory has been increasing as of 2014 financial period.

(f) Share Price Performance

Cognition Holdings headline earnings per share has plummet by -35.2% to 6.01cents per share in 2015 financial period compare to the previous period of 9.27cents per share. (Cognition Holdings Ltd annual report, 2015). Figure 6.3 illustrates that, Cognition Holdings cumulative return has been on downward trend as of November 2011, and became stable as of July 2015. On the other hand, Figure 6.3 depicts that, Net 1 UEPS Technologies cumulative return has been on upward trend as December 2013, until it reached a peak in September 2015, and thereafter started declining. Moreover, Figure 6.3 also shows that, Metrofile Holdings cumulative return has been stable over the presented periods.

(g) Conclusion

The outcomes from the valuation displays that, Cognition Holdings performance has not been consistent over the presented periods, particularly with regard to critical ratios such as profitability, efficiency as well as liquidity ratios compare to its peers. In addition, the firm's share price has been not been performing well particularly a year after the migration to the JSE main board. Based on the evaluation outcomes of two years post migration, Cognition Holdings is assessed and classified as a failure post migration to the JSE main board.

Table 6.3 (a): Cognition Holdings Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	23.22	**23.25**	24.96	10.48
Return on Capital Invested (%)	19.70	**20.17**	17.42	12.25
Current ratio	4.79	**5.45**	5.44	4.10
Debt/Equity ratio	0.04	**0.03**	0.02	0.01
Days Sales in Inventory	1.20	**1.50**	0.70	0.39

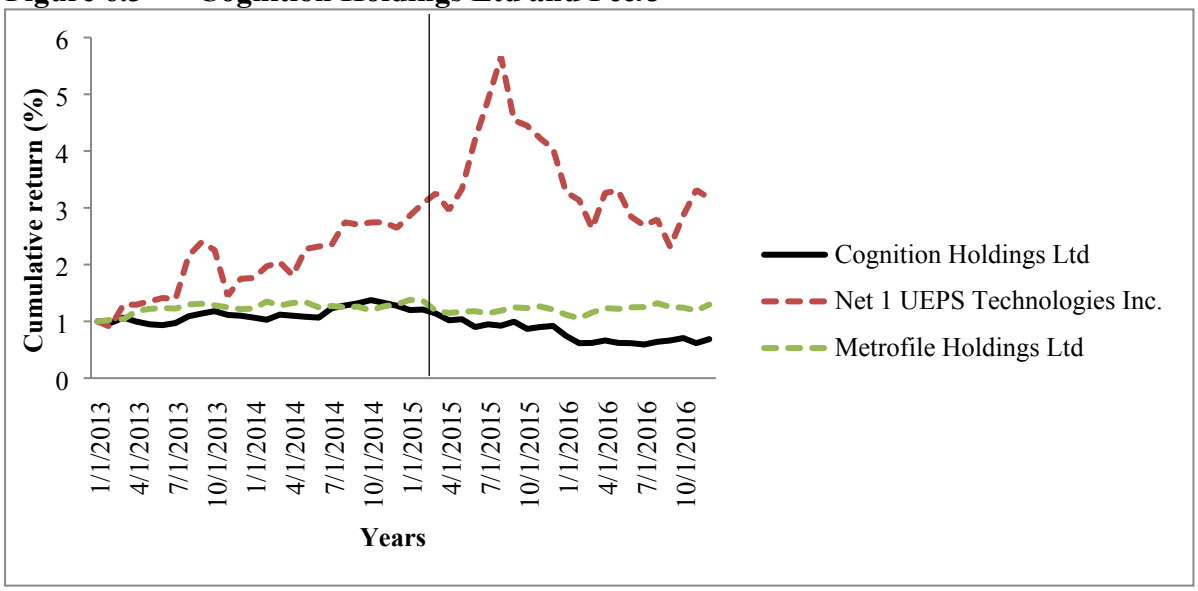
Table 6.3 (b): Net 1 UEPS Technologies Inc.

Ratio category	2013	2014	2015	2016
Net Margin (%)	2.91	**12.79**	16.63	15.17
Return on Capital Invested (%)	1.23	**9.39**	8.12	7.25
Current ratio	1.13	**1.25**	1.25	1.33
Debt/Equity ratio	0.20	**0.14**	0.11	0.07
Days Sales in Inventory	17.07	**16.13**	14.56	14.46

Table 6.3 (c): Metrofile Holdings Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	18.09	**22.93**	17.75	16.74
Return on Capital Invested (%)	20.66	**25.20**	18.23	17.74
Current ratio	1.24	**1.61**	2.07	1.57
Debt/Equity ratio	0.23	**0.17**	0.25	0.19
Days Sales in Inventory	17.70	**14.81**	16.86	19.60

Figure 6.3 Cognition Holdings Ltd and Peers



6.3.4 Ellies Holdings Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2009**) and Post – Migration (**2011 & 2012**)

Announcement Date: 17-11-2010

Migration Date: 26-11-2010

(a) Net Profit Margin

Table 6.4 (a) depicts that, Ellies Holdings net profit margin has been increasing over the presented periods. Moreover, Ellies Holdings revenue has climb by 14% to R1.32 million in 2011 financial period compare to the previous period of R1.16 million, while profit before tax is up by 33% to R94. 21 million in 2011 financial period compare to the prior period of R70. 97 million (Ellies Holdings Ltd annual report, 2011). Ellies Holdings continue mentioning that Consumer Goods and Services segment remain the largest contributor with 83% contribution towards revenue, while infrastructure Electrification segment has contributed 16% toward revenue. On the other hand, Table 6.4 (b) illustrates that, Consolidated Infrastructure Group net margin has been increasing over the presented periods, except in 2012, where it slightly plunge by -0.43% compare to the previous period. Furthermore, Table 6.4 (c) shows that, ARB Holdings net profit margin has been declining over the presented periods.

(b) Return on Capital Invested

Table 6.4 (a) illustrates that, Ellies Holdings capital invested has been increasing over the presented financial periods. Moreover, Ellies Holdings return on capital invested increase by 3.36% to 18.86% in 2011 financial period compare to the prior period of 15.60%. In 2011 financial period, the Property segment of Ellies Holdings has invested R43.4 million, with the anticipation that, over time the capitalisation of property and the value growth will deliver sound returns. On the other hand, Table 6.4 (b) depicts that, Consolidated Infrastructure Group return on capital invested has been declining as of 2010 financial period, while Table 6.4 (c) shows that, ARB Holdings return on capital invested has been declining over the presented periods.

(c) Current ratio

Table 6.4 (a) shows that, Ellies Holdings current ratio has been inconsistent over the presented periods, but above the general acceptable norm of 1. Furthermore, Ellies Holdings total current assets have climb by 28.47% to R655 240 in 2011 financial period compare to the prior period of R510 029, while its total current liabilities have decline by -45.38% to R324 655 in 2011 financial period compare to the previous period of R223 309 (Ellies Holdings Ltd annual report, 2011). On the other hand, Table 6.4 (b) shows that, Consolidated Infrastructure Group current ratio has been increasing over the presented periods, while Table 6.4 (c) depicts that, ARB Holdings current ratio has been declining over the presented periods.

(d) Debt/Equity ratio

Table 6.4 (a) depicts that, Ellies Holdings debt to equity ratio has been increasing over the presented periods. Furthermore, Ellies Holdings total stockholders' equity climb by 15.24% to R 596 079 in 2011 financial period compare the prior period of R 517 254, while its total liabilities have increase by 43.51% to R368 714 in 2011 financial period compare to the prior period of R256 934 (Ellies Holdings Ltd annual report, 2011). Ellies Holdings (2011) continue mentioning that, its properties are financed through a 10-year facility to the value of R40 million. On the other hand, Table 6.4 (b) present that, Consolidated Infrastructure Group debt to equity ratio has been increasing over the presented periods, except in 2012 financial period, where it has slightly decline by -0.02 compare to the previous period. Moreover, Table 6.4 (c) depicts that, ARB Holdings debt to equity ratio has been increasing as of 2010 financial period.

(e) Days Sales in Inventory

Table 6.4 (a) shows that, as from 2010 financial period, there have been an increase in the number of days it takes Ellies Holdings to sell its inventory over the presented periods. The shorter it takes Ellies Holdings to sell out its inventory, the better, because it saves the firm additional cost that comes with the keeping of the inventory. On the other hand, Table 6.4 (b) depicts that, Consolidated Infrastructure Group day's sales in inventory has been increasing as of 2010 financial period. Moreover Table 6.4 (c) shows that, ARB Holdings day's sales in

inventory has been declining over the presented periods, except in 2012 financial period, where day's sales in inventory has increase by 6.5 days compare to the previous period.

(f) Share Price Performance

Ellies Holdings headline earnings per share has climb by 24.88% to 32.42 cents per share in 2011 financial period compare to the previous period of 25.96 cents per share. (Ellies Holdings annual report, 2011). Figure 6.4 illustrates that, Ellies Holdings cumulative return has been on upward trend as of January 2009. On the other hand, Figure 6.4 shows that, both Consolidated Infrastructure Group and ARB Holdings cumulative returns have been on upward trend as of January 2009.

(g) Conclusion

The results from the valuation of Ellies Holdings has been consistently good over the years, particularly with regard to critical ratios such as profitability, efficiency as well as liquidity ratio compare to its peers. In addition, the firm's share price has been on upward trend even before its migration to JSE main board. Based on the evaluation results of two years post migration, Ellies Holdings is assessed and classified as a success post migration to the JSE main board.

Table 6.4 (a): Ellies Holdings Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	6.14	**7.26**	9.67	11.29
Return on Capital Invested (%)	15.01	**15.60**	18.96	20.56
Current ratio	1.85	**2.28**	2.02	2.41
Debt/Equity ratio	0.07	**0.07**	0.21	0.27
Days Sales in Inventory	94.50	**91.10**	92.30	107.40

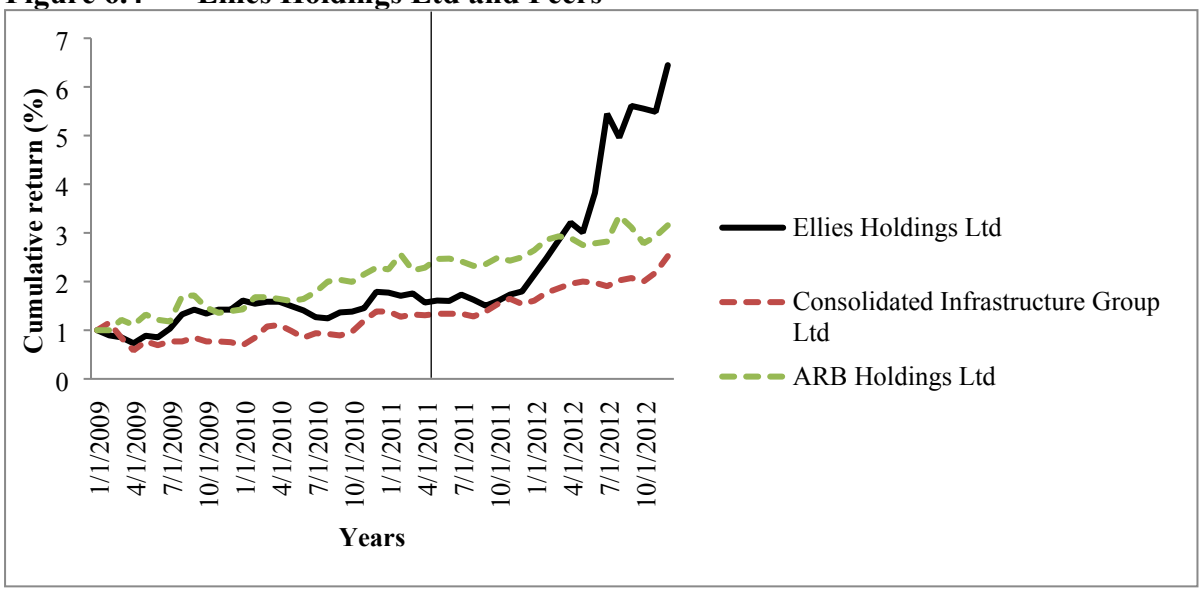
Table 6.4 (b): Consolidated Infrastructure Group Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	6.23	**7.68**	8.81	8.38
Return on Capital Invested (%)	9.65	**13.16**	9.83	9.73
Current ratio	1.25	**1.48**	2.64	2.72
Debt/Equity ratio	0.05	**0.28**	0.29	0.27
Days Sales in Inventory	11.50	**9.40**	12.50	14.30

Table 6.4 (c): ARB Holdings Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	6.32	**5.73**	5.15	4.89
Return on Capital Invested (%)	11.50	**11.61**	12.22	14.15
Current ratio	4.22	**4.51**	3.50	3.07
Debt/Equity ratio	0.06	**0.04**	0.25	0.27
Days Sales in Inventory	60.00	**51.00**	49.10	55.60

Figure 6.4 Ellies Holdings Ltd and Peers



6.3.5 Esor Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2008**) and Post – Migration (**2010 & 2011**)
Announcement Date: 24-06-2009
Migration Date: 25-06-2009

(a) Net Profit Margin

Table 6.5 (a) depicts that, Esor net profit margin has been inconsistent over the presented periods, however, it has experience a sharp decline to -2.98% in 2011 financial period compare to previous period 10.64%. Esor revenue has plunge by -26.32% to R1.4 billion in 2011 financial period compare to the prior period of R1.9 billion, while gross profit declines to R161.4 million in 2011 compare to the prior period R496.8 million. In addition, the results from operating activities show a loss of R16.4 million 2011 financial period (Esor Ltd annual report, 2011). On the other hand, Table 6.5 (b) illustrates that, Calgro M3 Holdings net margin has been inconsistent over the presented periods, while Table 6.5 (c) shows that, Group Five net profit margin has been declining over the presented periods.

(b) Return on Capital Invested

Table 6.5 (a) illustrates that, Esor capital invested has been declining over the presented periods. Moreover, Esor return on capital invested has decline by -12.64% to 18.83% in 2010 financial period compare to the prior period of 31.47%. On the other hand, Table 6.5 (b) depicts that, Calgro M3 Holdings return on capital invested has been declining as of 2009 financial period, while Table 6.5 (c) shows that, return on capital invested has been declining as of 2009 financial period.

(c) Current ratio

Table 6.5 (a) illustrates that, Esor current ratio has been inconsistent over the presented periods, but above the general acceptable norm of 1. Ellies Holdings total current assets have decrease by -16.32% to R39.34 million in 2010 financial period compare to the prior period of R47.01 million, while its total current liabilities have decline by 36.58% to R26.34 million in 2010 financial period compare to the previous period of R41.53 million (Esor Ltd annual report, 2010). On the other hand, Table 6.5 (b) shows that, Calgro M3 Holdings current ratio has been

inconsistent over the presented periods, while Table 6.5 (c) depicts that, Group Five current ratio has been increasing as of 2009 financial period.

(d) Debt/Equity ratio

Table 6.5 (a) depicts that, Esor debt to equity ratio has been inconsistent over the presented periods. Esor total stockholders' equity has hike by 47.49% to R49.04 million in 2010 financial period compare the prior period of R33.25 million, while its total liabilities have decline by 23.66% to R50.96 million in 2010 financial period compare to the prior period of R66.75 million (Esor Ltd annual report, 2010). Esor continue mentioning that, it is committed on reducing debt levels and conserve cash. On the other hand, Table 6.5 (b) present that, Calgro M3 Holdings debt to equity ratio has been inconsistent over the presented periods, while Table 6.5 (c) illustrates that, Group Five debt to equity ratio has been declining over the presented periods.

(e) Days Sales in Inventory

Table 6.5 (a) illustrates that, the number of days it takes Esor to sell its inventory has been increasing over the presented periods. The increase in the number of days that Esor takes to sell its inventory might result to additional cost that comes with the keeping of the inventory. On the other hand, Table 6.5 (b) depicts that, Calgro M3 Holdings day's sales in inventory has been declining as of 2009 financial period, while Table 6.5 (c) shows that, Group Five day's sales in inventory has been declining over the presented periods, except in 2011 financial period, where day's sales in inventory increase by 11.96 days compare to the prior period.

(f) Share Price Performance

Esor headline earnings on a per share basis has plunge by -90.1% to 4.1cents per share in 2010 financial period compare to the prior period of 41.3 cents per share (Esor Ltd annual report, 2010). Figure 6.5 illustrates that, Esor cumulative return has been on upward trend as of January 2009 until it has reach a peak on October 2009, and thereafter started declining. On the other hand, Figure 6.5 shows that, Calgro M3 Holdings cumulative returns experienced a sharp decline as of January 2008 until it picked an upward trend in November 2008. Moreover, Group

Five cumulative return has been experiencing an upward trend as of February 2009 until it reach a peak in September 2009, and thereafter it has starts declining.

(g) Conclusion

The results from the valuation indicates that the Esor's performance has not been good over the years, particularly with regard to critical ratios such as profitability, efficiency, and liquidity ratio compare to its peers. In addition, the firm's cumulative return has been on downward trend since October 2009, few months post its migration to JSE main board. Based on the evaluation results of two years post migration, Esor Ltd is assessed and classified as a failure post migration to the JSE main board.

Table 6.5 (a): Esor Ltd

Ratio category	2008	2009	2010	2011
Net Margin (%)	11.40	**10.14**	10.64	-2.98
Return on Capital Invested (%)	35.74	**31.47**	18.83	0.56
Current ratio	1.52	**1.13**	1.49	0.88
Debt/Equity ratio	0.21	**0.34**	0.12	0.19
Days Sales in Inventory	3.45	**3.46**	3.51	4.82

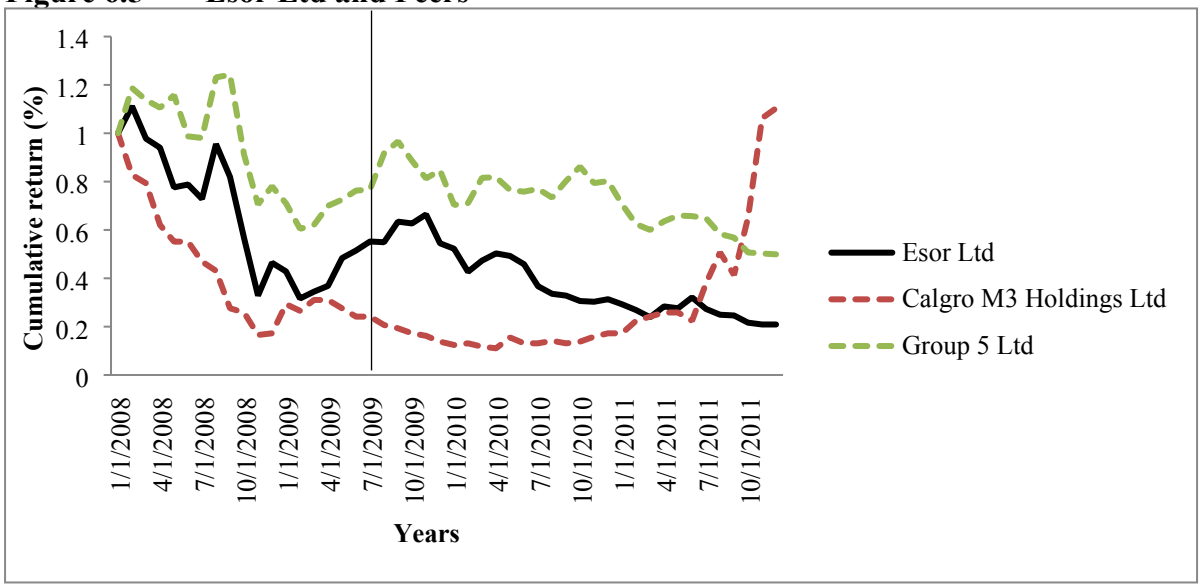
Table 6.5 (b): Calgro M3 Holdings Ltd

Ratio category	2008	2009	2010	2011
Net Margin (%)	9.92	**2.58**	8.21	6.02
Return on Capital Invested (%)	15.18	**1.73**	3.26	5.24
Current ratio	2.65	**1.28**	4.04	1.49
Debt/Equity ratio	1.25	**0.04**	1.02	0.01
Days Sales in Inventory	38.48	**63.27**	39.21	22.52

Table 6.5 (c): Group Five Ltd

Ratio category	2008	2009	2010	2011
Net Margin (%)	4.70	**4.26**	2.36	-2.37
Return on Capital Invested (%)	12.23	**12.45**	7.19	-6.96
Current ratio	1.08	**1.06**	1.12	1.12
Debt/Equity ratio	0.51	**0.38**	0.34	0.11
Days Sales in Inventory	130.76	**106.57**	104.11	116.07

Figure 6.5 Esor Ltd and Peers



6.3.6 Huge Group Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2015**) and Post – Migration (**2017 & 2018**)
Announcement Date: 04-02-2016
Migration Date: 01-03-2016

(a) Net Profit Margin

Table 6.6 (a) illustrates that, Huge Group net profit margin has been increasing over the presented periods. Furthermore, Huge Group total revenue has increase to R246 million in 2017 financial period compare to the prior period of R216.5 million, while gross profit climbs by 34.47% to R118.6 million in 2017 financial period compare to the prior period of R88.2 million. In addition, Huge Group net profit attributable to owners has climb by 41.49% to R26.6 million in 2017 financial period compare to the previous period of R18.8 million (Huge Group Ltd annual report, 2017). On the other hand, Table 6.6 (b) illustrates that, Vodacom Group net margin has been increasing as of 2016 financial period, while Table 6.6 (c) depicts that, MTN Group net profit margin has been inconsistent over the presented periods.

(b) Return on Capital Invested

Table 6.6 (a) illustrates that, Huge Group return on invested capital has been increasing over the presented periods, except in 2017 financial period, where it has slightly decline by 1.09% compare to previous period. Huge Group continue mentioning that, Infrastructure investment became crowded and commoditised and returns on investment has suffered and continues to suffer. On other hand, Table 6.6 (b) depicts that, Vodacom Group return on capital invested is of concern as it has continue declining over the period. Moreover, Table 6.6 (c) shows that, MTN Group return on invested capital sharply decline by -10.19% to 0.34% in 2016 financial period compare to the prior period of 10.53%.

(c) Current ratio

Table 6.6 (a) illustrates that, Huge Group current ratio has been inconsistent over the presented periods, but above the general acceptable norm of 1. Furthermore, Huge Group total current

assets have climb by 115.95% to R 27.75 million in 2017 financial period compare to the prior period of R 12.85 million, while its total current liabilities have decline by -44.56% to R 11.61 million in 2017 financial period compare to the previous period of R20.94 million (Huge Group Ltd annual report, 2017). On the other hand, Table 6.6 (b) shows that, Vodacom Group current ratio has been inconsistent over the presented periods, while Table 6.6 (c) depicts that, MTN Group current ratio has been declining as 2016 financial period.

(d) Debt/Equity ratio

Table 6.6 (a) depicts that, Huge Group debt to equity ratio has been inconsistent over the presented periods. Huge Group total stockholders' equity has increase by 10.05% to R85.84 million in 2010 financial period compare the prior period of R78.00 million, while its total liabilities have decline by -35.64% to R14.16 million in 2017 financial period compare to the prior period of R22.00 million (Huge Group Ltd annual report, 2017). On the other hand, Table 6.6 (b) present that, Vodacom Group debt to equity ratio has been inconsistent over the presented periods, while Table 6.6 (c) illustrates that, MTN Group debt to equity ratio has been increasing as of 2016 financial period.

(e) Days Sales in Inventory

Table 6.6 (a) illustrates that, the number of days it takes Huge Group to sell its inventory has been inconsistent over the presented periods. However, in 2018 financial period there was 12.69 days increase in the number of days that Huge Group takes to sell its inventory. Taking long to sell inventory might result to additional cost such as storage costs to Huge Group. On the other hand, Table 6.6 (b) depicts that, Vodacom Group day's sales in inventory has been increasing over the presented periods, while Table 6.6 (c) shows that, MTN Group day's sales in inventory has been declining over the presented periods, except in 2018 financial period ,where it remain constant.

(f) Share Price Performance

Huge Group headline earnings per share has increase to 26.3 cents per share in 2017 financial period compare to the prior period of 18.51 cents per share (Huge Group Ltd annual report, 2010). Figure 6.6 illustrates that, Huge Group cumulative return has been on upward trend as

of January 2015 until it has reach a peak in March 2017, and thereafter started declining slightly and picked an upward trend again in June 2017. On the other hand, Figure 6.6 depicts, both Vodacom Group and MTN Group cumulative returns have been quite stable over the presented periods.

(g) Conclusion

The results from valuation displays that, performance of Huge Group has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, the firm's cumulative return has been on upward trend before and after its migration to JSE main board. Based on the evaluation results of two years post migration, Huge Group is assessed and classified as a success post migration to the JSE main board.

Table 6.6 (a): Huge Group Ltd

Ratio category	2015	2016	2017	2018
Net Margin (%)	5.63	**8.67**	10.82	12.21
Return on Capital Invested (%)	5.14	**8.07**	8.79	7.70
Current ratio	0.68	**0.61**	2.37	0.81
Debt/Equity ratio	0.10	**0.13**	0.03	0.13
Days Sales in Inventory	0.90	**2.00**	1.40	14.09
Capital gain (%)	0	**266.67**	347.62	296.67

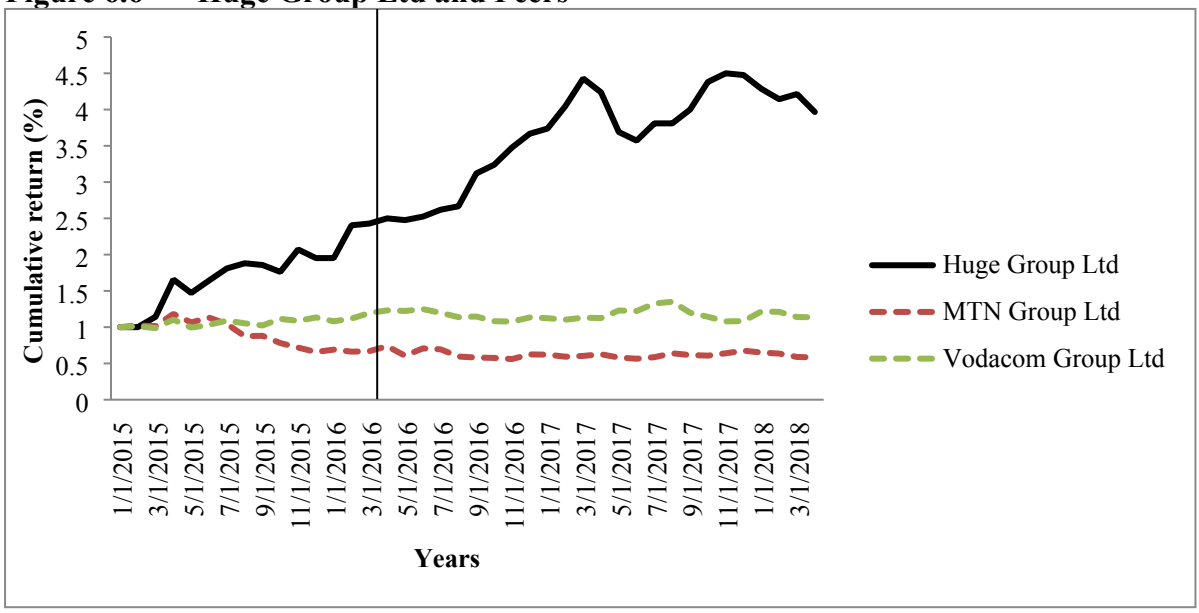
Table 6.6 (b): Vodacom Group Ltd

Ratio category	2015	2016	2017	2018
Net Margin (%)	16.39	**16.13**	16.51	16.83
Return on Capital Invested (%)	32.59	**27.27**	27.22	19.60
Current ratio	0.95	**1.07**	0.09	1.06
Debt/Equity ratio	0.95	**1.10**	1.15	0.34
Days Sales in Inventory	5.30	**6.50**	6.60	13.14
Capital gain (%)	0	**13.41**	8.41	13.69

Table 6.6 (c): MTN Group Ltd

Ratio category	2015	2016	2017	2018
Net Margin (%)	13.74	**-1.77**	6.07	3.42
Return on Capital Invested (%)	10.53	**0.34**	5.79	2.50
Current ratio	1.07	**1.02**	0.98	0.94
Debt/Equity ratio	0.36	**0.66**	0.66	0.87
Days Sales in Inventory	11.20	**11.90**	9.58	9.58
Capital gain (%)	0	**-37.56**	-32.40	-41.73

Figure 6.6 Huge Group Ltd and Peers



6.3.7 Insimbi Refractory & Alloy Supply Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2011**) and Post – Migration (**2013 & 2014**)

Announcement Date: 08-12-2011

Migration Date: 20-01-2012

(a) Net Profit Margin

Table 6.7 (a) depicts that, Insimbi Refractory and Alloy Supply net profit margin has been increasing over the presented periods, except in 2013 financial period, where it has slightly decline by -1.20% compare to the previous period. The strike action that started at Marikana in August 2012 had negatively affected Insimbi Refractory and Alloy Supply revenue for 2013 financial period, as the strike has lasted for about a year (Insimbi Refractory and Alloy Supply annual report, 2013). Moreover, Insimbi Refractory and Alloy Supply revenue for the year has climb by 13.37% to R939 million in 2014 financial period compare to the prior period of R828.3 million, while operating profit has increase by 82.47% to R35.4 million in 2014 financial period compare to the previous period of R19.4 million (Insimbi Refractory and Alloy Supply Ltd annual report, 2014). On the other hand, Table 6.7 (b) illustrates that, Sephaku Holdings net margin has been inconsistent over the presented periods, while Table 6.7 (c) shows that, Arcelormittal S.A. net margin has been declining except in 2014 financial period, where it has climb by 7.89% compare to the prior period.

(b) Return on Capital Invested

Table 6.7 (a) depicts that, Insimbi Refractory and Alloy Supply return on invested capital has been inconsistent over the presented periods. Insimbi Refractory and Alloy Supply return on capital has increase by 6.82% to 13.99% in 2014 financial period compare to the prior period of 7.17%. On other hand, Table 6.7 (b) illustrates that, Sephaku Holdings return on capital invested has been declining over the presented periods, except in 2014 financial period, where it has climb by 6.14% compare to the prior period. Moreover, Table 6.7 (c) shows that, Arcelormittal S.A. return on invested capital has been declining over the presented periods, except an increase of 8.92% in 2014 financial period compare to the prior period.

(c) Current ratio

Table 6.7 (a) illustrates that, Insimbi Refractory and Alloy Supply current ratio has been declining as of 2012 financial period, but above the general acceptable norm of 1. Insimbi Refractory and Alloy Supply total current assets have decrease by 18.84% to R60.73 million in 2013 financial period compare to the prior period of R74.83 million, while its total current liabilities have increase by 4.95% to R57.27 million in 2013 financial period compare to the previous period of R60.25 million (Insimbi Refractory and Alloy Supply Ltd annual report, 2012). On the other hand, Table 6.7 (b) shows that, Sephaku Holdings current ratio has been inconsistent over the presented periods, while Table 6.7 (c) depicts that, as of 2012 financial period Arcelormittal S.A. current ratio has been declining.

(d) Debt/Equity ratio

Table 6.7 (a) depicts that, Insimbi Refractory and Alloy Supply debt to equity ratio has been declining over the presented periods. Insimbi Refractory and Alloy Supply total stockholders' equity has increase by 16.79% to R33.04 million in 2013 financial period compare the prior period of R28.29 million, while its total liabilities have plunge by 6.62% to R66.96 million in 2013 financial period compare to the prior period of R71.71 million (Insimbi Refractory and Alloy Supply Ltd annual report, 2013). On the other hand, Table 6.7 (b) present that, debt to equity ratio has been inconsistent over the presented periods, while Table 6.7 (c) illustrates that, Arcelormittal S.A. debt to equity ratio has been increasing as of 2012 financial period.

(e) Days Sales in Inventory

Table 6.7 (a) illustrates that, the number of days it takes Insimbi Refractory and Alloy Supply to sell its inventory has been consistently increasing over the presented periods. In 2014 financial period, the number of days it takes Insimbi Refractory and Alloy Supply to sell inventory has increase by 10 days. This raise a concern as it can cause additional costs, such as storage costs to Insimbi Refractory and Alloy Supply. On the other hand, Table 6.7 (b) depicts that, Sephaku Holdings day's sales in inventory has been declining as of 2012 financial period, while Table 6.7 (c) shows that, Arcelormittal S.A. day's sales in inventory has been increasing over the presented periods, except in 2014 financial period ,where it has plummet by 17.70 days compare to the previous period.

(f) Share Price Performance

Insimbi Refractory and Alloy Supply headline earnings per share has slightly decline by 5.36% to in 2013 financial period 4.48 cents per share compare to the prior period of 4.72 cents per share (Insimbi Refractory and Alloy Supply Ltd annual report, 2013). Figure 6.7 illustrates that, Insimbi Refractory and Alloy Supply cumulative return has been on upward trend as of September 2011 until it reached a peak in March 2012, and thereafter it has been fluctuating over the presented periods. On the other hand, Figure 6.7 depicts, Sephaku Holdings cumulative returns has been on upward trend as from April 2012 until it reached a peak in March 2013, and thereafter it started fluctuating over the presented periods. Moreover, Figure 6.7 illustrates that, Arcelormittal S.A. has been declining as of January 2011 until it April 2013, where it has pick an upward trend.

(g) Conclusion

The outcomes from the valuation reveals that the performance of Insimbi Refractory and Alloy Supply has been inconsistent over the presented years. Nonetheless, Refractory and Alloy Supply's performance has improved over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, the firm's share price has been inconsistent but performing better over the presented periods. Based on the evaluation results of two years post migration, Insimbi Refractory and Alloy Supply is assessed and classified as a success post migration to the JSE main board.

Table 6.7 (a): Insimbi Refractory & Alloy Supply Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	1.64	**1.85**	0.96	2.16
Return on Capital Invested (%)	10.80	**15.42**	7.17	13.99
Current ratio	1.22	**1.24**	1.06	1.08
Debt/Equity ratio	0.44	**0.34**	0.19	0.14
Days Sales in Inventory	19.08	**21.04**	22.03	32.48

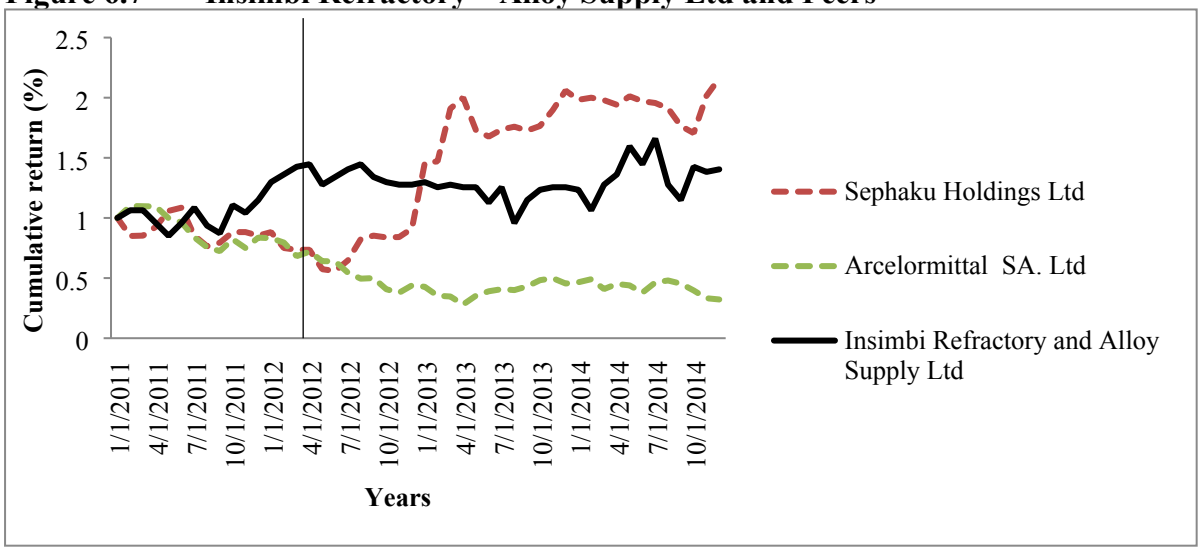
Table 6.7 (b): Sephaku Holdings Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	0.84	**0.14**	-0.49	6.08
Return on Capital Invested (%)	55.98	**0.14**	-0.27	5.87
Current ratio	12.07	**29.72**	0.58	1.87
Debt/Equity ratio	1.01	**1.00**	1.48	0.19
Days Sales in Inventory	59.14	**63.37**	9.12	7.12

Table 6.7 (c): Arcelormittal S.A. Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	0.03	**-1.57**	-6.52	-1.37
Return on Capital Invested (%)	0.03	**-1.68**	-8.72	-0.20
Current ratio	2.43	**2.51**	1.78	1.33
Debt/Equity ratio	0.03	**0.03**	0.04	0.41
Days Sales in Inventory	99.20	**105.70**	108.70	91.00

Figure 6.7 Insimbi Refractory – Alloy Supply Ltd and Peers



6.3.8 Interwaste Holdings Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2013**) and Post – Migration (**2015 & 2016**)
Announcement Date: 07-11-2014
Migration Date: 18-11-2014

(a) Net Profit Margin

Table 6.8 (a) depicts that, Interwaste Holdings net profit margin has been inconsistent over the presented periods. Interwaste Holdings revenue has climb by 19% to R460.4 million in 2015 financial period compare to the prior period of R386 million, while its gross profit has increase by 28% to R235.8 million in 2015 financial period compare to the previous period of R184.9 million. In addition, Interwaste Holdings operating activities has decline by 23.8% in 2015 compare to the precious period (Interwaste Holdings Ltd annual report, 2015). Interwaste Holdings continue mentioning that, its 2015 financial results include a currency loss of R1.5 million, due to the impact of a higher proportion of lower business margins and the consequences of lower oil and commodity prices in Namibia. On the other hand, Table 6.8 (b) illustrates that, Hudaco Industries net margin has been inconsistent over the presented periods, while Table 6.8 (c) shows that, Net 1 UEPS Technologies net margin has been increasing, except in 2016, where it has decrease by 1.46%.

(b) Return on Capital Invested

Table 6.8 (a) depicts that, Interwaste Holdings return on invested capital has been inconsistent over the presented periods. Interwaste Holdings return on capital has slightly increase by 0.47% to 4.74% in 2016 financial period compare to the prior period of 4.27%. On other hand, Table 6.8 (b) illustrates that, Hudaco Industries return on capital invested has been inconsistent over the presented periods, while Table 6.8 (c) shows that, Net 1 UEPS Technologies return on invested capital has been declining as of 2014 financial period.

(c) Current ratio

Table 6.8 (a) depicts that, Interwaste Holdings current ratio has been declining as of 2014 financial period, but above the general acceptable norm of 1. Furthermore, Interwaste Holdings total current assets have decline by -5.81% to R25.30 million in 2015 financial period compare

to the prior period of R26.86 million, while its total current liabilities have plunge by -6.72% to R20.26 million in 2015 financial period compare to the previous period of R21.72 million (Interwaste Holdings Ltd annual report, 2015). On the other hand, Table 6.8 (b) illustrates that, Hudaco Industries current ratio has been inconsistent over the presented periods, while Table 6.8 (c) shows that, as of 2014 Net 1 UEPS Technologies current ratio has been increasing.

(d) Debt/Equity ratio

Table 6.8 (a) depicts that, as of 2014 financial period Interwaste Holdings debt to equity ratio has been declining over the presented periods. Interwaste Holdings total stockholders' equity has slightly climb by 1.48% to R50.91 million in 2015 financial period compare the prior period of R50.17 million, while its total liabilities have slightly decrease by -1.49% to R49.09 million in 2015 financial period compare to the prior period of R49.83 million (Interwaste Holdings Ltd annual report, 2015). On the other hand, Table 6.8 (b) present that, Hudaco Industries debt to equity ratio has been inconsistent over the presented periods, while Table 6.8 (c) illustrates that, Net 1 UEPS Technologies debt to equity ratio has been declining over the presented periods.

(e) Days Sales in Inventory

According to Table 6.8 (a), the number of days it takes Interwaste Holdings to sell its inventory has been declining over the presented periods. The sooner it takes the firm to sell its inventory the better, because it will save the firm many costs that comes with keeping the inventory for a very long time. On other hand, Table 6.8 (b) illustrates that, Hudaco Industries day's sales in inventory has been declining over the presented periods, except in 2016 financial period, where it has increase by 7.30 days compare to the prior period. Moreover, Table 6.8 (c) depicts that, Net 1 UEPS Technologies day's sales in inventory has been declining over the presented periods.

(f) Share Price Performance

Interwaste Holdings headline earnings per share has plunge by -9.62% to 3.57cents per share in 2016 financial period compare to the previous period of 3.95cents per share (Interwaste Holdings Ltd annual report, 2015). As shown in Figure 6.8, the cumulative return of the Interwaste Holdings starts to decline on February 2015, after its migration to the JSE main

board in November 2014. However, the firm's cumulative returns has pick up again on August 2016. On the other hand, as of August 2014 financial period, Hudaco Holdings cumulative returns has starts declining until June 2015, and thereafter it has pick an upward trend. Furthermore, Figure 6.8 illustrates that, the cumulative return of Net 1 UEPS Technologies starts to decline in November 2013 until September 2015, where it has pick an upward trend.

(g) Conclusion

The evidence from the valuation indicates that the performance of Interwaste Holdings has not been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, the performance of Interwaste Holdings cumulative return has been not been consistent, especially after the firm's migration to the JSE main board in November 2014. Based on the evaluation results of two years post migration, Insimbi Refractory and Alloy Supply is assessed and classified as a failure post migration to the JSE main board.

Table 6.8 (a): Interwaste Holdings Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	3.97	**5.31**	4.27	4.74
Return on Capital Invested (%)	6.38	**9.53**	7.60	7.81
Current ratio	1.21	**1.24**	1.23	1.18
Debt/Equity ratio	0.34	**0.43**	0.41	0.34
Days Sales in Inventory	7.80	**6.20**	5.00	3.90

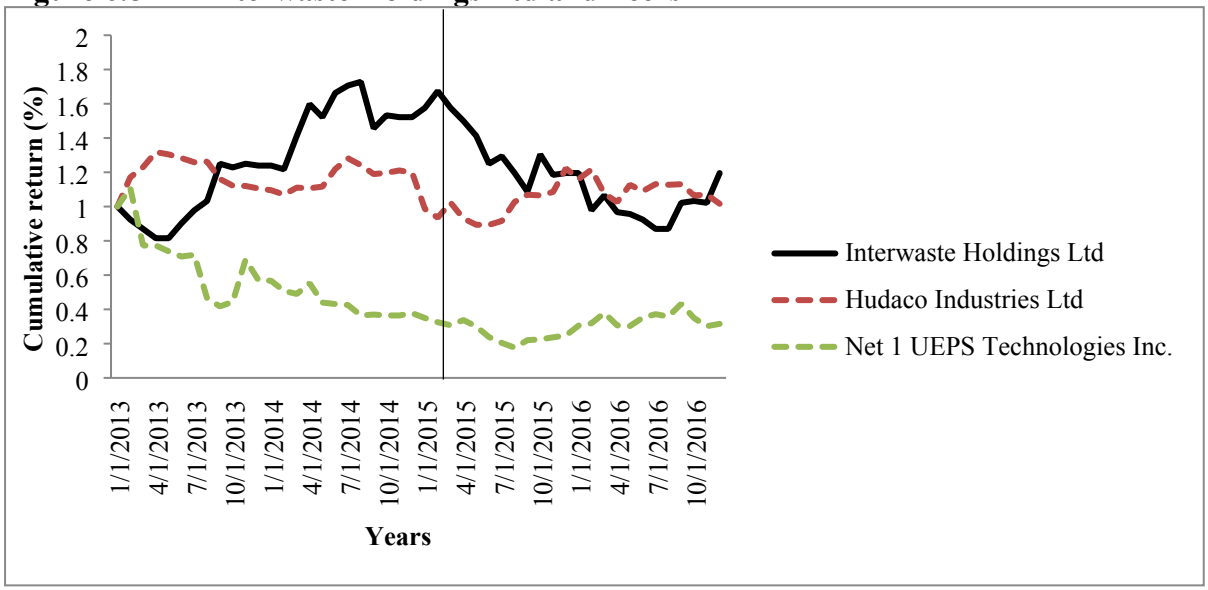
Table 6.8 (b): Hudaco Industries Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	7.46	**0.06**	7.05	7.01
Return on Capital Invested (%)	11.53	**1.50**	16.87	15.28
Current ratio	1.98	**1.74**	2.3	2.13
Debt/Equity ratio	0.17	**0.12**	0.43	0.34
Days Sales in Inventory	93.70	**91.50**	87.60	94.90

Table 6.8 (c): Net 1 UEPS Technologies Inc.

Ratio category	2013	2014	2015	2016
Net Margin (%)	2.91	**12.79**	16.63	15.17
Return on Capital Invested (%)	1.23	**9.39**	8.12	7.25
Current ratio	1.13	**1.25**	1.33	1.53
Debt/Equity ratio	0.20	**0.14**	0.11	0.07
Days Sales in Inventory	17.07	**16.13**	14.56	14.46

Figure 6.8 Interwaste Holdings Ltd and Peers



6.3.9 Mas Real Estate Inc. Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2013**) and Post – Migration (**2015 & 2016**)
Announcement Date: 10-12-2014
Migration Date: 18-12-2014

(a) Net Profit Margin

According to Table 6.9 (a), Mas Real Estate net profit margins have been inconsistent over the presented periods. However, Mas Real Estate has suffer a huge decline on its net profit margin by 438.30% to 39.30% in 2015 financial period compare to the previous period of 477.60%. Furthermore, revenue from rental income has increase to €6.6 million in 2015 financial period compare to the previous period of €2.6 million, while net operating income has climb to €2.7 million in 2015 financial period compare to the previous period of €45 453 (Mas Real Estate Inc. annual report, 2015). On the other hand, Table 6.9 (b), Trustco Group Holdings net profit margin has been inconsistent over the presented periods. However, the firm's net profit margin has significantly rise by 23.33% to 29.95% in 2014 financial period compare to the previous period of 6.62%. Moreover, Table 6.9 (c) illustrates that, Capital & Counties Properties profit margins have been declining over the presented financial periods, as from 2014 financial period.

(b) Return on Capital Invested

Mas Real Estate has been experiencing positive but inconsistent returns on capital invested except in 2013 financial period, as depicted in Table 6.9 (a). Mas Real Estate return on capital invested has increase by 15.81% to 14.55 % in 2014 financial period compare to the previous period of -1.26%. However, Mas Real Estate return on capital invested has plunge sharply by 14.12% in 2015 financial period to 0.43% compare to the previous period of 14.55%.On the other hand, Table 6.9 (b) depicts that, Trustco Group Holdings experienced a significant increase of 15.28% on its return on capital invested in 2014 financial period compare to the previous period of 3.18%. Moreover, Capital & Counties Properties returns on capital invested have been inconsistent over the presented years, as depicted in Table 6.9 (c). However, the firm

experienced a huge decline on its return on capital invested by 16.64% to -2.79% in 2016 financial period compare to the previous period of 13.85%.

(c) Current ratio

Table 6.9 (a) illustrates that, Mas Real Estate current ratio has been increasing over the presented years. Furthermore, Mas Real Estate total current assets have slightly increase by 0.38% to €29.11 million in 2015 financial period compare to the prior period of €29.00 million, while its total current liabilities have decline by 7.72% to €8.49 million in 2015 financial period compare to the previous period of €9.2 million (Mas Real Estate Inc. annual report, 2015). On the other hand, Table 6.9 (b) shows that, Trustco Group Holdings current ratio has been increasing over the presented periods except in 2016. Moreover, Table 6.9 (c) illustrates that, Capital & Counties Properties current ratio of has been declining as from 2014 financial period over the presented periods.

(d) Debt/Equity ratio

Table 6.9 (a) shows that, as from 2014 financial period, the debt to equity ratio of Mas Real Estate has been increasing over the presented periods. Mas Real Estate total stockholders' equity slightly has decline by 0.37% to €85.72 million in 2016 financial period compare the prior period of €86.04 million, while its total liabilities have increase by 28.46% to €14.28 million in 2016 financial period compare to the prior period of €19.96 million (Mas Real Estate Inc. annual report, 2016). On the other hand, Table 6.9 (b) shows that, debt to equity ratio of Trustco Group Holdings has been increasing over the presented periods except in 2016 financial period, where it has slightly decline by -0.17. Moreover, Table 6.9 (c) depicts that, Capital & Counties Properties debt to equity ratio has been as increasing over the presented years, as from 2014 financial period.

(e) Days Sales in Inventory

According to Table 6.9 (a), the number of days it takes Mas Real Estate to sell its inventory has been declining over the presented periods. The sooner it takes the firm to sell its inventory the better, because it will save the firm many costs that comes with keeping the inventory for a very long time. From 2013 to 2015 financial period, Trustco Group Holdings day's sales in

inventory has been increasing, however, in 2016 financial period it has decline by 159.75 days, as shown in Table 6.9 (b). On the other hand, Table 6.9 (c) shows that, Capital & Counties Properties day's sales in inventory has been declining over the presented years.

(f) Share Price Performance

Mas Real Estate headline earnings per share has climb by 7.34% to EUR1.17 cents per share in 2015 financial period compare to the previous period of EUR1.09 cents per share (Mas Real Estate Inc. annual report, 2015). As shown in Figure 6.9, the cumulative return of the Mas Real Estate has experience an upward trend as of June 2015 until it has reach its peak in January 2016, and thereafter it has starts declining. However, Mas Real Estate cumulative return has spick an upward trend again in September 2016. On the other hand, as of June 2013, Trustco Group Holdings cumulative return has pick an upward trend until it has reach a peak in October 2015, and thereafter it starts declining. Figure 6.9 shows that, the cumulative return of Capital & Counties Properties has pick an upward trend as January 2013 until it reaches its peak in November 2015, and thereafter it starts declining.

(g) Conclusion

The results from the valuation shows that the performance of Mas Real Estate has been consistent over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, the firm's cumulative returns have been inconsistent but better in terms of performance after Mas Real Estate migrated to the JSE main board. Based on the evaluation results of two years post migration, Mas Real Estate is assessed and classified as a success post migration to the JSE main board.

Table 6.9 (a): Mas Real Estate Inc.

Ratio category	2013	2014	2015	2016
Net Margin (%)	108.30	**477.60**	39.30	106.35
Return on Capital Invested (%)	-1.26	**14.55**	0.43	5.87
Current ratio	12.46	**3.40**	3.43	6.77
Debt/Equity ratio	0.27	**0.02**	0.04	0.11
Days Sales in Inventory	11.95	**11.01**	7.91	6.74

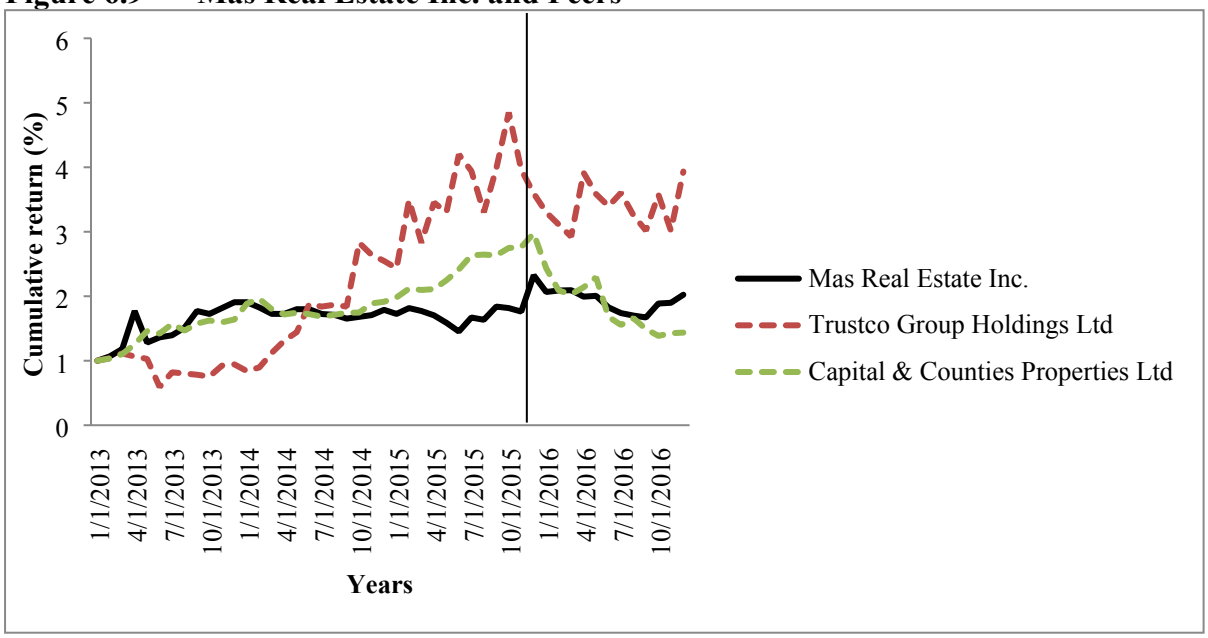
Table 6.9 (b): Trustco Group Holdings Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	6.62	**29.95**	29.81	36.50
Return on Capital Invested (%)	3.18	**18.46**	16.82	18.41
Current ratio	2.08	**2.38**	7.65	6.10
Debt/Equity ratio	0.30	**0.49**	0.67	0.50
Days Sales in Inventory	17.51	**375.95**	595.59	435.84

Table 6.9 (c): Capital & Counties Properties Plc.

Ratio category	2013	2014	2015	2016
Net Margin (%)	363.97	**447.26**	432.40	-114.04
Return on Capital Invested (%)	17.76	**18.03**	13.85	-2.79
Current ratio	2.12	**1.31**	0.96	0.82
Debt/Equity ratio	**0.20**	**0.17**	**0.21**	**0.30**
Days Sales in Inventory	1444.95	**826.97**	281.23	152.64

Figure 6.9 Mas Real Estate Inc. and Peers



6.3.10 Mazor Group Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2007**) and Post – Migration (**2009 & 2010**)
Announcement Date: 07-07-2008
Migration Date: 14-07-2008

(a) Net Profit Margin

According to Table 6.10 (a), Mazor Group net profit margin have been inconsistent over the presented periods. However, the firm has suffer a huge decline on its profit margin by -9.16% to 12.35% in 2010 financial period compare to the previous period of 21.51%. Mazor Group revenue has climb by 45.79% to R180.20 million in 2009 financial period compare to the prior period of R123.60 million, while its gross profit has increase to R61.2 million in 2009 financial period compare to the previous period of R37.5 million. I addition, Mazor Group operating profit has increase to R48.3 million in 2009 compare to the previous period of R28.5 million (Mazor Group Ltd annual report, 2009). Mazor Group continue mentioning that, Mazor Steel and Mazor Aluminium both have increase their contribution to group revenue and profitability, by 60.1% and 72.5%, and 24.6% and 25.7%, respectively. As shown in Table 6.10 (b), PPC net profit margins have been inconsistent over the presented periods. However, the firm's net profit margins significantly decline by 22.46% to 1.53% in 2008 compare to the previous period of 6.62%. Table 6.10 (c) depicts that, Afrimat profit margins have been inconsistent over the presented financial periods. However, Afrimat has suffer a decline on its net profit margin by 7.12% to 8.40% in 2008 compare to the previous period of 15.52%.

(b) Return on Capital Invested

According to Table 6.10 (a), Mazor Group return on capital invested has been declining over the presented periods, as from 2008 financial period. Mazor Group return on capital invested decline by 21.22% to 15.75% in 2009 compare to the previous period of 36.97%. Table 6.10 (b) depicts that, PPC experienced a significant decline of 36.35% on its return on capital invested in 2008 compare to the previous period of 44.71%. On the other hand, Afrimat returns on capital invested have been inconsistent over the presented years, as depicted in Table 6.10 (c). However, the firm experienced a decline on its return on capital invested by 9.81% to 10.08% in 2008 compare to the previous period of 19.89%.

(c) Current ratio

Table 6.10 (a) illustrates that, Mazor Group current ratio has been inconsistent, but above general acceptable norm of 1, over the presented periods. Mazor Group total current assets have slightly climb by 0.54% to R 74.75 million in 2009 financial period compare to the prior period of R74.35 million, while its total current liabilities have decrease by -43.36% to R11.99 million in 2009 financial period compare to the previous period of R21.17 million (Mazor Group Ltd annual report, 2009). On the other hand, Table 6.10 (b) shows that, PPC current ratio has been consistent above general norm of 1 except in 2007. According to Table 6.10 (c), Afrimat current ratio of has been declining over the presented

(d) Debt/Equity ratio

Table 6.10 (a) shows that, as from 2007, the debt to equity ratio of Mazor Group has been declining over the presented periods. Mazor Group total liabilities have decline by -8.28% to R25.47 million compare to the prior period of R27.77 million in 2008 financial period, while its total stockholders' equity has climb by 81.52% to R146.16 million in 2008 financial period compare to the prior period of R80.52 million (Mazor Group Ltd annual report, 2008). On the other hand, Table 6.10 (b) shows that, debt to equity ratio of PPC has been increasing over the presented periods except in 2010, where it has decrease by -0.25 due to the decline in total liabilities, while its total stockholders' equity has increase (PPC annual report, 2010). According to Table 6.10 (c), Afrimat debt to equity ratio has been inconsistent over the presented periods.

(e) Days Sales in Inventory

According to Table 6.10 (a), the number of days it takes Mazor Group to sell its inventory has been increasing over the presented periods. In general, it is always preferable for any firm to take lesser days in sell its inventory, because it will save the firm many costs that comes with keeping the inventory for a very long time. Similarly, PPC day's sales in inventory has been increasing over the periods, as shown in Table 6.10 (b). On the other hand, Table 6.10 (c) shows that, Afrimat day's sales in inventory has been inconsistent over the presented periods.

(f) Share Price Performance

According to Mazor Group (2009) annual report, the headline earnings on a per share basis has climb to 29.19 cents per share in 2009 compare the previous period of 20.75 cents per share. As shown in Figure 6.10, Mazor Group experience a huge decline on its cumulative returns as of November 2007 until February 2009, where it has pick an upward trend until it reaches its peak in December 2009. Moreover, Mazor Group cumulative returns has continue to decline just after its peak in December 2009. As of June 2008, PPC cumulative returns have been consistent over the presented periods, as shown in Figure 6.10. On the other hand, Figure 6.10 shows that, the cumulative return of Afrimat has experience a huge decline as November 2007 until March 2009, where it has pick an upward trend.

(g) Conclusion

The outcomes from the valuation indicates that the performance of Mazor Group has been poor over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, the Mazor Group cumulative returns have been inconsistent and poor in terms of performance after the firm's migration to the JSE main board. Based on the evaluation outcomes of two years post migration, Mazor Group is assessed and classified as a failure post migration to the JSE main board.

Table 6.10 (a): Mazor Group Ltd

Ratio category	2007	2008	2009	2010
Net Margin (%)	16.00	**16.93**	21.51	12.35
Return on Capital Invested (%)	27.01	**26.70**	36.97	15.75
Current ratio	6.00	**6.76**	3.51	6.24
Debt/Equity ratio	0.04	**0.02**	0.01	0.01
Days Sales in Inventory	11.04	**12.52**	22.30	37.78

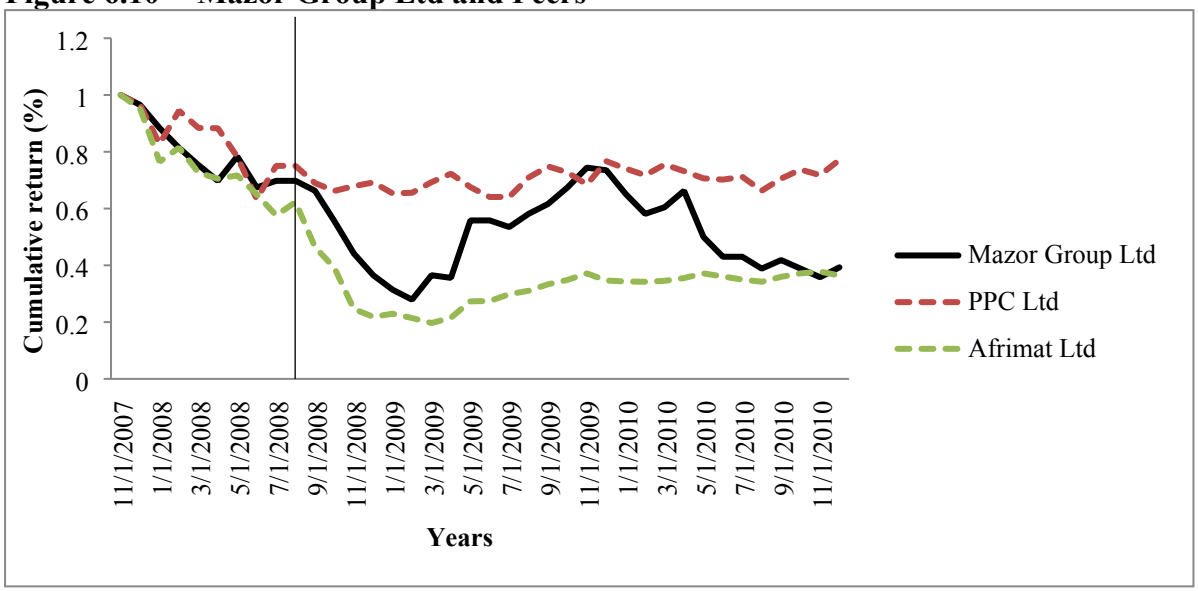
Table 6.10 (b): PPC Ltd

Ratio category	2007	2008	2009	2010
Net Margin (%)	25.67	**23.99**	1.53	14.84
Return on Capital Invested (%)	42.08	**44.71**	8.36	25.66
Current ratio	1.07	**0.58**	1.06	1.00
Debt/Equity ratio	0.03	**0.03**	2.87	3.08
Days Sales in Inventory	33.34	**36.02**	43.08	51.73

Table 6.10 (c): Afrimat Ltd

Ratio category	2007	2008	2009	2010
Net Margin (%)	7.02	**15.52**	8.40	9.37
Return on Capital Invested (%)	21.03	**23.43**	11.23	12.83
Current ratio	2.16	**2.02**	1.75	1.66
Debt/Equity ratio	0.14	**0.06**	0.12	0.08
Days Sales in Inventory	52.01	**41.96**	46.93	44.19

Figure 6.10 Mazor Group Ltd and Peers



6.3.11 OneLogix Group Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2012**) and Post – Migration (**2014 & 2015**)
Announcement Date: 07-06-2008
Migration Date: 18-06-2013

(a) Net Profit Margin

According to Table 6.11 (a), OneLogix Group net profit margins have been declining as from 2013 financial period. OneLogix Group profit margin has decline by 4.60% to 1.24% in 2015 financial period compare to the previous period of 5.84%. Moreover, OneLogix Group revenue has climb by 8% to R1.4 billion in 2015 compare to the previous period of R1.3 billion, while its operating profit has decrease by 59% to R48.7 million in 2015 compare to the previous period of R118.6 million (OneLogix Group Ltd annual report, 2015). OneLogix Group continue mentioning that, the newly acquired Jackson and Buffelshoek has contributed to its results for the last two months of 2015 financial year. As shown in Table 6.11 (b), Imperial Holdings net profit margins have been declining over the presented periods. However, Imperial Holdings net profit margins has decrease by 0.41% to 3.16% in 2014 compare to the previous period of 3.57%. Similarly, Table 6.11 (c) depicts that, Trencor profit margins have been declining over the presented financial periods. In addition, Trencor net profit margin has suffered a huge decline by 13.49 to -1.57% in 2015 compare to the previous period of 11.92%.

(b) Return on Capital Invested

According to Table 6.11 (a), OneLogix Group return on capital invested has been declining over the presented periods except in 2015. OneLogix Group return on capital invested has climb by 4.48% to 18.04% in 2015 compare to the previous period of 13.20%. OneLogix continue mentioning that it has invested R299.5 million on its operational infrastructure. On the other hand, Table 6.11 (b) depicts that, Imperial Holdings return on capital invested has been declining over the presented periods. However, Imperial Holdings return on invested capital has plunge by 3.25% in 2013 compare to the previous period of 18.16%. Similarly, Table 6.11(c) shows that, as from 2013 financial period returns on capital invested of Trencor have been declining over the presented periods. However, the firm has experience a significant

decline on its return on capital invested by 3.59% to 1.11% in 2015 compare to the previous period of 4.70%.

(c) Current ratio

Table 6.11 (a) shows that, OneLogix Group current ratio has been declining over the presented periods except in 2015. OneLogix Group current ratio has increase slightly by 0.39 to 1.21 in 2015 compare to the previous period of 0.82. OneLogix Group total current assets have slightly climb by 0.50% to R28.17 million in 2014 financial period compare to the prior period of R28.31 million, while its total current liabilities have decline by 3.19% to R35.95 million in 2014 financial period compare to the previous period of R34.84 million (OneLogix Group Ltd annual report, 2014). On the other hand, Table 6.11 (b) shows that, Imperial Holdings current ratio has been consistently above general norm of 1. Similarly, Table 6.11 (c) shows that, current ratio of Trencor has been above the general acceptable norm of 1. Moreover, Trencor current ratio increase by 1.39 to 2.70 in 2015 compare to the prior period of 1.31.

(d) Debt/Equity ratio

Table 6.11 (a) shows that, as from 2013, the debt to equity ratio of OneLogix Group has been declining over the presented periods. OneLogix Group total liabilities have decline from R62.35 million in 2014 to R54.15 million in 2015 financial period, while its total stockholders' equity has jumped from R37.65 million in 2014 financial period to R45.85 million in 2015 financial period (OneLogix Group Ltd annual report, 2015). In contrast, Table 6.11 (c) shows that, Trencor debt to equity ratio has been increasing over the presented periods. On the other hand, Table 6.11 (b) shows that, debt to equity ratio of Imperial Holdings has been inconsistent over the presented periods.

(e) Days Sales in Inventory

According to Table 6.11 (a), there has been inconsistency in the number of days it takes OneLogix Group to sell its inventory over the presented periods. It is always preferable for any firm to take lesser days in sell its inventory, because it will save the firm many costs that comes with keeping the inventory for a very long time. Similarly, Trencor day's sales in inventory has been inconsistent over the presented periods, as shown in Table 6.11 (c). On the other hand,

Table 6.11 (b) shows that, Imperial Holdings day's sales in inventory has been increasing over the presented periods.

(f) Share Price Performance

According to OneLogix Group (2015) annual report, headline earnings per share has climb to 17.5 cents per share in 2015 compare to the previous period of 15.4 cents per share. As shown in Figure 6.11, OneLogix Group cumulative return has been on upward trend as of October 2012 until January 2015, where it has reach its peak, and thereafter it has starts declining. On the other hand, Figure 6.11 shows that, as from August 2012 Imperial Holdings cumulative returns have been consistent over the presented periods, however, it starts declining as of October 2015. As of February 2012, Trencor cumulative return has been on upward trend until it has reach its peak in June 2014, and thereafter starts declining, as shown in Figure 6.11.

(g) Conclusion

The results from the valuation demonstrates that the performance of Onelogix Group has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, OneLogix Group cumulative return has experienced an upward trend pre and post migration to the JSE main board. Based on the evaluation results of two years post migration, OneLogix Groups is assessed and classified as a success post migration to the JSE main board.

Table 6.11 (a): OneLogix Group Ltd

Ratio category	2012	2013	2014	2015
Net Margin (%)	6.00	**6.30**	5.84	1.24
Return on Capital Invested (%)	15.60	**13.64**	13.20	18.04
Current ratio	1.28	**0.83**	0.82	1.21
Debt/Equity ratio	0.46	**0.51**	0.50	0.48
Days Sales in Inventory	8.30	**16.83**	9.83	16.03

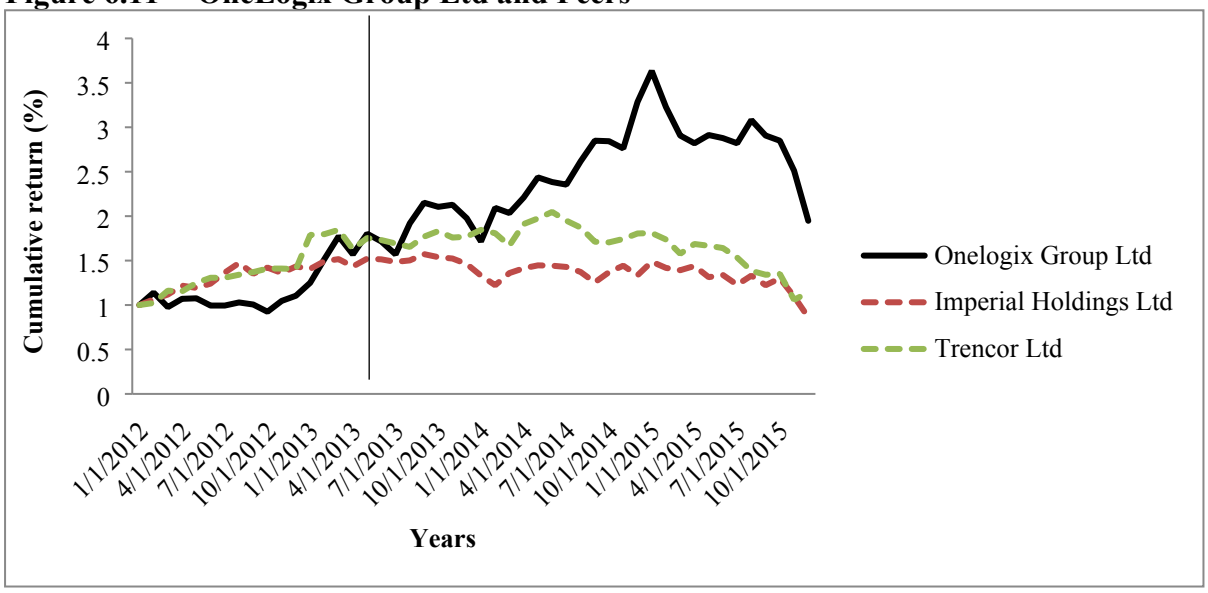
Table 6.11 (b): Imperial Holdings Ltd

Ratio category	2012	2013	2014	2015
Net Margin (%)	3.69	**3.57**	3.16	2.84
Return on Capital Invested (%)	18.16	**14.91**	13.27	11.54
Current ratio	1.24	**1.14**	1.43	1.35
Debt/Equity ratio	0.42	**0.34**	0.70	0.65
Days Sales in Inventory	55.60	**61.88**	66.10	72.16

Table 6.11 (c): Trencor Ltd

Ratio category	2012	2013	2014	2015
Net Margin (%)	22.56	**21.11**	11.92	-1.57
Return on Capital Invested (%)	7.53	**7.08**	4.70	1.11
Current ratio	1.73	**1.92**	1.31	2.70
Debt/Equity ratio	2.67	**3.40**	3.45	3.91
Days Sales in Inventory	63.63	**73.89**	62.06	69.69

Figure 6.11 OneLogix Group Ltd and Peers



6.3.12 Pan African Resources Inc. Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2008**) and Post – Migration (**2010 & 2011)**

Announcement Date: 26-11-2009

Migration Date: 01-12-2009

(a) Net Profit Margin

According to Table 6.12 (a), Pan African Resource's net profit margin has been increasing as from 2009 financial period. Pan African Resources net profit margin has climb by 12.53% to 20.84% in 2010 financial period compare to the previous period of 8.31%. Furthermore, revenue has increase by 32% to £38.33 million in 2010 compare to the previous period of £29.04 million, while earnings before interest, taxes, depreciation and amortisation has climb by 51% to £12.95 million compare to the previous period of £8.60 million (Pan African Resources Plc. annual report, 2010). Pan African Resources continue mentioning that, the increase in revenue in 2010 financial period is mainly due to a 26.64% increase in the average gold spot price to US$1098/oz in 2010 financial period compare to the prior year of US$867/oz, and the depreciation of the GBP against the ZAR. As shown in Table 6.12 (b), AngloGold Ashanti net profit margin has been increasing as of 2009 financial period. However, the firm's net profit margins have sharply increase by 23.90% to 2.10% in 2010 compare to the previous period of -21.80%. Similarly, Table 6.12 (c) depicts that, Gold Fields net profit margins have been increasing as of 2009 financial period.

(b) Return on Capital Invested

According to Table 6.12 (a), Pan African Resources return on capital invested has been inconsistent over the presented periods. Nonetheless, Pan African Resources return on capital invested has decline sharply by 14.92% to 7.71% in 2009 compare to the previous period of 22.63%. Table 6.12 (b) depicts that, AngloGold Ashanti return on capital invested has been increasing as from 2009 financial period. However, AngloGold Ashanti return on invested capital has climb by 19.27% to 2.75% in 2010 compare to the previous period of -16.52%. Similarly, Table 6.12 (c) shows that, as of 2009 return on capital invested of Gold Fields has

been increasing over the presented periods. Nonetheless, the firm's return on capital invested has increase by 5.53% to 11.70% in 2011 compare to the previous period of 6.17%.

(c) Current ratio

Table 6.12 (a) shows that, Pan African Resource's current ratio has been inconsistent over the presented periods. Pan African Resources current ratio has decline by -0.52 to 0.81 in 2009 compare to the previous period of 133. According Pan African Resources (2009) annual report, the firm has experience a decline on its total current assets by 50% to £6.86 million compare to the prior period of £13.61 million. On the other hand, Table 6.12 (b) shows that, AngloGold Ashanti current ratio has been inconsistent over the presented periods. For two consecutive years, 2008 and 2009 financial period AngloGold Ashanti current ratio has been below the general norm of 1. This could suggest that, AngloGold Ashanti might not be able to settle its short-term liabilities when they are due. Similarly, Table 6.12 (c) shows that, current ratio of Gold Fields has been inconsistent over the presented periods, and in 2008 and 2010 financial period, the firm had a current ratio below 1.

(d) Debt/Equity ratio

Table 6.12 (a) shows that, Pan African Resource's debt to equity ratio has been inconsistent over the presented periods. Pan African Resources total liabilities have decline from £23.16 million in 2009 to £20.12 million in 2010 financial period, while its total stockholders' equity has increase from £76.84 million to £79.88 million (Pan African Resources Plc. annual report, 2010). Similarly, Table 6.12 (b) shows that, debt to equity ratio of Imperial Holdings has been inconsistent over the presented periods. On the other hand, Table 6.12 (c) shows that, AngloGold Ashanti debt to equity ratio has been declining over the presented periods.

(e) Days Sales in Inventory

According to Table 6.12 (a), there has been an increase in the number of days it takes Pan African Resources to sell its inventory over the presented periods. It is always preferable for any firm to take lesser days in sell its inventory, because it will save the firm many costs that comes with keeping the inventory for a very long time. On the other hand, Table 6.12 (b) shows that, AngloGold Ashanti day's sales in inventory has been declining as of 2009 financial

period. In addition, Table 6.12 (c) shows that, Gold Fields day's sales in inventory has been inconsistent over the presented periods.

(f) Share Price Performance

According to Pan African Resources (2010) annual report, the headline earnings per share has climb to 0.53 pence in 2010 compare to the previous period of 0.36 pence. As shown in Figure 6.12, Pan African Resource's cumulative return has been on upward trend as of December 2008 until December 2009, where it has starts declining. Furthermore, after Pan African Resource's cumulative return has experience a decline in December 2009, however, it has peak an upward trend in April 2010. On the other hand, Figure 6.12 shows that, AngloGold Ashanti cumulative return has experience a downward trend as of February 2008 until it has pick an upward trend in October 2008. As of February 2009, AngloGold Ashanti, cumulative return has been consistent, Gold Fields had a similar trend to that of AngloGold Ashanti, as depicted in Figure 6.12.

(g) Conclusion

The outcomes from the valuation indicates that the performance of Pan African Resources has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, Pan African Resource's cumulative return has experienced an upward trend pre and post migration to the JSE main board. Based on the evaluation outcomes of two years post migration, Pan African Resources Plc is assessed and classified as a success post migration to the JSE main board.

Table 6.12 (a): Pan African Resources Plc.

Ratio category	2008	2009	2010	2011
Net Margin (%)	13.91	**8.31**	20.84	21.68
Return on Capital Invested (%)	22.63	**7.71**	22.07	20.31
Current ratio	1.33	**0.81**	2.50	1.77
Debt/Equity ratio	0.04	**0.20**	0.13	0.18
Days Sales in Inventory	3.65	**4.71**	6.68	10.40

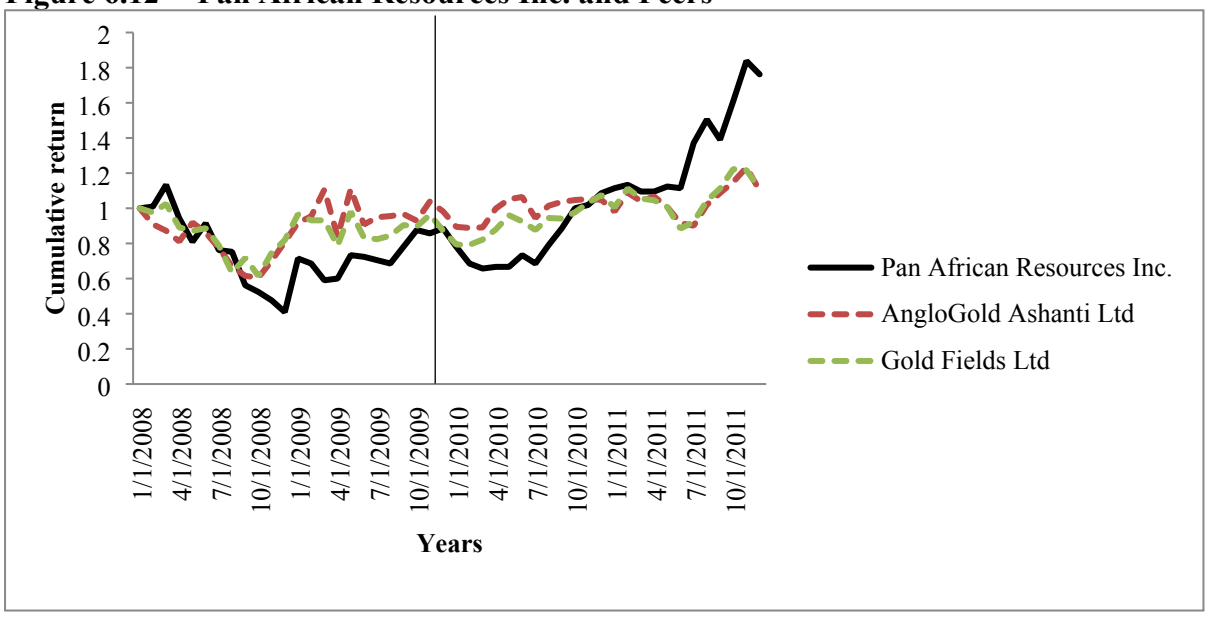
Table 6.12 (b): AngloGold Ashanti Ltd

Ratio category	2008	2009	2010	2011
Net Margin (%)	-15.40	**-21.80**	2.10	21.69
Return on Capital Invested (%)	-11.67	**-16.52**	2.75	20.37
Current ratio	0.86	**0.63**	1.99	1.42
Debt/Equity ratio	0.26	**0.20**	0.58	0.46
Days Sales in Inventory	132.71	**141.23**	117.98	107.84

Table 6.12 (c): Gold Fields Ltd

Ratio category	2008	2009	2010	2011
Net Margin (%)	14.11	**4.98**	9.39	15.20
Return on Capital Invested (%)	7.30	**3.14**	6.17	11.70
Current ratio	0.50	**1.04**	0.84	1.15
Debt/Equity ratio	0.12	**0.15**	0.07	0.24
Days Sales in Inventory	26.69	**31.85**	29.56	36.85

Figure 6.12 Pan African Resources Inc. and Peers



6.3.13 Rockcastle Global Real Estate Co. Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2013**) and Post – Migration (**2015 & 2016)**
Announcement Date: 17-11-2014
Migration Date: 25-11-2014

(a) Net Profit Margin

According to Table 6.13 (a), as of 2014 financial period Rockcastle Global Real Estate net profit margin has been increasing over the presented periods. Moreover, Rockcastle Global Real Estate net margin has significantly increase by 120.90% in 2015 financial period compare to the prior period of 12.60%. In comparison with Rockcastle Global Real Estate, Table 6.13 (b) illustrates that, Redefine Properties net profit margin has been has been declining as of 2014 financial period, while Table 6.13 (c) depicts that, Growth Point Properties net profit margin has been inconsistent over the presented periods.

(b) Return on Capital Invested

Table 6.13 (a) depicts that, Rockcastle Global Real Estate return on capital invested has been declining as of 2014 financial period over the presented periods. In comparison with Rockcastle Global Real Estate, Table 6.13 (b) depicts that, Redefine Properties return on capital invested has been declining over the presented periods. Furthermore, Table 6.13 (c) shows that, Growth Point Properties return on invested capital has been declining over the presented periods, except in 2016 financial period, where it has increase slightly by 1.75% compare to the prior period.

(c) Current ratio

Table 6.13 (a) illustrates that, Rockcastle Global Real Estate current ratio has been increasing over the presented periods. Rockcastle Global Real Estate total current assets have increase by 77.05% to R17.05 million in 2015 financial period compare to the prior period of R9.63 million, while its total current liabilities have decline by 12.81% to R3.47 million compare to the prior period of R3.98 million (Rockcastle Global Real Estate annual report, 2015). On the other hand, Table 6.13 (b) shows that, Redefine Properties current ratio has been declining as

of 2014 financial period, while Table 6.13 (c) illustrates that, Growth Point Properties current ratio has been increasing over the presented periods.

(d) Debt/Equity ratio

Table 6.13 (a) shows that, Rockcastle Global Real Estate debt to equity ratio has been increasing over the presented years. Moreover, Rockcastle Global Real Estate total liabilities have increase by % to R33.09 million in 2015 compare to the previous period of R19.55 million, while its total stockholders' equity has climb by % to R66.91million in 2015 financial period compare the prior period of R80.45 million (Rockcastle Global Real Estate annual report, 2015). In comparison with Consolidated Infrastructure, Table 6.13 (b) illustrates that, Redefine Properties debt to equity ratio has been increasing as of 2014 financial period, while Table 6.13 (c) depicts that, Growth Point Properties debt to equity ratio has been increasing over the presented periods.

(e) Days Sales in Inventory

According to Table 6.13 (a), the number of days it takes Rockcastle Global Real Estate to sell its inventory has been as of 2014 financial period. However, it advisable for Rockcastle Global Real Estate to keep its days sales in inventory low, because it will save the firm additional cost that comes with the keeping of the inventory for longer period. In comparison with Rockcastle Global Real Estate, Table 6.13 (b) illustrates that, Redefine Properties day's sales in inventory has been declining over the presented periods, except in 2016 financial period, where it has slightly increase by 0.16 days, compare to the prior period. Moreover, Table 6.13 (c) shows that, Growth Point Properties day's sales in inventory has been inconsistent over the presented period.

(f) Share Price Performance

As presented in Figure 6.13, Rockcastle Global Real Estate cumulative return has been on upward trend as of January 2013, before its migration to the JSE main board. In comparison with Rockcastle Global Real Estate, Figure 6.13 illustrates that, Redefine Properties and Growth Point Properties cumulative returns have been stable over the presented years.

(g) Conclusion

The results from the valuation indicates that the performance of Rockcastle Global Real Estate has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. Furthermore, Rockcastle Global Real Estate cumulative return has been on upward trend before its migration to the JSE main board. Based on the evaluation outcomes of two years post migration, Rockcastle Global Real Estate is assessed and classified as a success post migration to the JSE main board.

Table 6.13 (a): Rockcastle Global Real Estate Co. Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	262.60	**12.60**	133.50	171.60
Return on Capital Invested (%)	9.50	**9.88**	6.88	6.67
Current ratio	0.21	**0.43**	0.49	1.06
Debt/Equity ratio	1.60	**1.68**	1.90	1.92
Days Sales in Inventory	12.01	**10.42**	22.41	16.84

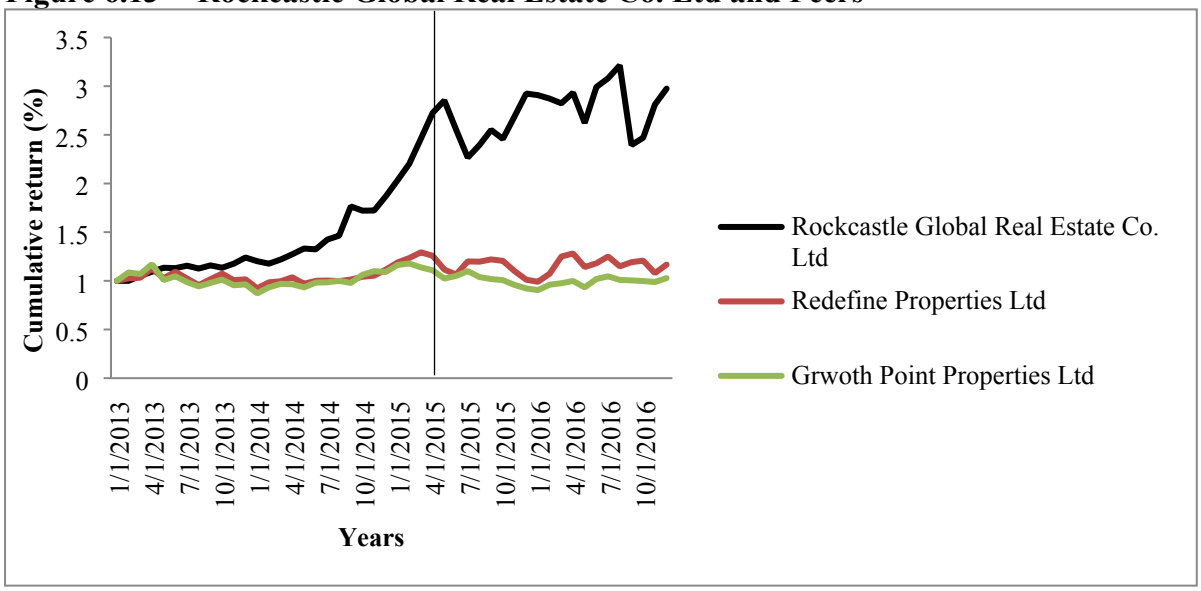
Table 6.13 (b): Redefine Properties Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	60.92	**86.07**	69.72	42.73
Return on Capital Invested (%)	7.61	**9.26**	6.30	4.12
Current ratio	0.15	**0.45**	0.19	0.17
Debt/Equity ratio	0.60	**0.52**	0.57	0.65
Days Sales in Inventory	1.62	**1.24**	0.62	0.78

Table 6.13 (c): Growth Point Properties Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	84.47	**88.37**	50.48	69.96
Return on Capital Invested (%)	11.38	**10.50**	7.46	9.21
Current ratio	0.27	**0.40**	0.79	1.94
Debt/Equity ratio	0.41	**0.44**	0.50	0.59
Days Sales in Inventory	22.40	**18.60**	44.20	32.90

Figure 6.13 Rockcastle Global Real Estate Co. Ltd and Peers



6.3.14 Rolfes Technology Holdings Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2010**) and Post – Migration (**2012 & 2013)**
Announcement Date: 17-11-2014
Migration Date: 25-11-2014

(a) Net Profit Margin

According to Table 6.14 (a), as of 2011 financial period, Rolfes Technology Holdings net profit margin has been declining over the presented periods. However, Rolfes Technology Holdings net profit slightly climb by 0.68% to 6.74% in 2012 financial period compare to the previous period of 7.02%. Rolfes Technology Holdings revenue for the year ended 30 June 2012 has increase by 38.09% to R636.2 million compare to the prior year of R460.7 million, while gross profit increase to R127.2 million in 2012 financial period compare to the previous year of R87 million (Rolfes Technology Holdings Ltd annual report, 2012). Rolfes Technology Holdings continue mentioning that, the revenue increase is mainly due to the acquisition of Amazon Colours and increase sales in Africa. Table 6.14 (b) shows that, Sasol net profit margin has been increasing over the presented periods. Similarly, Table 6.14 (c) depicts that, African Oxygen net profit margin has been increasing over the presented periods. In 2011 financial period, African Oxygen net profit margins has increase by 1.50% to 3.49% compare to the prior period of 1.99%.

(b) Return on Capital Invested

According to Table 6.14 (a), Rolfes Technology Holdings return on capital invested has been inconsistent over the presented periods. Nonetheless, Rolfes Technology Holdings return on capital invested has increase by 0.68% to 19.42% in 2012 compare to the previous period of 20.10%. Table 6.14 (b) depicts that, Sasol return on capital invested has been increasing over the presented periods, except in 2013 financial period. Sasol return on invested capital has slightly decline by 1.93% to 16.48% in 2013 compare to the previous period of 18.41%. On the other hand, Table 6.14 (c) shows that, African Oxygen return on capital invested has been increasing over the presented periods.

(c) Current ratio

Table 6.14 (a) shows that, as of 2011 financial period, Rolfes Technology Holdings current ratio has been declining, but above the general acceptable norm of 1. Rolfes Technology Holdings current ratio has decline by -0.21 to 1.65 in 2013 compare to the previous period of 1.86. According Rolfes Technology Holdings (2013) annual report, the firm has experience a decline on its total current assets by 3.54% to R63.48 million compare to the prior period of R65.81 million. On the other hand, Table 6.14 (b) shows that, Sasol current ratio has been declining over the presented periods, except in 2013 financial period where it has slightly increase by 0.36. Similarly, Table 6.14 (c) shows that, African Oxygen current ratio of has been declining over the presented periods, except in 2013 financial period where it has slightly increase by 0.83.

(d) Debt/Equity ratio

Table 6.14 (a) shows that, Rolfes Technology Holdings debt to equity ratio has been inconsistent over the presented periods. Rolfes Technology Holdings total liabilities have increase by 32.01% to R54.69 million in 2012 compare to the previous period of R41.43 million, while its total stockholders' equity has decline by -22.64% to R45.31 million in 2010 compare to the prior period of R58.57 million (Rolfes Technology Holdings Ltd annual report, 2012). Rolfes Technology Holdings continue mentioning that, the significant increase in debt to equity ratio for 2012 financial period is mainly due to the consideration of the acquisition of Agchem and Amazon, totaling R56.3 million, which are finance through long-term debt. On the other hand, Table 6.14 (b) shows that, debt to equity ratio of Sasol has been declining over the presented periods, except in 2013 where it has slightly increase by 0.05. Similarly, Table 6.14 (c) shows that, African Oxygen debt to equity ratio has been declining over the presented periods, except in 2013, where it has increase by 0.26.

(e) Days Sales in Inventory

According to Table 6.14 (a), there has been an increase in the number of days it takes Rolfes Technology Holdings to sell its inventory over the presented periods. This might result to additional cost to Rolfes Technology Holdings, as it takes longer to sell its inventory. On the other hand, Table 6.14 (b) shows that, Sasol day's sales in inventory has been increasing as of

2011 financial period. On the other hand, Table 6.14 (c) shows that, African Oxygen day's sales in inventory has been inconsistent over the presented periods.

(f) Share Price Performance

According to Rolfes Technology Holdings (2012) annual report, the headline earnings per share has climb to 36.1cents per share in 2012 financial period compare to the prior period of 31.2 cents per share. As shown in Figure 6.14, Rolfes Technology Holdings cumulative return has been on upward trend as of January 2010, prior its migration to the JSE main board. Furthermore, Rolfes Technology Holdings cumulative return continued increasing even after its migration to the JSE main board. On the other hand, Figure 6.14 shows that, both Sasol and African Oxygen cumulative returns have been consistent over the presented periods.

(g) Conclusion

The evidence from the valuation demonstrates that the performance of Rolfes Technology Holdings has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, Rolfes Technology Holdings cumulative return has experienced an upward trend pre and post migration to the JSE main board. Based on the evaluation results of two years post migration, Rolfes Technology Holdings is assessed and classified as a success post migration to the JSE main board.

Table 6.14 (a): Rolfes Technology Holdings Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	6.46	**7.02**	6.74	6.53
Return on Capital Invested (%)	15.47	**20.10**	19.42	20.78
Current ratio	1.87	**1.97**	1.86	1.65
Debt/Equity ratio	0.08	**0.1**	0.04	0.19
Days Sales in Inventory	93.15	**84.33**	95.09	109.43

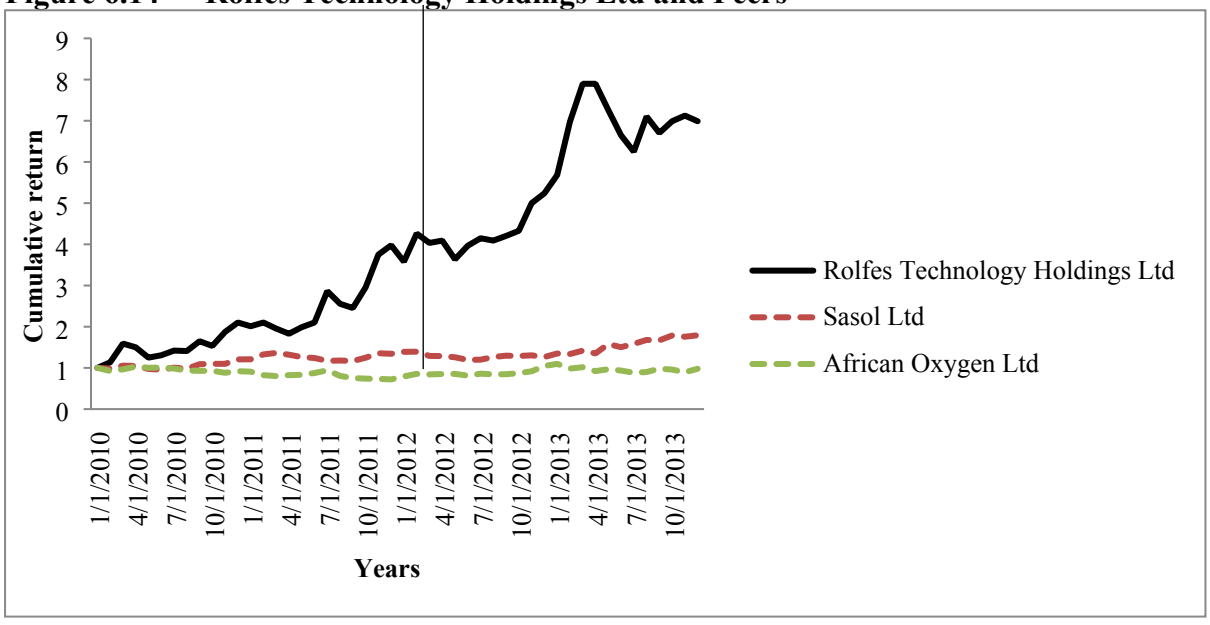
Table 6.14 (b): Sasol Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	13.04	**13.90**	13.92	14.50
Return on Capital Invested (%)	15.50	**17.38**	18.41	16.48
Current ratio	2.35	**2.19**	2.12	2.48
Debt/Equity ratio	0.14	**0.13**	0.10	0.15
Days Sales in Inventory	44.80	**42.20**	45.00	45.80

Table 6.14 (c): African Oxygen Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	1.99	**3.49**	4.86	5.30
Return on Capital Invested (%)	2.29	**4.78**	7.63	7.78
Current ratio	1.52	**1.20**	1.02	1.85
Debt/Equity ratio	0.32	**0.16**	0.05	0.31
Days Sales in Inventory	61.35	**55.45**	55.95	55.55

Figure 6.14 Rolfes Technology Holdings Ltd and Peers



6.3.15 Santova Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2010**) and Post – Migration (**2012 & 2013)**
Announcement Date: 28-10-2011
Migration Date: 02-11-2011

(a) Net Profit Margin

According to Table 6.15 (a), Santova net profit margin has been increasing over the presented periods. Santova net profit margin has increase by 1.45% to 13.21% in 2012 financial period compare to the previous period of 11.76%. Moreover, Santova turnover has increase by 15.88% to R167.1 million in 2012 financial period compare to the prior period of R144.2 million (Santova Ltd annual report, 2012). Santova continue mentioning that, the internal operational efficiencies and the successful acquisition of quality new clients has ensure a sustainable earnings growth over 2012 financial period. Table 6.15 (b) displays that, in 2013 financial period, Grindrod net profit margin has increase by 4.39% to 7.91% compare to the prior period of 3.13%. On the other hand, Table 6.15 (c) depicts that, Super Group net profit margin has been increasing over the presented periods, except in 2013 financial period where it slightly declined by 0.40%.

(b) Return on Capital Invested

As of 2011 financial period, Santova return on capital invested has been declining, over the presented periods, as depicted in Table 6.15 (a). Santova return on capital invested has decline by 0.65% to 12.03% in 2012 compare to the previous period of 12.68%. Table 6.15 (b) depicts that, Grindrod return on capital invested has been increasing as from 2011 financial period. Sasol return on invested capital has slightly decrease by 1.93% to 16.48% in 2013 compare to the previous period of 18.41%. On the other hand, Table 6.15 (c) shows that, Super Group return on capital invested has been increasing over the presented periods, except in 2013 where it has slightly decline by 0.77%.

(c) Current ratio

Table 6.15 (a) present that, Santova current ratio has been increasing as from 2011 financial period, and continued to be above the general acceptable norm of 1. Rolfes Technology Holdings current ratio has slightly decline by -0.08 to 1.15 in 2011financial period compare to the previous period of 1.23. On the other hand, Table 6.15 (b) shows that, Grindrod current ratio has been declining as from 2011 financial period, however, still above general acceptable norm of 1. Similarly, Table 6.15 (c) shows that, Super Group current ratio of has been increasing over the presented periods.

(d) Debt/Equity ratio

Table 6.15 (a) shows that, Santova debt to equity ratio has been declining over the presented periods, except in 2013 financial period, where it has increase by 0.23. Santova total liabilities have slightly increase from R70.83 million in 2013 compare to the previous period of R73.91 million, while its total stockholders' equity has decline from R29.17 million in 2010 to R26.09 million (Santova Ltd annual report, 2013). On the other hand, Table 6.15 (b) shows that, debt to equity ratio of Grindrod has been increasing over the presented periods, except in 2013 where it has slightly decline by -0.03. Table 6.15 (c) shows that, Super Group debt to equity ratio has been declining over the presented periods, except in 2013, where it has increase by 0.09.

(e) Days Sales in Inventory

According to Table 6.15 (a), there has been an increase in the number of days it takes Santova to sell its inventory as of 2011 financial period. This might results to additional cost to Santova, as it takes longer to sell its inventory. On the other hand, Table 6.15 (b) shows that, Grindrod day's sales in inventory has been increasing over the presented periods, except in 2013 financial period where it has decline by 1.90 days. On the other hand, Table (c) shows that, Super Group day's sales in inventory has been increasing as from 2011 financial period.

(f) Share Price Performance

According to Santova (2012) annual report, the firm has a headline earnings per share of 15.99 cents per share in 2012 financial period compare to the previous period of 10.65cents per share.

Figure 6.15 shows that, Santova cumulative return has been on upward trend prior, during and post its migration to the JSE main board. On the other hand, Figure 6.15 shows that, both Grindrod and Super Group cumulative returns have been increasing over the presented periods.

(g) Conclusion

The outcomes from the valuation displays that the performance of Santova Ltd has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency, capital gain, and liquidity ratio compare to its peers. In addition, Santova cumulative return has experienced an upward trend pre and post migration to the JSE main board. Based on the evaluation outcomes of two years post migration, Santova Ltd is assessed and classified as a success post migration to the JSE main board.

Table 6.15 (a): Santova Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	3.82	**11.76**	13.21	13.81
Return on Capital Invested (%)	4.51	**12.68**	12.03	7.91
Current ratio	1.23	**1.15**	1.19	1.21
Debt/Equity ratio	0.06	**0.04**	0.03	0.26
Days Sales in Inventory	706.88	**538.27**	621.56	703.54

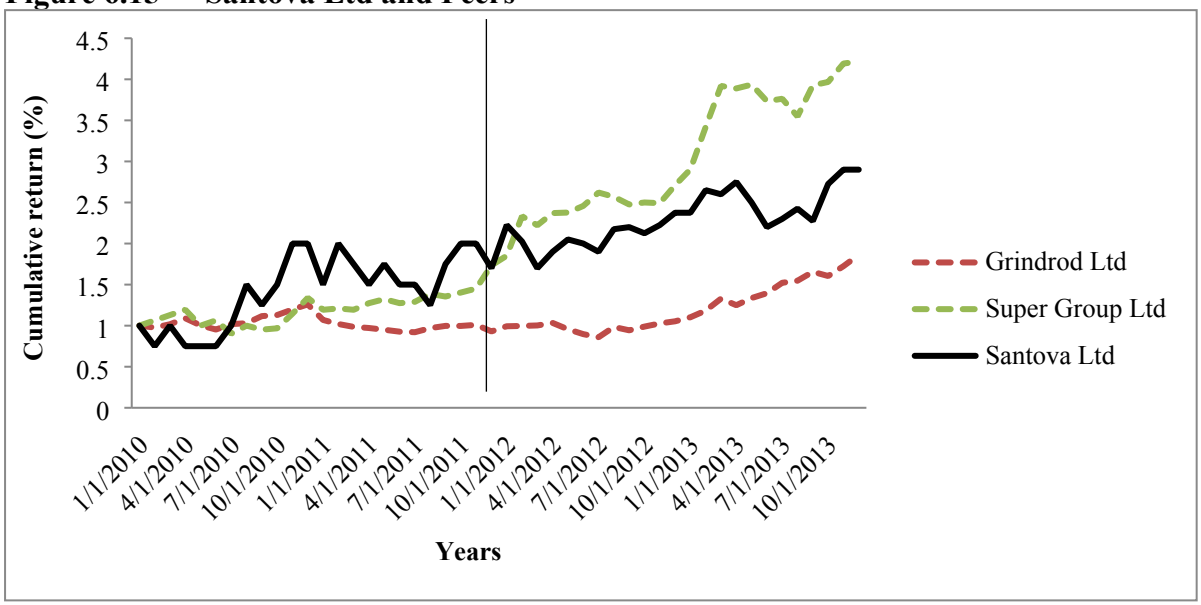
Table 6.15 (b): Grindrod Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	2.58	**1.63**	3.13	7.52
Return on Capital Invested (%)	7.94	**4.46**	4.82	5.76
Current ratio	1.28	**1.50**	1.48	1.10
Debt/Equity ratio	0.24	**0.24**	0.28	0.25
Days Sales in Inventory	8.40	**12.50**	13.90	12.00

Table 6.15 (c): Super Group Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	1.96	**4.09**	5.83	5.43
Return on Capital Invested (%)	7.90	**9.68**	13.59	12.82
Current ratio	0.92	**1.10**	1.29	1.50
Debt/Equity ratio	0.44	**0.38**	0.36	0.45
Days Sales in Inventory	22.40	**20.40**	23.20	28.20

Figure 6.15 Santova Ltd and Peers



6.3.16 Taste Holdings Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2010**) and Post – Migration (**2012 & 2013)**
Announcement Date: 28-06-2011
Migration Date: 08-07-2011

(a) Net Profit Margin

According to Table 6.16 (a), Taste Holdings net profit margin has been increasing over the presented periods, except 2013 financial period. Taste Holdings net profit margin has decrease by -3.05% to 4.89% in 2013 financial period compare to the previous period of 7.94%. Furthermore, Taste Holdings revenue for the year ended 29 February 2012 has increase by 13% to R265.3 million compare to the prior period of R233.8 million, while operating profit has climb by 16% to R35.6 million in 2012 compare to the previous period of R30.8 million (Taste Holdings Ltd annual report, 2012). Taste Holdings continue mentioning that, the combination of same-store sales and new store openings as well as the acquisition of the Fish and Chip Co. has pushed the revenue up in 2012 financial year. Table 6.16 (b) shows that, Spur Corporation net profit margin has been inconsistent over the presented periods. On the other hand, Table 6.16 (c) depicts, Famous Brand net profit margin has been constantly increasing over the presented periods.

(b) Return on Capital Invested

Table 6.16 (a) shows that, Taste Holdings return on capital invested has been declining over the presented periods, except in 2013 financial period. Moreover, Taste Holdings return on capital invested has slightly increase by 1.02% to 11.16% in 2013 compare to the previous period of 10.14%. In comparison with Taste Holdings, Table 6.16 (b) depicts that, Spur Corporation return on capital invested has been increasing as of 2011 financial period. In addition, Spur Corporation return on invested capital has slightly decline by -1.39% to 16.37% in 2011 financial period compare to the previous period of 17.76%. On the other hand, Table 6.16 (c) shows that, Famous Brand return on capital invested has been increasing over the presented periods.

(c) Current ratio

Table 6.16 (a) depicts that, Taste Holdings current ratio has been declining as of 2011 financial period, but above general acceptable norm of 1. Furthermore, Taste Holdings current ratio has slightly decrease by -0.36 to 1.89 in 2012 financial period compare to the prior period of 1.68. According Taste Holdings (2012) annual report, the firm total current assets have decline by 5.62% to R 50.00 million compare to the prior period of R52.98 million. On the other hand, Table 6.16 (b) shows that, as from 2011 financial period, Spur Corporation current ratio has been slightly declining over the presented periods, but above general acceptable norm of 1. Table 6.16 (c) present that, Famous Brand current ratio has been declining over the presented years, except in 2013 financial period, where it has slightly increase by 0.01.

(d) Debt/Equity ratio

Table 6.16 (a) shows that, Taste Holdings debt to equity ratio has been inconsistent over the presented periods. However, Taste Holdings total liabilities have climb by 8.42% to R49.06 million in 2012 compare to the previous period of R45.25 million, while its total stockholders' equity has plunge by 6.96% to R50.94 million in 2012 financial period compare the prior period of R54.75 million (Taste Holdings Ltd annual report, 2013). On the other hand, Table 6.16 (b) shows that, debt to equity ratio of Spur Corporation has been constant as of 2011 financial period. Table 6.16 (c) depicts that, Famous Brand debt to equity ratio has been declining over the presented periods, except in 2013, where it became the same as previous period.

(e) Days Sales in Inventory

According to Table 6.16 (a), there has been a decline in the number of days it takes Taste Holdings to sell its inventory. The shorter it takes Taste Holdings to sell out its inventory, the better, because it saves the firm additional cost that comes with the keeping of the inventory. On the other hand, Table 6.16 (b) shows that, Spur Corporation day's sales in inventory has been decreasing over the presented periods, except in 2013 financial period where it has increase by 3.09 days. On the other hand, Table 6.16 (c) shows that, Famous Brand day's sales in inventory has been increasing as from 2011 financial period.

(f) Share Price Performance

According to Taste Holdings (2012) annual report, the headline earnings per share has climb by 16% to 12.4 cents per share in 2012 financial period compare to the prior period of 10.7cents per share. As presented in Figure 6.16, Taste Holdings cumulative return has been on upward trend as of 31 March 2011 until it has reach its peak in January 2013, and thereafter it has starts declining. Similarly, Figure 6.16 depicts that, both Spur Corporation and Famous Brand cumulative returns have been increasing over the presented periods.

(g) Conclusion

The evidence from valuation indicates that the performance of Taste Holdings has not been over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, Taste Holdings cumulative return has experienced an upward trend pre and post migration to the JSE main board. Based on the evaluation results of two years post migration, Taste Holdings is assessed and classified as a failure post migration to the JSE main board.

Table 6.16 (a): Taste Holdings Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	8.00	**7.72**	7.94	4.89
Return on Capital Invested (%)	14.61	**14.27**	10.14	11.16
Current ratio	2.22	**2.25**	1.89	1.68
Debt/Equity ratio	0.30	**0.25**	0.32	0.23
Days Sales in Inventory	221.34	**191.43**	184.47	96.48

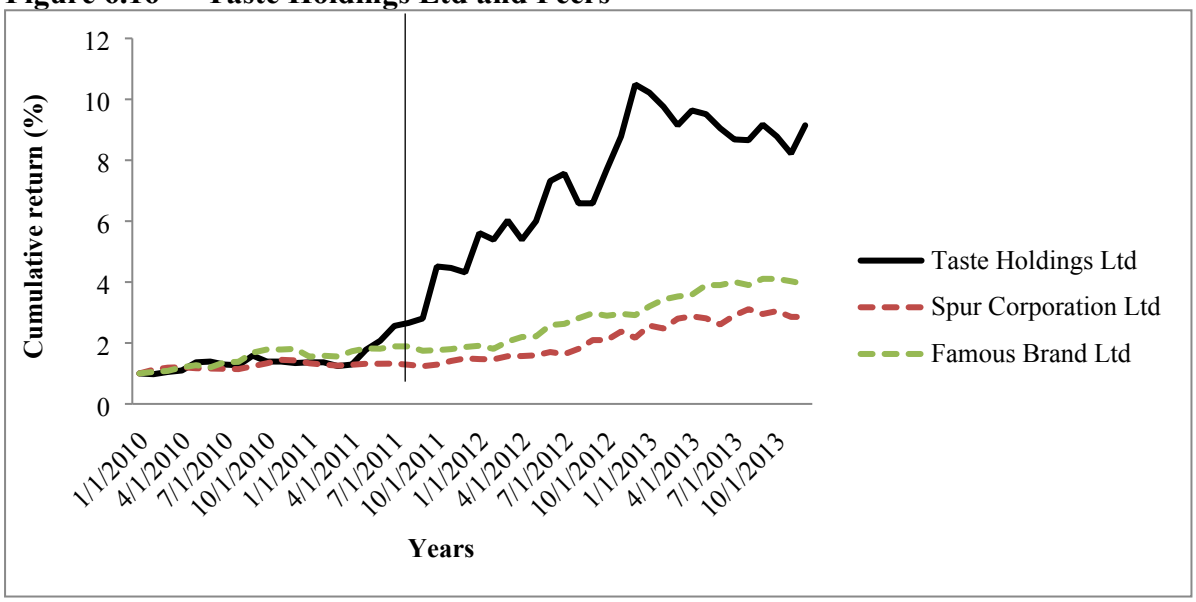
Table 6.16 (b): Spur Corporation Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	22.29	**17.55**	22.62	20.26
Return on Capital Invested (%)	17.76	**16.37**	24.97	27.22
Current ratio	2.36	**2.47**	1.90	1.88
Debt/Equity ratio	0.01	**0.02**	0.02	0.02
Days Sales in Inventory	31.40	**24.17**	21.48	24.57

Table 6.16 (c): Famous Brand Ltd

Ratio category	2010	2011	2012	2013
Net Margin (%)	11.43	**12.26**	12.38	13.07
Return on Capital Invested (%)	23.86	**27.35**	30.82	31.84
Current ratio	1.38	**1.36**	1.32	1.33
Debt/Equity ratio	0.34	**0.18**	0.07	0.07
Days Sales in Inventory	32.25	**26.69**	28.95	35.82

Figure 6.16 Taste Holdings Ltd and Peers



6.3.17 Wescoal Holdings Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2009**) and Post – Migration (**2011 & 2012)**
Announcement Date: 08-03-2010
Migration Date: 24-04-2010

(a) Net Profit Margin

According to Table 6.17 (a), Wescoal Holdings net profit margin has been declining over the presented periods, except 2012 financial period. Wescoal Holdings net profit margin has climb by 11.09% to 3.27% in 2012 financial period compare to the previous period of -7.82. Furthermore, Wescoal Holdings revenue has increase to R557.6 million in 2011 financial period compare to the prior period of R353.9 million, while its gross profit has climb with more than halve to R58.5 million in 2011 financial period compare to the previous period of R25.7 million (Wescoal Holdings annual report, 2011). In comparison with Wescoal Holdings, Table 6.17 (b) shows that, Exxaro Resources net profit margin has been increasing over the presented periods. In addition, Exxaro Resources net profit margin has increase by 23.54% to 30.36% in 2010 financial period compare to the previous period of 6.82%. On the other hand, Table 6.17 (c) depicts, MC Mining net profit margin has been increasing as of 2010 financial period. However, MC Mining net margin has sharply increase by 86.76% to -83.77% in 2011 compare to the previous period of -170.53%.

(b) Return on Capital Invested

Table 6.17 (a) shows that, Wescoal Holdings return on capital invested has been declining over the presented periods, except in 2012 financial period. Wescoal Holdings return on capital invested has sharply increase by 41.04% to 13.85% in 2012 compare to the previous period of -27.19%. In comparison with Wescoal Holdings, Table 6.17 (b) depicts that, Exxaro Resources return on capital invested has been increasing over the presented financial periods. In addition, Exxaro Resources return on invested capital has climb by 20.85% to 28.44% in 2010 financial period compare to the previous period of 7.59%. On the other hand, Table 6.17 (c) shows that, MC Mining return on capital invested has been declining over the presented periods, except

2012 financial period. As presented in Table 51, MC Mining net profit margin has increase by 12.47% to -30.64 in 2012 financial period compare to the previous period of -43.11%.

(c) Current ratio

Table 6.17 (a) depicts that, Wescoal Holdings current ratio has been inconsistent over the presented periods, but above general acceptable norm of 1. Wescoal Holdings current ratio has slightly decline by -0.60 to 1.10 in 2011 financial period compare to the prior period of 1.70. According Taste Holdings (2011) annual report, its total current liabilities have increase by 42.51% to R 40.73 million compare to the prior period of R28.58 million. On the other hand, Table 6.17 (b) shows that, Exxaro Resources current ratio has been declining over the presented periods. Similarly, Table 6.17 (c) present that, MC Mining current ratio has been declining over the presented periods. Furthermore, MC Mining current ratio has sharply decline by 9.08 to 1.36 in 2010 financial period compare to the previous period of 10.44. According MC Mining (2010) financial report, its total current liabilities have significantly climb by 529.55% to R13.85 million compare to the prior period of R 2.20 million.

(d) Debt/Equity ratio

Table 6.17 (a) shows that, Wescoal Holdings debt to equity ratio has been increasing as of 2010 financial period. Wescoal Holdings total liabilities have increase by 50.57% to R49.16 million in 2011 compare to the previous period of R 32.65 million, while its total stockholders' equity has plunge by -24.51% to R50.84 million in 2011 financial period compare the prior period of R 67.35 million (Wescoal Holdings annual report, 2011). On the other hand, Table 6.17 (b) shows that, Exxaro Resources debt to equity ratio has been declining over the presented periods, except in 2012, where it has slightly increase by 0.01. Similarly, in Table 6.17 (c), MC Mining debt to equity ratio has been declining over the presented periods, except in 2012 where it has slightly increase by 0.01.

(e) Days Sales in Inventory

According to Table 6.17 (a), as of 2011 financial period there has been a decline in the number of days it takes Wescoal Holdings to sell its inventory. The shorter it takes Taste Holdings to sell out its inventory, the better, because it saves the firm additional cost that comes with the

keeping of the inventory. Similarly, Table 6.17 (b) shows that, Exxaro Resources day's sales in inventory has been decreasing over the presented periods. On the other hand, Table 6.17 (c) shows that, MC Mining day's sales in inventory has been declining as from over the presented periods, except in 2012, where it has slightly increase by 0.68 days.

(f) Share Price Performance

According to Wescoal Holdings (2011) annual report, its headline earnings per ordinary share from continuing operations has weaken by 8.9 cents per share to 8.1 cents per share compare to the previous period of 17 cents per share. As presented in Figure 6.17, Wescoal Holdings cumulative return has been on downward trend as of January 2011, post its migration to the JSE main board. Furthermore, Wescoal Holdings cumulative return has pick an upward trend in October 2011, since then it has been fluctuating. On the other hand, Figure 6.17 depicts that, Exxaro Resources cumulative return has been increasing as of January 2009, until it has reach its peak in March 2012, and thereafter it has starts declining. In addition, Figure 6.17 present that, MC Mining cumulative return has been on upward trend as of January 2009 until it has reach its peak in March 2010, and thereafter it has starts declining.

(g) Conclusion

The results from the valuation demonstrates that the performance Wescoal Holdings has been not good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. In addition, Wescoal Holdings cumulative return has been experienced a downward trend as of February 2011, post migration to the JSE main board. Based on the evaluation results of two years post migration, Wescoal Holdings is assessed and classified as a failure post migration to the JSE main board.

Table 6.17 (a): Wescoal Holdings Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	3.24	**1.73**	-7.82	3.27
Return on Capital Invested (%)	18.68	**4.68**	-27.19	13.85
Current ratio	1.70	**1.70**	1.10	1.40
Debt/Equity ratio	0.01	**0.01**	0.02	0.03
Days Sales in Inventory	11.50	**31.30**	16.50	7.60

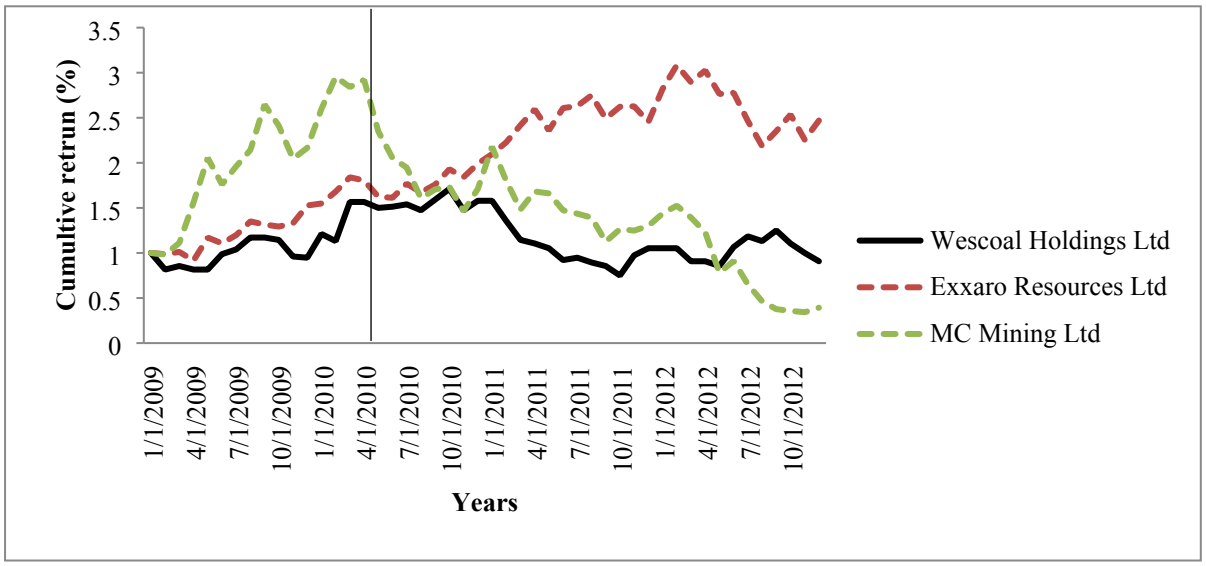
Table 6.17 (b): Exxaro Resources Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	6.82	**30.36**	35.82	79.13
Return on Capital Invested (%)	7.59	**28.44**	32.64	33.30
Current ratio	2.44	**2.31**	1.03	0.96
Debt/Equity ratio	0.34	**0.20**	0.09	0.10
Days Sales in Inventory	68.30	**66.50**	31.80	20.40

Table 6.17 (c): MC Mining Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	-40.60	**-170.53**	-83.77	-56.97
Return on Capital Invested (%)	-2.64	**-34.27**	-43.11	-30.64
Current ratio	10.44	**1.36**	0.75	0.55
Debt/Equity ratio	0.18	**0.11**	0.06	0.07
Days Sales in Inventory	1265.21	**79.35**	38.50	39.18

Figure 6.17 Wescoal Holdings Ltd and Peers



6.3.18 Finbond Group Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2013**) and Post – Migration (**2015 & 2016)**
Announcement Date: 03-03-2014
Migration Date: 24-03-2014

(a) Net Profit Margin

According to Table 6.18 (a), Finbond Group net profit margin has been declining as of 2014 financial period. Finbond Group net profit margin has decline by -2.10% to 13.53% in 2015 financial period compare to the previous period of 15.63%. Furthermore, Finbond Group Interest income has increase by 14% to R79 million in 2015 financial period compare to the prior period of R69.1 million, while profit before taxation has hike by 71% to R42.2 million in 2015 financial period compare to the previous period of R24.7 million. (Finbond Group Ltd annual report, 2015). Table 6.18 (b) shows that, Standard Bank Group net profit margin has been increasing over the presented periods, except in 2016 financial period, where it has slightly decline by 1.66%. Similarly, Table 6.18 (c) depicts that, Nedbank Group net profit margin has been increasing over the presented periods, except in 2016 financial period, where it has decrease by 3.44%.

(b) Return on Capital Invested

Table 6.18 (a) shows that, Finbond Group return on capital invested has been inconsistent over the presented periods. Finbond Group return on capital invested has climb by 4.60% to 18.89% in 2016 compare to the previous period of 14.29%. In comparison with Finbond, Table 6.18 (b) depicts that, as from 2014 financial period, Standard Bank Group return on capital invested has been increasing. In addition, Standard Bank Group return on invested capital has slightly increase by 0.23% to 1.54% in 2015 financial period compare to the previous period of 1.31%. On the other hand, Table 6.18 (c) shows that, Nedbank Group return on capital invested has been consistent over the presented periods.

(c) Current ratio

Table 6.18 (a) depicts that, Finbond Group current ratio has been increasing over the presented periods, except in 2016 financial period where it has slightly decline by -0.15. According Finbond Group (2016) annual report, its total current liabilities have increase by 20% to R 18.00 million compare to the prior period of R15.00 million. On the other hand, Table 6.18 (b) shows that, Standard Bank Group current ratio has been increasing as of 2014 financial period, over the presented periods. Similarly, Table 6.18 (c) present that, Nedbank Group current ratio has been increasing as of 2014 financial period, over the presented periods.

(d) Debt/Equity ratio

Table 6.18 (a) shows that, Finbond Group debt to equity ratio has been increasing as of 2014 financial period. Finbond Group total liabilities have climb by 6.80% to R74.32 million in 2015 compare to the previous period of R 69.59 million, while its total stockholders' equity has decrease by 15.55% to R25.68 million in 2015 financial period compare the prior period of R 30.41 million (Finbond Group Ltd annual report, 2015). On the other hand, Table 6.18 (b) present that, Standard Bank Group debt to equity ratio has been declining as of 2014 financial period. In contrast, Table 6.18 (c) depicts that, Nedbank Group debt to equity ratio has been increasing over the presented.

(e) Days Sales in Inventory

According to Table 6.18 (a), there has been a decline in the number of days it takes Finbond Group to sell its inventory. The shorter it takes Finbond Group to sell out its inventory, the better, because it saves the firm additional cost that comes with the keeping of the inventory. On the other hand, Table 6.18 (b) reveals that, Standard Bank Group day's sales in inventory has been increasing over the presented periods, except in 2016 where it has decline by 1.99 days. Similarly, Table 6.18 (c) shows that, Nedbank Group day's sales in inventory has been increasing over the presented periods, except in 2016 financial period, where it has decrease by 1.57 days.

(f) Share Price Performance

According to Finbond Group (2014) annual report, the headline earnings per share has sharply climb by 45% to 3.3 cents per share compare to the previous period of 2.3 cents per share. As presented in Figure 6.18, Finbond Group cumulative return has been on downward trend as of January 2013, before its migration to the JSE main board. Furthermore, Finbond Group cumulative return has pick an upward trend in March 2014, since then it has been stable over the years. In comparison with Finbond, Figure 6.18 depicts that, Standard Bank Group cumulative return has been declining as of September 2013, until it has pick an upward trend in April 2015, then it has continue increasing until it has reach its peak in February 2015, and thereafter it has starts declining. The cumulative return of Nedbank Group has followed as similar trend with that of Standard Bank Group, as presented in Figure 6.18.

(g) Conclusion

The outcomes from the valuation shows that the performance of Finbond Group Ltd has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. Furthermore, Finbond Group cumulative return has been experienced a downward trend as of January 2013, until it picked an upward trend in June 2015. Based on the evaluation results of two years post migration, Finbond Group is assessed and classified as a success post migration to the JSE main board.

Table 6.18 (a): Finbond Group Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	10.95	**15.63**	13.53	12.21
Return on Capital Invested (%)	11.17	**14.64**	14.29	18.89
Current ratio	0.01	**0.12**	0.30	0.15
Debt/Equity ratio	0.09	**0.02**	0.05	0.13
Days Sales in Inventory	0.00	**2.23**	1.43	0.29

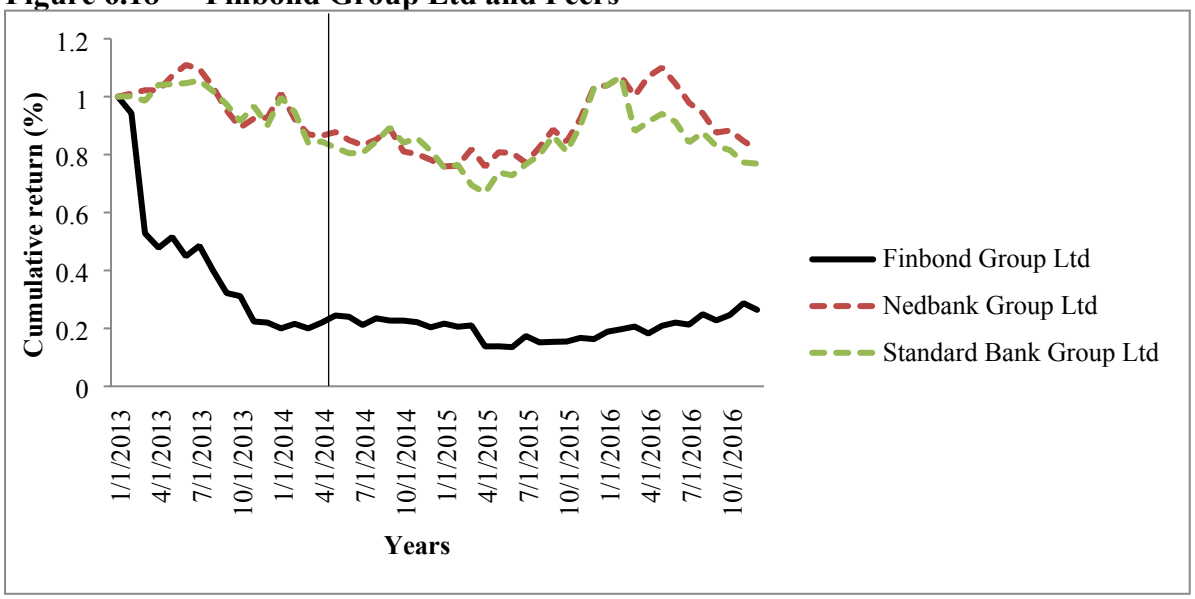
Table 6.18 (b): Standard Bank Group Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	10.22	**10.94**	15.63	13.97
Return on Capital Invested (%)	1.35	**1.28**	1.31	1.54
Current ratio	0.20	**0.04**	0.15	0.70
Debt/Equity ratio	0.46	**0.50**	0.47	0.46
Days Sales in Inventory	0.30	**3.21**	4.02	2.03

Table 6.18 (c): Nedbank Group Ltd

Ratio category	2013	2014	2015	2016
Net Margin (%)	22.54	**22.69**	25.03	21.59
Return on Capital Invested (%)	6.25	**7.96**	7.80	10.22
Current ratio	0.11	**0.08**	0.23	0.43
Debt/Equity ratio	0.55	**0.53**	0.60	0.67
Days Sales in Inventory	0.15	**2.72**	2.73	1.16

Figure 6.18 Finbond Group Ltd and Peers



6.3.19 Curro Holdings Ltd Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2011**) and Post – Migration (**2013 & 2014)**
Announcement Date: 14-05-2012
Migration Date: 03-07-2012

(a) Net Profit Margin

According to Table 6.19 (a), Curro Holdings net profit margin has been increasing over the presented periods, except 2014 financial period, where it has slightly decline by -0.13% compare to the previous period. Curro Holdings revenue has climb to R308.8 million in 2013 financial period compare to the previous period of R161.3 million, while earnings before interest, taxation, depreciation and amortisation has increase to R51.3 million in 2013 financial period compare to the prior period of R18.5 million (Curro Holdings Ltd annual report, 2013). In comparison with Curro Holdings, Table 6.19 (b) shows that, Advtech net profit margin has been inconsistent over the presented periods. On the other hand, Table 6.19 (c) depicts that, Stadio Holdings net profit margin has been increasing over the presented periods, except in 2014 financial period, where it has decline slightly by 0.15% compare to the previous period.

(b) Return on Capital Invested

Table 6.19 (a) illustrates that, Curro Holdings return on capital invested has been increasing over the presented periods, except in 2014, where it has decline slightly by -0.18% compare to the previous period. On the other hand, Table 6.19 (b) depicts that, Advtech return on capital invested has been declining over the presented periods. Similarly, Table 6.19 (c) shows that, Stadio Holdings return on invested capital has been declining over the presented periods.

(c) Current ratio

Table 6.19 (a) depicts that, as of 2012 financial period, Curro Holdings current ratio has been increasing over the presented periods. According Curro Holdings (2013) annual report, its current assets have increase by 14.95% to R 4.46 million compare to the prior period of R3.88

million, while its total liabilities have decline by 62.94% to R7.45 compare to the previous period of R20.10 million. On the other hand, Table 6.19 (b) shows that, Advtech current ratio has been declining over the presented periods, except in 2014 financial period, where it remain the same as previous period of 0.30. Table 6.19 (c) illustrates that, as of 2012 financial period the current ratio of Stadio Holdings has been increasing, over the presented periods.

(d) Debt/Equity ratio

Table 6.19 (a) shows that, Curro Holdings debt to equity ratio has been increasing as of 2012 financial period. Curro Holdings total liabilities have increase by 12.36% to R45.72 million in 2014 compare to the previous period of R40.69 million, while its total stockholders' equity has decline by 8.48% to R54.28 million in 2014 financial period compare the prior period of R59.31 million (Curro Holdings Ltd annual report, 2014). In comparison with Curro Holdings, Table 6.19 (b) illustrates that, as of 2012 financial period, Advtech debt to equity ratio has been increasing over the presented periods, while Table 6.19 (c) depicts that, Stadio Holdings debt to equity ratio has been increasing over the presented periods.

(e) Days Sales in Inventory

According to Table 6.19 (a), as of 2012 financial period, the number of days it takes Curro Holdings to sell its inventory has been increasing. However, it advisable for Curro Holdings to ensure that it sell its inventory within short period, because it saves the firm additional cost that comes with the keeping of the inventory for longer period. In comparison with Curro Holdings, Table 6.19 (b) illustrates that, Advtech day's sales in inventory has been constant as of 2012 financial, while Table 6.19 (c) reveals that, Stadio Holdings days sales in inventory has been increasing as of 2012 financial period.

(f) Share Price Performance

According to Curro Holdings (2013) annual report, the headline earnings per share has increase to 5.3 cents per share in 2013 financial period compare to the prior period loss of 1.9 cents per share. As presented in Figure 6.19, Curro Holdings cumulative return has been on upward trend

before and after its migration to the JSE main board. Similarly, Advtech cumulative return has been increasing over the presented years.

(g) Conclusion

The evidence from the valuation indicates that the performance of Curro Holdings has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. Furthermore, Curro Holdings cumulative return has been on upward trend before and after its migration to the JSE main board. Based on the evaluation results of two years post migration, Curro Holdings is assessed and classified as a success post migration to the JSE main board.

Table 6.19 (a): Curro Holdings Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	-4.45	**4.24**	5.62	5.49
Return on Capital Invested (%)	1.30	**1.51**	2.01	1.83
Current ratio	0.24	**0.19**	0.60	0.86
Debt/Equity ratio	0.33	**0.28**	0.48	0.63
Days Sales in Inventory	0	**0**	1.90	4.40

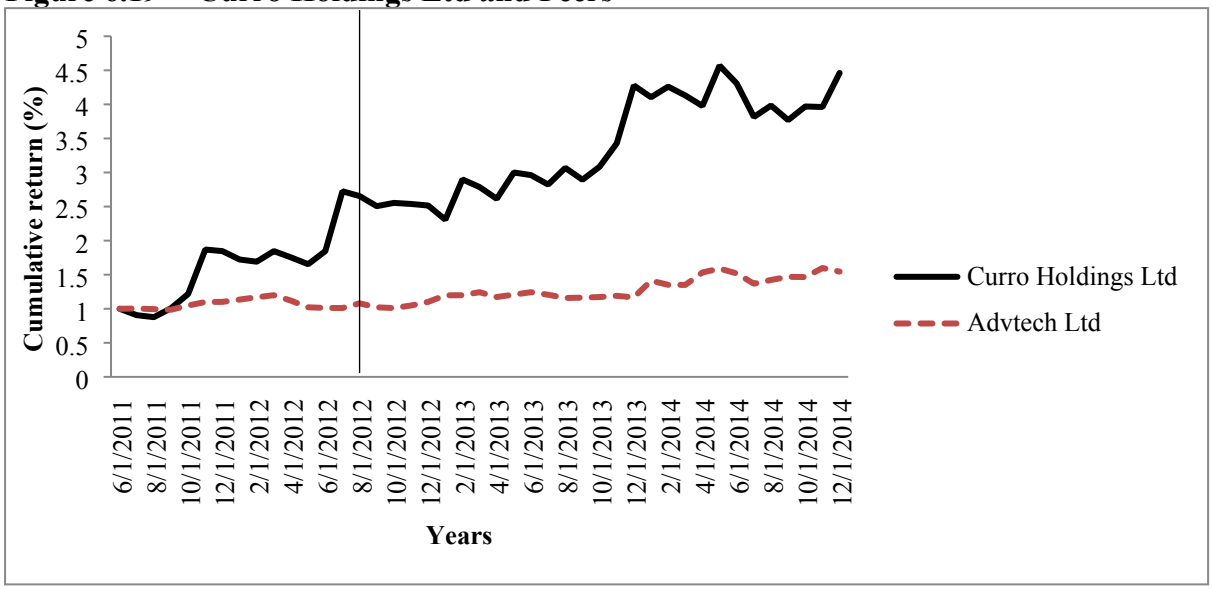
Table 6.19 (b): Advtech Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	9.73	**8.20**	8.82	8.65
Return on Capital Invested (%)	19.91	**15.81**	14.55	12.55
Current ratio	0.44	**0.38**	0.30	0.30
Debt/Equity ratio	0.33	**0.30**	0.35	0.59
Days Sales in Inventory	0.40	**0.10**	0.10	0.10

Table 6.19 (c): Stadio Holdings Ltd

Ratio category	2011	2012	2013	2014
Net Margin (%)	2.64	**6.22**	7.22	7.07
Return on Capital Invested (%)	10.61	**8.66**	8.28	7.19
Current ratio	0.34	**0.29**	0.45	0.58
Debt/Equity ratio	0.33	**0.29**	0.42	0.61
Days Sales in Inventory	0.20	**0.05**	1.00	2.25

Figure 6.19 Curro Holdings Ltd and Peers



6.3.20 Consolidated Infrastructure Group Financial Ratio Analysis Pre and Post-migration

Financial Position Pre – Migration (**2009**) and Post – Migration (**2011 & 2012)**
Announcement Date: 25-02-2009
Migration Date: 06-09-2009

(a) Net Profit Margin

According to Table 6.20 (a), Consolidated Infrastructure net profit margin has been increasing over the presented periods. Consolidated Infrastructure revenue has climb by 7.5% to R1.6 billion in 2012 financial period compare to the previous period of R1.4 billion, while gross profit has increase to R437.1 million in 2012 financial period compare to the prior period of R409.5 million (Consolidated Infrastructure Ltd annual report, 2012). In comparison with Consolidated Infrastructure, Table 6.20 (b) illustrates that, Allied Electronics Corporation net profit margin has been has been declining as of 2010 financial period. Furthermore, Table 6.20 (c) depicts that, Reunert net profit margin has been inconsistent over the presented periods.

(b) Return on Capital Invested

Table 6.20 (a) illustrates that, Consolidated Infrastructure return on capital invested has been increasing over the presented periods, except in 2012 financial period, where it has decline by 2.81% compare to the prior period. In comparison with Consolidated Infrastructure, Table 6.20 (b) depicts that, Allied Electronics Corporation return on capital invested has been declining over the presented periods. Furthermore, Table 6.20 (c) shows that, Reunert return on invested capital has been declining as of 2010 financial period.

(c) Current ratio

Table 6.20 (a) shows that, Consolidated Infrastructure current ratio has been increasing over the presented periods and above the general acceptable norm of 1. According Consolidated Infrastructure (2011) annual report, its total current assets have increase by 7.93% to R49.70 million compare to the prior period of R 46.05 million, while its total liabilities have decline by 9.14% to R33.61 compare to the previous period of R36.99 million. In comparison with Consolidated Infrastructure, Table 6.20 (b) shows that, Allied Electronics Corporation current

ratio has been inconsistent over the presented periods, similarly Table 6.20 (c) illustrates that, Reunert current ratio has been inconsistent over the presented periods.

(d) Debt/Equity ratio

Table 6.20 (a) shows that, Consolidated Infrastructure debt to equity ratio has been inconsistent over the present periods. Consolidated Infrastructure total liabilities have decline by 2.38% to R41.76 million in 2011 compare to the previous period of R42.78 million, while its total stockholders' equity has climb by 1.78% to R58.24 million in 2011 financial period compare the prior period of R57.22 million (Consolidated Infrastructure Ltd annual report, 2011). In comparison with Consolidated Infrastructure, Table 6.20 (b) illustrates that, Allied Electronics Corporation debt to equity ratio has been inconsistent over the presented periods, while Table 6.20 (c) depicts that, Reunert debt to equity ratio has been declining over the presented periods.

(e) Days Sales in Inventory

According to Table 6.20 (a), the number of days it takes to Consolidated Infrastructure sell its inventory has been declining, except in 2012 financial period, where it has increase by 4.22 days compare to the previous period. However, it advisable for Consolidated Infrastructure to keep its days sales in inventory low, because it saves the firm additional cost that comes with the keeping of the inventory for longer period. In comparison with Consolidated Infrastructure, Table 6.20 (b) illustrates that, Allied Electronics Corporation day's sales in inventory has been inconsistent over the presented periods, similarly Table 6.20 (c) shows that, Reunert days sales in inventory has been inconsistent over the presented period.

(f) Share Price Performance

According to Consolidated Infrastructure (2012) annual report, its headline earnings per share has climb by 15.5% to 116.1 cents per share in 2012 financial period compare to the prior period of 100.5 cents per share. As presented in Figure 6.20, Consolidated Infrastructure cumulative return has been on upward trend as of April 2009, before its migration to the JSE main board. In comparison with Consolidated Infrastructure, Figure 6.20 depicts that, Allied Electronics Corporation cumulative return has been stable as of August 2009 until May 2011,

and thereafter it has starts declining. Furthermore, Reunert cumulative return has been increasing as from March 2009.

(g) Conclusion

The results from the valuation demonstrates that the performance of Consolidated Infrastructure has been good over the presented years, particularly with regard to critical ratios such as profitability, efficiency and liquidity ratio compare to its peers. Furthermore, Consolidated Infrastructure cumulative return has been on upward trend before its migration to the JSE main board. Based on the evaluation results of two years post migration, Consolidated Infrastructure is assessed and classified as a success post migration to the JSE main board.

Table 6.20 (a): Consolidated Infrastructure Group Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	5.02	**6.23**	7.68	8.81
Return on Capital Invested (%)	8.71	**9.96**	12.69	9.88
Current ratio	1.16	**1.25**	1.48	2.64
Debt/Equity ratio	0.02	**0.05**	0.03	0.29
Days Sales in Inventory	27.75	**15.97**	13.14	17.36

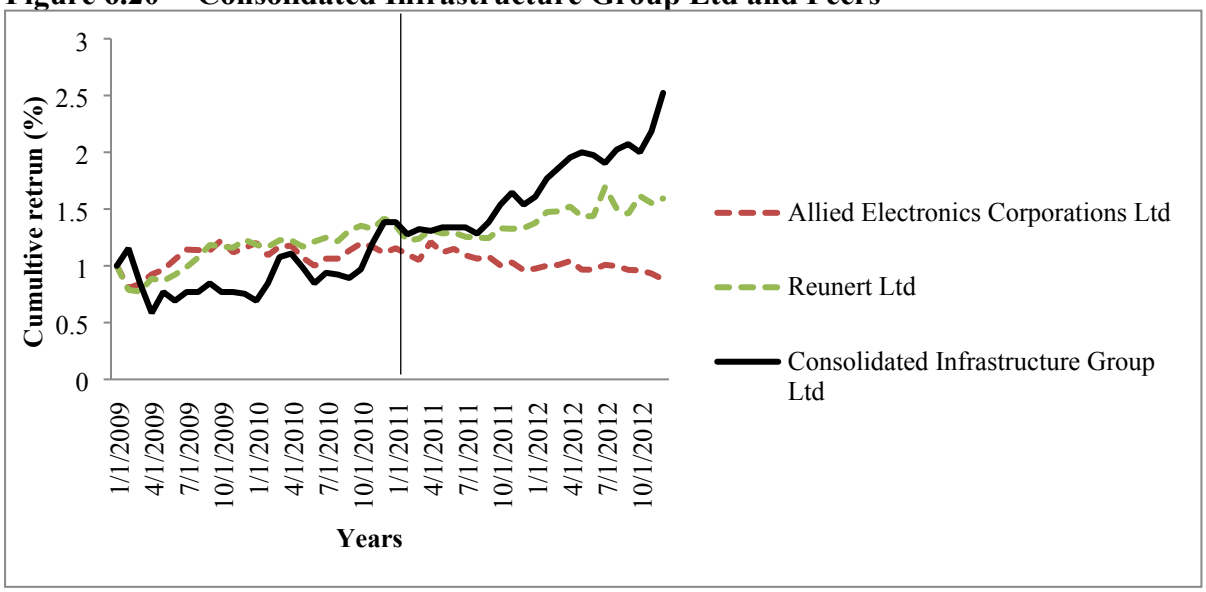
Table 6.20 (b): Allied Electronics Corporation Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	3.37	**2.43**	2.38	0.74
Return on Capital Invested (%)	16.04	**9.71**	9.42	3.53
Current ratio	1.41	**1.29**	1.39	1.37
Debt/Equity ratio	0.31	**0.13**	0.15	0.14
Days Sales in Inventory	43.71	**47.47**	46.50	50.26

Table 6.20 (c): Reunert Ltd

Ratio category	2009	2010	2011	2012
Net Margin (%)	11.34	**8.42**	12.24	9.15
Return on Capital Invested (%)	19.11	**15.22**	28.67	24.40
Current ratio	1.71	**2.23**	1.79	2.07
Debt/Equity ratio	0.18	**0.16**	0.01	0.01
Days Sales in Inventory	26.60	**29.20**	29.00	34.30

Figure 6.20 Consolidated Infrastructure Group Ltd and Peers



6.4 Conclusion

The main purpose of this chapter is to evaluate the performance of the 20 sample firms one year prior and two years post migration to the JSE main board; and subsequesntly classified them either as a success or a failure after their migration. The findings reveals that, out of 20 sample firms that have undergone the evaluation only 13 firms have been classified as successful, while the rest are classified as unsuccessuful after their migration. The findings further show that, the majority of the sample firms that are classified as unsuccessful after their migration to the JSE main board, amongst other reasons tend to report negative corporate news or market perceptions. Consequently, such classification is reflected in their poor share price performance one to two years post migration to the JSE main board.

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7

Multivariate Discriminant Analysis Results

7.1 Introduction

In Chapter 6, out of 20 sample firms only 13 firms were categorised as successful while 7 firms were categorised as unsuccessful post migration from the AltX to the JSE main board. In the context of this study when the AltX firm is perceived to be unsuccessful, it means that the firm continues to underperform compare to its peers. The objective of this chapter is to identify attributes that best distinguish the successful firms from the unsuccessful firms, after their migration from the AltX to the JSE main board.

The stocks listed on the AltX are start-ups and small, medium and micro enterprises (SMMEs), and hence are prone to financial distress by nature. Thus, this research employs factors from bankruptcy prediction model of Altman (1968) in the Multivariate Discriminant Analysis (MDA) to predict a successful migration or failure. Originally introduced by Altman (1968), MDA combines the information from several financial ratios in a single model for bankruptcy predictions. This is also known as Altman (1968) Z-score model. The empirical evidence from the studies conducted by Altman (1968), Aragon (2009), Sajter (2008), Lugovskaja (2009), Dinca and Bociu (2015) show that, MDA is not only capable of predicting bankruptcy of sample firms but also to identify the important variables that lead to it.

7.2 Methodology

According to Yakubu, Dinye, Buor and Iddrisu (2017), MDA is essentially employed to predict a discrete result such as group membership (dependent variable) based upon a set of predictors (independent variables). For this research, MDA involves deriving a linear combination of two or more financial ratios that will best discriminate between the sample firms that are successful (Group 1) and those that are unsuccessful (Group 0) post migration from the AltX to the JSE main board. These financial ratios include current ratio, net profit margin, return on capital invested, debt-to-equity ratio and days sales in inventory. This linear combination is employed to construct an indicator, called Z-score that estimate an approximation of performance position for a given sample firm when compared to its peers as shown in Equation 7.1. The dependent variable (Group) takes on the value of 1 or 0. Firms that are classified as successful after migration in Chapter 6 take on a value of 1, while the unsuccessful ones take on a value of 0. The current ratio, profit margin, debt-to-equity ratio, return on invested capital, and day's sales in in inventory of the sample firms are employed as the independent variables in MDA.

$$Z = \alpha + v_1X_1 + v_2X_2 + v_3X_3 + v_4X_4 + v_5X_5 \qquad 7.1$$

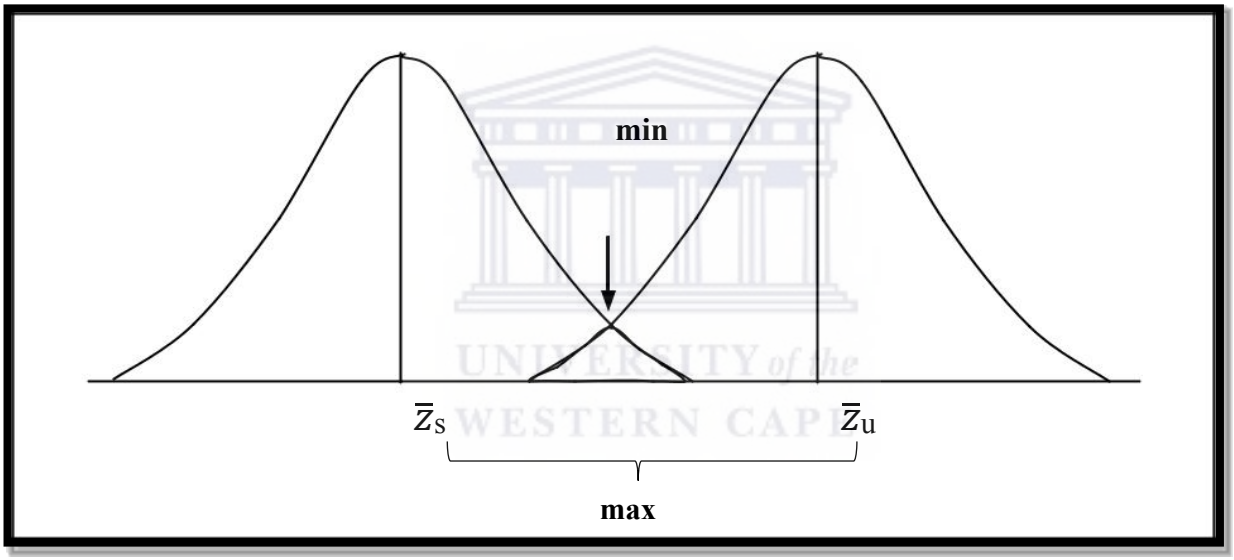
where,

Z is the discriminant score;
α is the constant;
v_j is the coefficient of the independent variable, where j = 1, 2, 3, 4, 5;
X_1 is the net profit margin;
X_2 is the return on capital invested;
X_3 is the current ratio;
X_4 is the debt to equity ratio; and
X_5 is the day's sales in inventory.

The estimated scoring function that discriminates between successful and unsuccessful firms based on financial ratios is computed to ensure that the score distributions of these two groups (that is Group 0 and Group 1) are independent from each other. The desired discriminatory

outcome between the successful firms and unsuccessful firms is presented in Figure 7.1, where the estimated score function will maximise the distance between the average successful firms and average unsuccessful firms (max $\overline{Z}_S - \overline{Z}_U$), while at the same time minimises the standard deviation of scores in each group (min $\sigma_S - \sigma_U$). The average scores of successful and unsuccessful firms are $\overline{Z}_S$ and $\overline{Z}_U$ respectively. On the other hand, σ_S and σ_U are the standard deviations of the successful and unsuccessful firms' scores. As exhibited in Figure 7.1, the overlapping area between the two distributions is minimised in MDA while the distance between the means of the two groups is maximised. This is necessary to deliver the lowest degree of ambiguity in the classification of sample firms.

Figure 7.1 Frequency distribution of scores on successful and unsuccessful firms



Source: Stancu and Stancu (2014)

In the situation whereby the sample firm's Z-score is higher than that of the estimated function score, the firm is classified as successful post its migration to the JSE main board in MDA. On the other hand, when the sample firm's Z-score is less than that of the estimated function score, the firm is classified as unsuccessful post its migration to the JSE main board in MDA. Subsequently, the classification estimated in MDA is compared to the actual coding of success or failure conducted in Chapter 6. The main objective of this exercise is to determine the appropriateness of applying the Altman (1968) Z-score model to predict a successful migration or failure for AltX firms. If the model's predictive power is statistically sound, the next step is to identify the most important financial ratios that determine the success or failure of AltX

firms post migration to the JSE main board.

In this study, the ability of the Altman (1968) Z-score model to distinguish between successful and unsuccessful AltX firms post migration to the JSE main board will be examined through various statistical tests such as Box's M, eigenvalues/canonical correlation and Wilks' lambda. The Box's M tests equality of covariance across the groups. Eigenvalues measure the discriminatory power of MDA. The larger the eigenvalue, the greater the discriminatory power of the model. Similarly, the canonical correlation measures the amount of variation in the dependent variable (groups) that can be explained by the variation in the independent variables (financial ratios). The larger the amount of variation in the dependent variable that is explained by the variation in the independent variables, the greater the discriminatory power of model. The Wilks' lambda depicts the model's ability to separate the sample firms in different groups. The closer the value of the Wilks' lambda to zero, the greater is the discriminatory power of the model.

If the model is appropriate in predicting successful firms from unsuccessful firms after migration to the JSE main board, the model is capable of identifying the most important financial ratios that determine the AltX firms success or failure post migration. This study will start by examining the statistical discrepancies of mean and standard deviation of each financial ratio in two groups respectively. Once the coefficients of the financial ratios are estimated in MDA, the statistical significance and the direction of the financial ratios can be established.

7.3 Empirical Results and Discussion

7.3.1 Descriptive Statistics

Table 7.1 represents the two groups mean and standard deviation of five financial ratios. The employed five financial ratios are obtained from the latest financial statements of the sample firms before migration to the JSE main board. MDA results as displayed in Table 7.1 shows that only 7 out of the 20 sample firms are classified as unsuccessful while 13 firms are classified as successful as per analysis in Chapter 6.

In Table 7.1, one can observe that the means as well standard deviations of the five financial ratios in Group 0 are higher compared to the ones in Group 1 with the exception of net profit margin. The average net profit margin for the successful group (23.411%) is more than double compared to the unsuccessful group (10.980%). The net profit margin provides an indication of the short-term profitability of the sample firms. This means that the successful firms are able to convert a large percentage of sales into profits compared to the unsuccessful firms on average. The majority of AltX listed firms are SMMEs and start-ups businesses that have potential to increase in sales and profits particularly when there is a huge market for their products. However, pressure intensify as new competitors enter the market. Although the successful firms have higher net profit margins on average, their return on capital invested (13.441%) is lower compared to the unsuccessful firms (18.803%). This could be an indication that the successful firms have invested more on fixed assets compared to the unsuccessful firms as investments in fixed assets are critical to the long-term competitiveness of the firm.

With regard to short-term liquidity as represented by current ratio in Table 7.1, it is observed that the average current ratio for the unsuccessful firms (2.693%) is slightly higher than that of the successful firms (1.795%). The observation of the day's sales in inventory reveals that it takes longer to sell inventories for the unsuccessful firms compare to the successful firms, which could partially explained why the unsuccessful group appears to be more liquid compared to the successful group in terms of their respective current ratio averages. With regard to financial leverage, the averages of debt-to-equity ratio for the two groups are very similar. This suggests that financial leverage may not be a good predictor for a successful migration or failure in this research.

Table 7.1 Group Statistics

Table 7.1 presents statistical results on mean and standard deviation of each financial ratio per group. Group 0 represents all the unsuccessful firms after migration to the JSE main board, while Group 1 represents all the sample firms that are successful after migration to the JSE main board. The financial ratio employed as independent variables in MDA in this research are presumed to have an effect on predicting the sample share's membership in Group 0 and Group 1. The mean is the average of each financial ratio per group, while the standard deviation is the variability of achieving each financial ratio mean.

Group		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
0	Net Profit Margin	10.980	6.533	7	7
	Return On Capital Invested	18.803	6.468	7	7
	Current Ratio	2.693	1.904	7	7
	Debt To Equity Ratio	0.2214	0.127	7	7
	Days Sales In Inventory	102.853	167.934	7	7
1	Net Profit Margin	23.411	39.493	13	13
	Return On Capital Invested	13.441	3.169	13	13
	Current Ratio	1.795	1.375	13	13
	Debt To Equity Ratio	0.2169	0.1647	13	13
	Days Sales In Inventory	84.232	140.935	13	13
Total	Net Profit Margin	19.060	32.180	20	20
	Return On Capital Invested	15.318	5.142	20	20
	Current Ratio	2.110	1.591	20	20
	Debt To Equity Ratio	0.2185	0.1491	20	20
	Days Sales In Inventory	90.750	146.744	20	20

Table 7.2 presents the results for the test of equality of group means for each financial ratio employed in MDA. The significance of each financial ratio's contribution in discriminating between the successful and unsuccessful is showed by the Wilks' lambda and the assumption of equal means among the groups is tested using the associated F-statistics as reflected in each financial ratio's p-value. Net profit margin, current ratio and return on capital invested are significant at a 5% level, while debt-to-equity ratio and day's sales in inventory are statistically insignificant. This indicates that the net profit margin, current ratio and return on capital invested are the most important predictors in MDA, while the debt-to-equity ratio and day's sales in inventory are the least important predictor variables of the function. Overall, Table 7.2 provides a strong statistical evidence on each financial ratio's contribution in MDA,

highlighting net profit margin, current ratio and return on capital invested as most important independent variables.

Table 7.2 Tests of Equality of Group Means

Table 7.2 represents the results for tests of equality of group means for each financial ratio employed in MDA. The assumption of equal means among the groups is tested using the associated F-statistic and p-values of the respective financial ratios.

	Wilks' Lambda	F	df1	df2	Sig.
Net Profit Margin	0.964	0.667	1	18	0.042
Return On Capital Invested	0.740	6.339	1	18	0.022
Current Ratio	0.924	1.485	1	18	0.024
Debt To Equity Ratio	1.000	0.004	1	18	0.951
Days Sales In Inventory	0.996	0.070	1	18	0.795

The pooled within-groups correlation matrices are presented in Table 7.3. Each correlation coefficient is an estimate of the strength between the corresponding pair of variables within the groups. When the selected predictors are significantly correlated with each other, they might not be able to discriminate the groups very well (Bian, 2012). Table 7.3 illustrates that all the financial ratios are positive correlated to each other. It is also observed that there is a high positive correlation between return on invested capital and current ratio, while net profit margin and return on capital invested have recorded the lowest positive correlation.

As demonstrated in Table 7.1 the successful firms are more profitable in the short-term as reflected in the higher average net profit margin and tend to invest more on fixed assets as reflected on the lower return on invested capital compared to the unsuccessful firms. This results in the low positive correlation (0.560) between the net profit margin and return on capital invested.

Table 7.3 Pooled Within-Groups Matrices

Table 7.3 represents pooled within-groups matrices. The within-groups correlation matrix indicates the relationships between the predictor variables (Flannelly & Jankowski, 2014). The strength of the relationship between two variables is determined through correlation value (Bian, 2012). This correlation value is between -1 and +1 and it also known as correlation coefficient. When the correlation coefficient is positive it means that there is a positive relationship between the two variables. On the other hand, a negative correlation coefficient indicates a negative relationship between the two variables (Mukaka, 2012). In addition, the correlation coefficient of 0 shows that there is no existing relationship between the two variables.

Correlation	Net Profit Margin	Return On Capital Invested	Current Ratio	Debt To Equity Ratio	Days Sales In Inventory
Net Profit Margin	1.000				
Return On Capital Invested	0.560	1.000			
Current Ratio	0.628	0.915	1.000		
Debt To Equity Ratio	0.728	0.809	0.713	1.000	
Days Sales In Inventory	0.814	0.846	0.904	0.817	1.000

7.3.2 Box's Test of Equality of Covariance Matrices

The test of homogeneity of covariance matrices is presented in Table 7.4. One of the most important assumptions of MDA is homogeneity of covariance matrices of the dependent variables. This assumption is tested through the Box's M test, which is also significant in attaining the assumption of multivariate normality. The Box's M test statistic presented in Table 7.4 is transformed to an F-statistic with df1 and df2 degrees of freedom and its significant p-value of 0.066 confirms that the two groups have met the assumption of homogeneity of covariance matrices, as the selected criterion p-value of 0.05 is less than p-value of 0.066. In order for homogeneity of covariance matrices assumption to hold, the log determinants equality should exists between the two groups (Vallejo and Ato, 2012).

The log determinants is a good measure of the variability among the groups. Bin (2012) mentioned that large differences in log determinants indicate that the groups have different covariance matrices. The log determinants (of 3.194 and 4.178) in Table 7.5 suggest a similarity between the covariance matrixes of the sample firms that belong to Group 0 and that of the sample firms that belong to Group 1.

Table 7.4 Box's M Test Results

Table 7.4 represents the statistical results on Box's M test. The Box's M tests the assumption of equal covariance across the groups using p-value = 0.05 as a criterion (Bian, 2012). If the Box's M test has a lager p-value compared to that of a chosen criterion of p-value = 0.05, it means the assumption of equal variances across the groups has been achieved. On the other hand, the Box's M test results has a smaller p-value compared to a chosen criterion of p-value = 0.05, it means the assumption of equal variances across the groups has been violated.

Box's M		140.887
F	**Approx.**	5.912
	df1	15
	df2	604.127
	Sig.	0.066

Table 7.5 Log Determinants

Table 7.5 represents the log determinants of the two groups. The increase among log determinant in the Table 7.5, will lead to more differences among the group's covariance matrix (Wu, 2010). The rank column exhibits the number of predictor variables used.

Group	Rank	Log Determinant
0	5	3.194
1	5	4.178
Pooled within-groups	5	10.612

7.3.3 Summary of Canonical Discriminant Functions

The test of canonical correlation between the financial ratios (net profit margin, current ratio, debt-to-equity ratio, return on capital invested, and day's sales in inventory) and groups (Group 0 and Group 1) is highlighted in Table 7.6. The canonical correlation measures the correlation between the discriminant function and independent variable (groups). The square of canonical correlation coefficient is equal to the percentage of variance explained in the dependent variable. Therefore, a square of canonical correlation of 0.781 as shown in Table 7.6 suggests that the model explains 61% of the variation in the grouping variable.

Table 7.6 Eigenvalues

Table 7.6 represents the discriminant function eigenvalue. The eigenvalue is interrelated to the canonical correlation and it displays the function's discriminatory power (Bian, 2012). The magnitude of the eigenvalue is an indication of the functions' discriminating abilities. On the other hand, the canonical correlation represents the association between groups and discriminant function.

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1.565[a]	100.0	100.0	0.781

Table 7.7 presents the importance of the estimated discriminant function. The Wilks' lambda estimated in Table 7.7 shows the function's ability to separates the sample firms into Group 0 and Group 1. The closer the Wilks' lambda value to zero, the greater the discriminatory ability of the function. Table 7.7 depicts that the function is significant at 5% level of significance (p-value = 0.012) and provides 39% as the amount of total variability that is unexplained by the discriminant function.

Table 7.7 Wilks' Lambda

The Wilk's lambda is often employed in the multivariate analysis of variance as a measure of the class centre differences as well as of the amount of variance (Kanyama, 2011). In essence, the Wilks' lambda describes the importance of the discriminant function (Bian, 2012). It is the product of the values of (1-canonical correlation^2). The canonical correlation that is represented in Table 7.6 is 0.781, therefore the Wilks' lambda testing canonical correlation is (1- 0.781^2) = 0.390 as presented in Table 7.7.

Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.
1	0.390	14.598	5	0.012

Table 7.8 shows the significance of each financial ratio to the function like the regression coefficients does in multiple linear regression and the interpretation of the discriminant coefficients or weights is similar to that of multiple regression. Standardisation of the discriminant function coefficients allows the comparison of variables that are measured on different scales (Bian, 2012).The sign indicates the direction of the relationship. As depicted in Table 7.8, net profit margin is the strongest predictor variable as it constitutes 0.351, followed by the absolute value of return on capital invested (-2.985), current ratio (-1.422), and debt-to-equity ratio (-1.319), while the absolute value of the day's sales in inventory (-0.399) is the least important predictor variable. Overall, these four financial ratios (net profit margin,

current ratio, return on capital invested and debt-to-equity ratio) with large absolute values (coefficients) stand out as the strongest in predicting the allocation of sample firms in Group 0 and Group 1.

Table 7.8 Standardised Canonical Discriminant Function Coefficients

The standardised discriminant function shows how significant is the independent variables in predicting the dependent (Poulsen and French, 2004). Moreover, the standardised discriminant function coefficients allows the comparison of variables that are measured on different scales (Bian, 2012). The larger the absolute value of the coefficient of a particular financial ratio, the greater discriminating ability of that particular financial ratio.

	Function
	1
Net Profit Margin	0.351
Return On Capital Invested	-2.985
Current Ratio	-1.422
Debt To Equity Ratio	-1.319
Days Sales In Inventory	-0.399

The actual prediction equation that is employed to classify sample firms into two groups is constructed by using the unstandardised function coefficients presented in Table 7.9 and Equation 7.2. On the other hand, the unstandardised coefficients cannot be employed to distinguish which variables possess a greatest discriminatory power between the groups, because each variable possess a different scale (Bian, 2012).

D = -6.238 + 0.011*net profit margin -0.905*current ratio -0.657*return on invested capital -0.003*days sales inventory -8.616*debt-to-equity ratio 7.2.

Table 7.9 Unstandardised Canonical Discriminant Function Coefficients

Table 7.9 represents the unstandardised coefficients that are computed using the raw scores for each financial ratio. The unstandardised coefficients are often used when the researcher undertakes to cross-validates the findings of the MDA (Bian, 2012).

	Function
	1
Net Profit Margin	0.011
Return On Capital Invested	-0.657
Current Ratio	-0.905
Debt To Equity Ratio	-8.616
Days Sales In Inventory	-0.003
(Constant)	-6.238

Table 7.10 illustrates group centroids. The centroids represent each group mean discriminant scores, which are then used as a cut-off point for classifying cases (Yakubu *et al.*, 2017). The centroid of sample firms that are categorised as Group 0 is 1.617, whereas the centroid of the sample firms that are categorised as Group 1 is -0.871.

Table 7.10 Functions at Group Centroids

The group centroids presented in Table 7.10 represents each group mean discriminant score. The closer a score is to a particular group centroid, the more likely it is to be assigned to that group (Tinsley and Brown, 2000). Therefore, the absolute group centroids shows the extent to which groups are differentiated on each function, while the sign of the centroid shows the course of the differentiation.

	Function
Group	**1**
0	1.617
1	-0.871

7.3.4 Classification Statistics

Table 7.11 represents classification processing summary of the discriminant function. The cases, which were successfully classified by the function, are referred to as processed cases. Furthermore, Table 7.11 highlights the details that might have led to the exclusion of the sample firm by the function's processes as: (1) missing or out of range group codes; and (2)

at least one missing discriminating variable. Overall, Table 7.11 shows that all of the 20 sample firms in the dataset were successfully processed by the function.

Table 7.11 Classification Processing Summary

Table 7.11 outlines the processed and excluded cases by the function. Table 7.11 does not only outlines the included and processed cases by the function but also give explanation as to why the function might have not included a sample firm in the classification process.

Processed		20
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	0
Used in Output		20

The prior probabilities for groups are presented in Table 7.12. According to Wu (2010), prior probabilities are the likelihood of being classified to a particular group before the interval variables are known and are generally considered to be subjective probability estimates. In general, the discriminant function analysis programs (SPSS), has the default option, which set all prior probabilities membership as equally likely between the groups (Yakubu et al., 2017). Hence, it is shown in Table 7.12 that, both Group 0 and Group 1 have equal probabilities of 50% each.

Table 7.12 Prior Probabilities for Groups

Table 7.12 represents prior probabilities for Group 0 and Group 1. Probability that belong to Group 0 are denoted by Prior (0) and those belong to Group 1 are denoted by Prior (1). When the function determines the coefficients in order to preclassify the cases to groups, a serious assumption is made that the cases are equally likely to belong to any of the groups (Yakubu et al., 2017). This assumption of equal probability of cases is being set as default in the function in SPSS. The weighted values are normally used in the calculation of centroid value (Bian, 2012).

		Cases Used in Analysis	
Group	**Prior**	**Unweighted**	**Weighted**
0	0.500	7	7.000
1	0.500	13	13.000
Total	1.000	20	20.000

Table 7.13 displays the overall performance of the discriminant function. The classification

table reflects the groups of the function on its rows, while the predicted group membership is reflected on its columns. Table 7.13 shows that 5 (71.4%) of the 7 original cases in Group 0 are correctly classified as Group 0 by the discriminant function, while (100%) of the 13 original cases in Group 1 are perfectly categorised as Group 1 by the function. Overall, 90% of the original cases are perfectly categorised by the function, while 85% of the cross-validated cases are perfectly categorised. This indicates that the discriminant function is a useful model in predicting between the sample firms that are likely to be successful and the ones that are unlikely to be successful post their migration from the AltX to the JSE main board.

Table 7.13 Classification Results

Table 7.13 represents classification of results. The discriminant function classifies the original cases in the sample and subsequently validates the accuracy of these classifications. The predicted group membership in Table 7.13 represents the predicted frequencies of groups from the analysis (Wu, 2010). Column 0 and column 1 indicate the number of observations that have been correctly and incorrectly classified. The frequency of each group in the sample data is reflected in the Original. The count reflects the number of sample firms that belongs into the given group and the percentages represents the percentage of the sample firms in a given group. Cross-validation determines the credibility of the results of a discriminant function by ensuring their relevance to other samples (Bian, 2012).

			Predicted Group Membership		
		Group	0	1	Total
Original	**Count**	**0**	5	2	7
		1	0	13	13
	%	**0**	71.4	28.6	100.0
		1	0.0	100.0	100.0
Cross-validated	**Count**	**0**	4	3	7
		1	0	13	13
	%	**0**	57.1	42.9	100.0
		1	0	100.0	100.0

a. 90, 0% of original grouped cases correctly classified.

b. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

c. 85, 0% of cross-validated grouped cases correctly classified.

The distributions of the discriminant function scores of Group 0 and Group 1 are displayed in Chart (a) and Chart (b) of Figure 7.2 respectively. It is apparent from Chart (a) and Chart (b) that the discriminant function separates the two groups well as the two distributions are barely

overlapped. The y-axes represents the frequency of scores of the function, while the x-axes represents the variation of the scores. Group 0 has the mean of 1.62 compare to -0.87 of Group 1, and a standard deviation of 1.55 compare to 0.55 of Group 1. As depicted in Figure 7.2 the means, standard deviations, and minimal overlap of the two distributions indicate a substantial discrimination between Group 0 and Group1 by the discrimination function. This confirms that the function discriminates the groups very well, as the previous tables have also indicated.

Figure 7.2 Separate-Group Graphs

Figure 7.2 represents separate-groups graphs. Chart (a) and Chart (b) demonstrate the shape, centre, and spread of the distribution for Group 0 and Group 1 respectively. The mean is the average of each predictor variable per group, while the standard deviation is the variability of achieving each predictor variable mean (Bian, 2012).

Chart (a) Canonical Discriminant Function 1 – Group 0

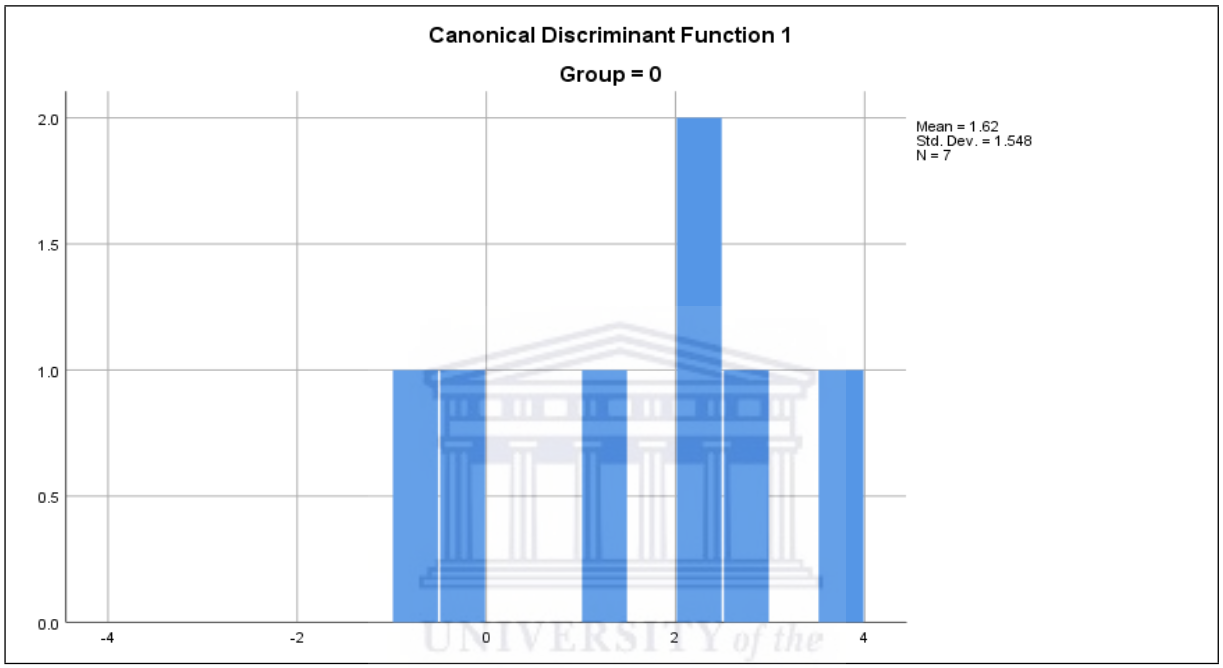
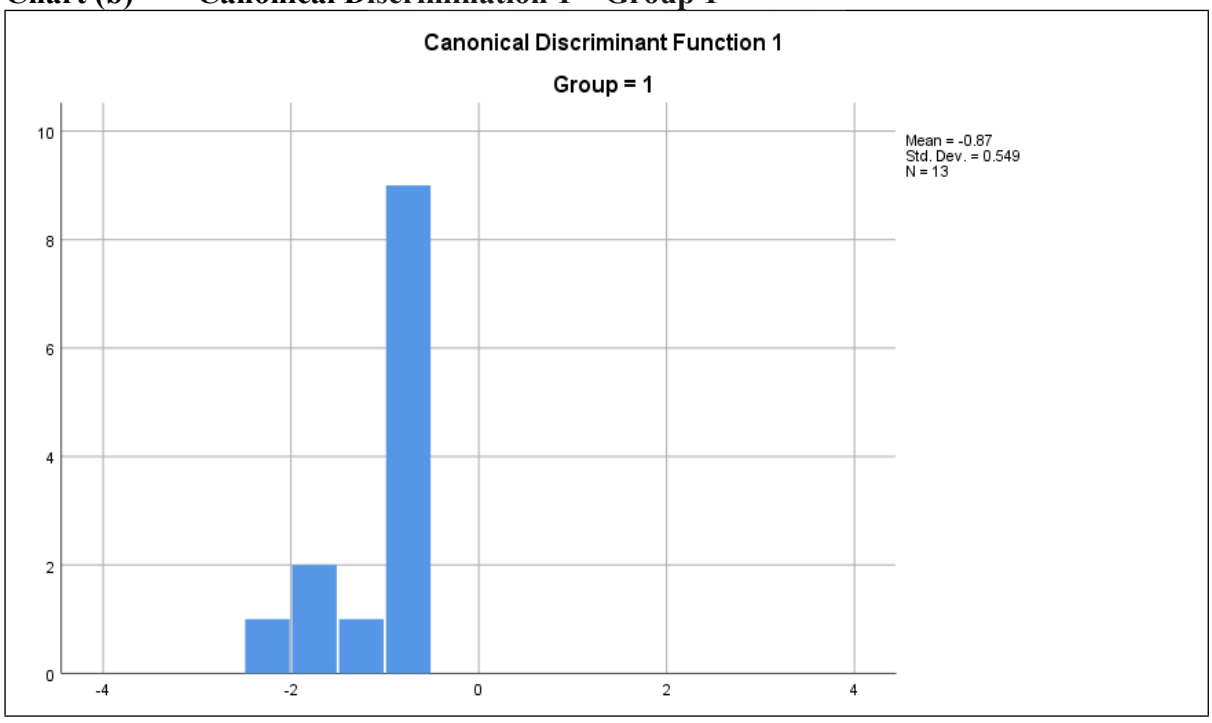


Chart (b) Canonical Discrimination 1 – Group 1



7.4 Conclusion

The aim of this chapter is to conduct a two-group MDA to identify key financial ratios that distinguish between the sample firms that are successful and those that are unsuccessful within two years after they have migrated from the AltX to the JSE main board. The analysis is conducted on a sample of 20 AltX firms over the period from 1 January 2004 to 31 December 2015. Using the same set of financial ratios that used in bankruptcy prediction model as independent variables, the discrimination function was significant at the 5% level of significance. Overall, the model is able to classify 90% of the original cases and 85% of the cross-validated cases perfectly. The model identifies net profit margin (short-term profitability), current ratio (liquidity) and return on capital invested as the most important financial ratios in distinguishing the successful firms from unsuccessful firms post migration from the AltX to the JSE main board.

8

Conclusion

8.1 General Research Summary

The purpose of the study is to investigate the role and the functions of the Alternative Exchange (AltX) and its contribution to the development of the small and medium-sized enterprises (SMMEs) in South Africa. The sample consists of 20 firms listed on the AltX between January 2004 and December 2015. The study commences by discussing the most relevant theories underlying the development of the research problem statements, hypothesis and objectives (discussed in Chapter 1 and Chapter 2). According to the efficient market hypothesis (EMH), a market can only be regarded as efficient when all the information available is being reflected on the stock prices. Therefore, the EMH implies that it is impossible for investor to outperform the market consistently on a risk-adjusted basis since market prices should only react to new information. The EMH is linked with the notion of random walk hypothesis (RWH), which states that the movements of asset prices in the market are random and unpredictable. Other theories underpinning this research are the modern portfolio theory (MPT), the capital asset pricing model (CAPM), the arbitrage pricing theory (APT) and the Behavioural Finance. The CAPM and the APT have become two prominent models that have tried to systematically measure the prospect for assets to generate a return or a loss. Both of these models are based on the EMH, and are part of the modern portfolio theory. On the other hand, behavioural finance attempts to explicate the influence of human psychological biases and their actions when making investment decisions.

Chapter 3 discusses the pertinent literature that relates to this research. Chapter 3 commences by discussing the historical background of the JSE and the listing requirements of its different boards. The chapter, further details the roles and functions of the AltX in the economy of South Africa, the global view of the SMME Exchanges and the challenges of the SMME Exchanges globally. Chapter 4 discusses the problem statement and the research objectives undertaken to answer the research question. The chapter also details selected research database and sample, an outline of the tests conducted throughout this study and the potential biases in the study as

well as how they are mitigated.

The research first examines the performance of 20 AltX migrated firms against the broad market, proxied by the FTSE/JSE All Share Index (ALSI). After the excess returns of the sample firms were regressed against the market risk premium using ALSI as the market proxy, the preliminary tests conducted revealed that the beta coefficients estimated by the regressions are statistically insignificant. This shows that the firms listed on the AltX have insignificant correlation with the firms listed on the JSE main board. Hence, the ALSI could not be employed as a performance benchmark for the sample firms in this study. As such, the benchmark returns employed by this research is the historical performance of the sample shares instead of the expected return computed by the CAPM.

Subsequently, this research employed an event study methodology in an attempt to investigates the impact of migration announcement/actual migration on the stock returns and trading volumes of the firms that have migrated from the AltX to the JSE main board. The rationale behind investigating the impact of both announcement and actual migration separately is due to the fact that the observed between announcement date and migration date is usually more than a month and investors might have different reactions towards these two mentioned events. The findings have revealed the impact of migration announcements and actual migration on the returns as follows: (1) The significant average abnormal returns that are observed three weeks before the migration announcement date suggests the possibility insider trading. On the other hand, the significant average abnormal returns that are observed two days after the migration announcement date suggests that the market is not information-efficient in the semi-strong form of the efficient market hypothesis (EMH); (2) Similarly, the significant abnormal returns observed approximately three weeks before the actual migration date, suggests the possibility of insider trading. On the other hand, the significant abnormal returns that are observed three weeks after the actual migration date provides evidence against the semi-strong form of market efficiency.

The results further revealed the impact migration announcement and actual migration on turnovers (trading volumes) as follows: (1) The significant abnormal turnovers observed approximately one week before the migration announcement date suggests insider trading and consequently provides evidence against the strong-form of market efficiency. On the other

hand, the significant average abnormal turnovers that are observed two weeks after the migration announcement date provides evidence against the semi-strong form of market efficiency; (2) Similar results were observed on the actual migration date. The significant abnormal turnovers observed approximately three weeks before the actual migration date provides evidence against the strong-form of market efficiency, while the significant abnormal turnovers that are observed three weeks after the actual migration date provides evidence against the semi-strong form of efficiency. Although migration announcement on average stimulates trading activities, the improvement in liquidity is not statistically significant. In general, these findings (the prospect of insider trading and market underreaction) on migration announcement and actual migration provide strong evidence against both the semi-strong and strong form of market efficiency.

In an attempt evaluates the performance of the firms that have migrated from the AltX to the JSE main board against their comparable peers, this research employed methodology as discussed under section 6.2 in Chapter 6. The latest financial statements of the sample firms are used in order to assess the financial position of the AltX sample firms before their migration to the JSE main board. Subsequently, the research conducted a post migration performance using attributes such as share price, financial performance, and firm's news to classify each of the sample firms either as a success or as a failure after their migration to the JSE main board. Moreover, the post migration performance results indicates that on average majority of the AltX firms have a poor performance. This could be partially attributed to factors such as lack of liquidity and lack of visibility and often than not some of the investors view the AltX firms as high-risk investments. The overall outcome from the evaluation shows that, out of twenty evaluated firms only thirteen firms have been categorised as successful post their migration from the AltX to the JSE main board, while the remaining seven firms are categorised as unsuccessful post migration.

Finally, this research investigates the attributes that differentiate the AltX firms that are likely to be successful and those that are unlikely to be successful after their migration to the JSE main board. To achieve this study employed Multivariate Discriminant Analysis (MDA) using SPSS to identify the important financial ratios that determine the success or failure of the sample firms after migration to the JSE main board. MDA is a technique that is used by the researcher to analyse the research data when the dependent variable is categorical and the

independent variable is an interval in nature. This research further classifies the successful and failed firms after their migration to the JSE min board as Group 1 and Group 0 respectively. The findings reveal that, all the thirteen firms that were classified as success in Chapter 6 are correctly classified, while out of seven firms that were classified as failure only five are correctly classified as per the SPSS results. Overall, the MDA is able to classify 90% of the original cases and 85% of the cross-validated cases perfectly. Furthermore, the model has identify net profit margin, current ratio and return on capital invested as the most essential financial ratios in distinguishing the successful firms from unsuccessful firms post migration from the AltX to the JSE main board.

This thesis makes a pivotal contribution to the growing body of corporate finance literature in numerous ways. First, this thesis adds to the very little academic research that has examined the impact of migration announcement and actual migration on returns/turnovers of the firms from the AltX to the JSE main board. To date, empirical studies has been focusing on the impact of corporate reaction on share prices but rarely on the impact of actual migration on returns/turnovers. This is the first study to conduct the impact of both migration announcement and actual migration in the same research. As a result, there is little evidence on whether the actual migration effects the returns and turnovers of the AltX listed firms. Secondly, this research also made significant contribution to the literature of the AltX by discovering that the risks inherent in the firms listed on the AltX are idiosyncratic in nature, and hence there is no common benchmark that exists for the firms listed on the AltX as each firm has its unique risks and challenges.

Although this research represents a unique attempt in investigating the impact of both the migration announcement/actual migration on the AltX, some limitations exist. Initially, the research comprised of 30 sample firms, however, after a stringent selection process was implemented in this research, only 20 AltX firms survived to be part of this study sample data. As such, the sample used in this research only includes the AltX firms, which are viewed as the only survivors from selection process, thus the results established in this study may be bias. Although there are acknowledged limitations of this research, this thesis remains the most important to the growing body of corporate finance literature in South Africa. An important area where future research may be fruitful would be to examine the impact of migration

announcement/actual migration on the earnings of the AltX listed firms. Since the analysis on market reaction to migration announcement/actual migration documented in this research is based on market returns/turnovers, the study did not consider the impact of both migration announcement and actual migration on earnings of the AltX listed firms.

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Appendix

Appendix A: CAPM Regression Statistics

Table A1: **Migration [t-120, t-21]**

No. of Companies	Market Proxy: ALSI (J203T)			Market Proxy: AltX (J232T)		
	αp	βp	R^2(%)	αp	βp	R^2(%)
1. Esor Ltd	0.00	0.33	0.04	0.00	0.02	0.00
2.1 Time Holdings Ltd	0.00	0.02	0.00	0.00	0.04	0.00
3. Calgro M3 Holdings Ltd	0.02*	1.13	0.03	0.02*	0.63	0.02
4. Curro Holding Ltd	0.00	0.68	0.03	0.00	0.05	0.00
5. Cognition Holding Ltd	0.00	-0.53	0.02	0.00	0.32	0.01
6. Ellies Holding Ltd	0.00	-0.41	0.01	0.00	0.01	0.00
7. Finbond Group Ltd	0.00	0.49	0.01	0.00	2.28	0.29
8. Insimbi Refractory-Alloy Supply Ltd	0.00	-0.05	0.00	0.00	-0.01	0.00
9. Interwaste Holding Ltd	0.00	0.00	0.00	0.00	0.61	0.03
10. Mas Real Estate Inc.	0.00	0.28	0.05	0.00*	1.00	0.52
11. Mazor Group Ltd	0.00	0.19	0.01	0.00	0.87	0.05
12. Onelogix Group Ltd	0.01**	0.46	0.02	0.1*	0.17	0.02
13. Pan African Resources Plc	0.00	0.77	0.10	0.00	0.45	0.03
14. Rockcastle Global Estate Co. Ltd	0.00	-0.05	0.00	0.00**	1.35	0.57
15. Rolfes Technology Holdings Ltd	0.01	0.35	0.01	0.01	0.32	0.00
16. Santova Ltd	0.00	-1.19	0.04	0.00	0.04	0.00
17. Stenprop Ltd	0.00	0.05	0.00	0.00	0.04	0.00
18. Wescoal Holdings Ltd	0.00	0.37	0.01	0.00	-0.07	0.00
19. Taste Holdings Ltd	0.01	-0.83	0.02	0.01	1.44	0.06
20. Consolidated Infrastructure Group Ltd	0.00	-0.94	0.30	0.00	0.99	0.17

Note: ***, **,* indicate p-value significant at 1%, 5% and 10% level, respectively.

Table A2: **Announcement [t-120, t-21]**

No. of Companies	Market Proxy: ALSI (J203T)			Market Proxy: AltX (J232T)		
	p	**βp**	**R^2(%)**	**αp**	**βp**	**R^2(%)**
1. Esor Ltd	0.00	0.44	0.06	0.00	0.17	0.01
2.1 Time Holdings Ltd	0.00	0.01	0.00	0.00	0.03	0.00
3. Calgro M3 Holdings Ltd	0.01	1.13	0.03	0.01	0.67	0.02
4. Curro Holding Ltd	0.00	0.34	0.01	0.00	-0.07	0.00
5. Cognition Holding Ltd	0.00	-0.53	0.02	0.00	0.32	0.01
6. Ellies Holding Ltd	0.00	-0.29	0.01	0.00	-0.19	0.01
7. Finbond Group Ltd	0.00	0.42	0.01	0.00	2.28	0.29
8. Insimbi Refractory-Alloy Supply Ltd	0.00	0.04	0.00	0.00	0.06	0.00
9. Interwaste Holding Ltd	0.00	0.09	0.00	0.00	0.78	0.04
10. Mas Real Estate Inc.	0.00	0.23	0.06	0.00**	0.92	0.50
11. Mazor Group Ltd	0.00	0.00	0.00	0.00	0.64	0.02
12. Onelogix Group Ltd	0.00	0.24	0.01	0.00	0.15	0.01
13. Pan African Resources Plc	0.00	0.88	0.10	0.00	0.45	0.03
14. Rockcastle Global Estate Co. Ltd	0.00*	-0.08	0.00	0.00	1.31	0.55
15. Rolfes Technology Holdings Ltd	0.01	0.38	0.01	0.00	0.32	0.00
16. Santova Ltd	0.00	-1.19	0.04	0.00	-0.36	0.00
17. Stenprop Ltd	0.00	0.06	0.01	0.00	0.04	0.01
18. Wescoal Holdings Ltd	0.00	0.48	0.02	0.00	-0.02	0.00
19. Taste Holdings Ltd	0.01	-0.64	0.01	0.01	1.21	0.05
20. Consolidated Infrastructure Group Ltd	0.00	-0.94	0.30	0.00	-0.99	0.17
21.Huge Group Ltd	0.00	0.11	0.00	0.00	0.42	0.01

Note: ***, **,* indicate p-value significant at 1%, 5% and 10% level, respectively.

Appendix B: Announcement CAR & CAT

Table B1: 1 Time Holdings Ltd

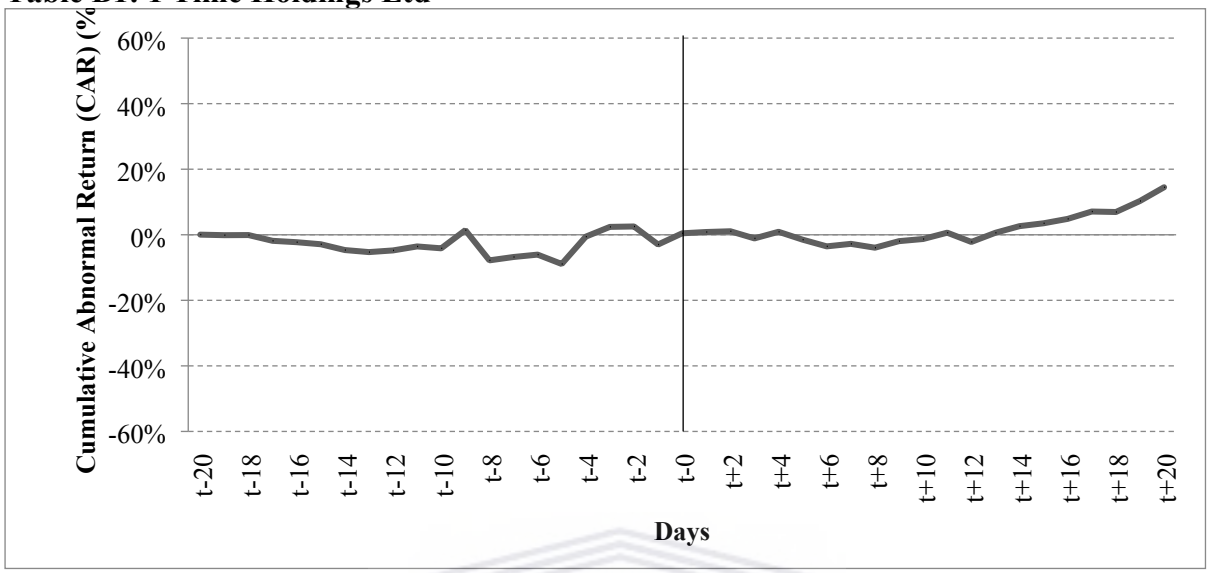


Table B1: 1 Time Holdings Ltd

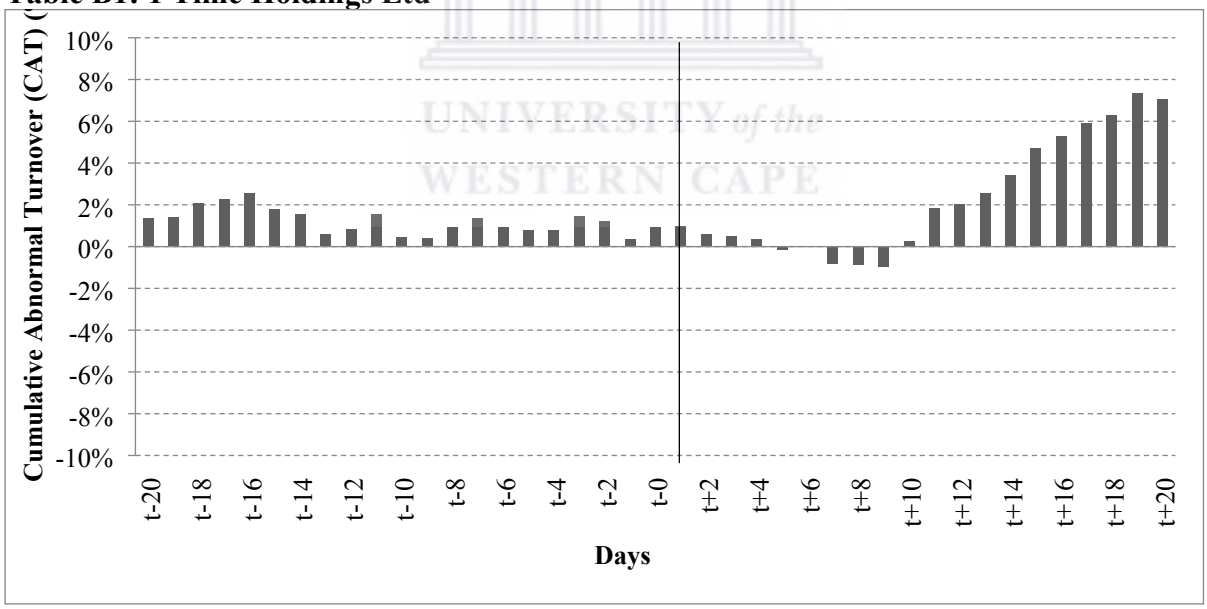


Table B2: Esor Ltd

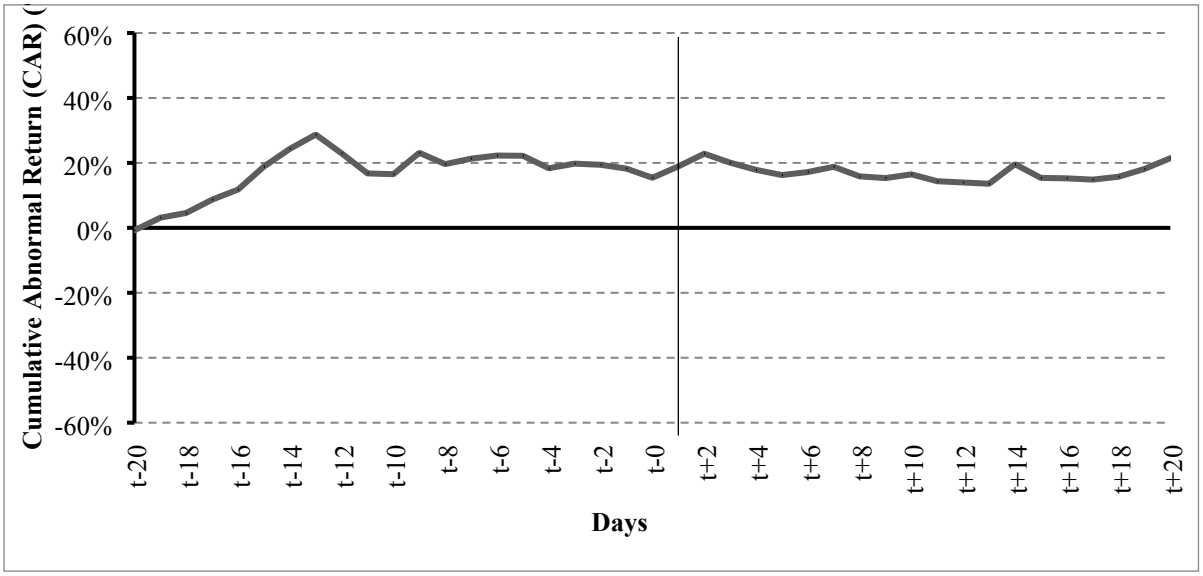


Table B2: Esor Ltd

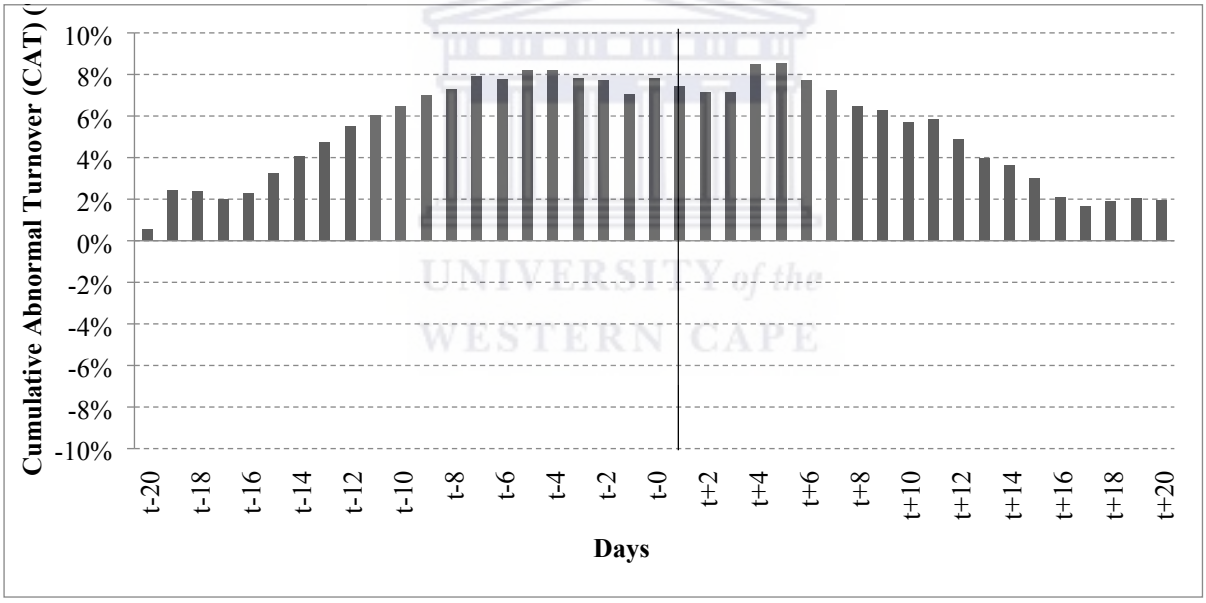


Table B3: Calgro M3 Holdings Ltd

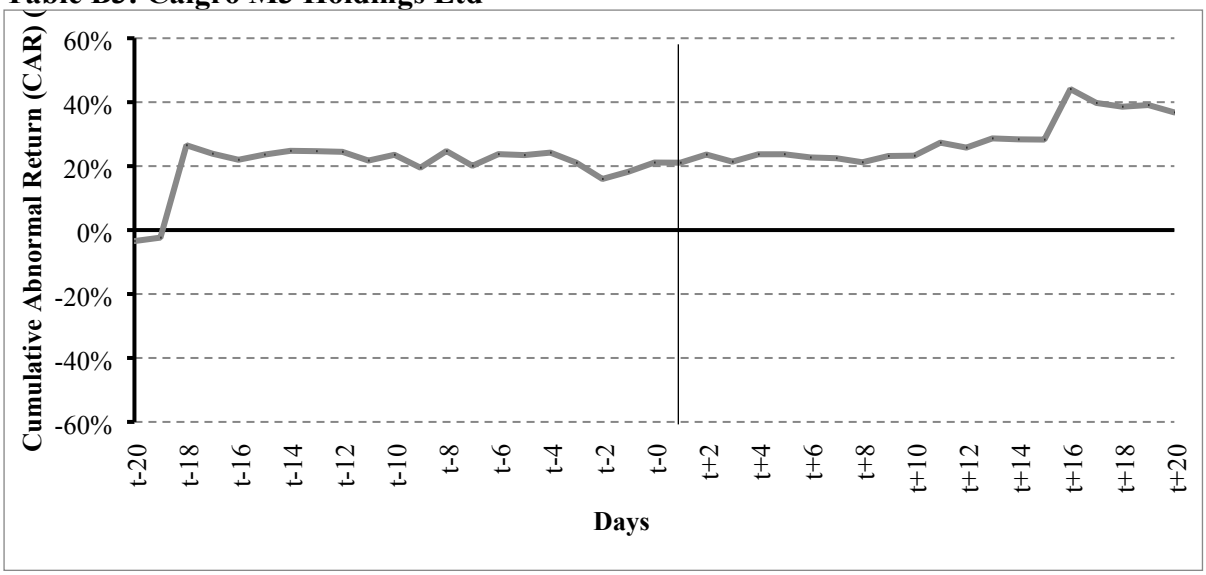


Table B3: Calgro M3 Holdings Ltd

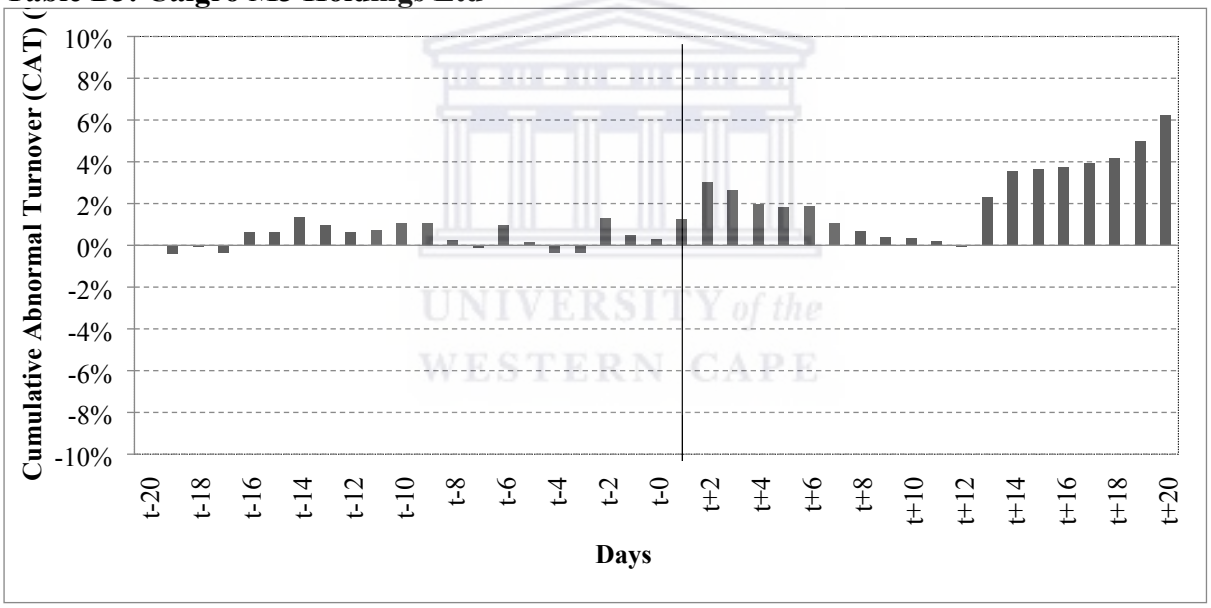


Table B4: Curro Holdings Ltd

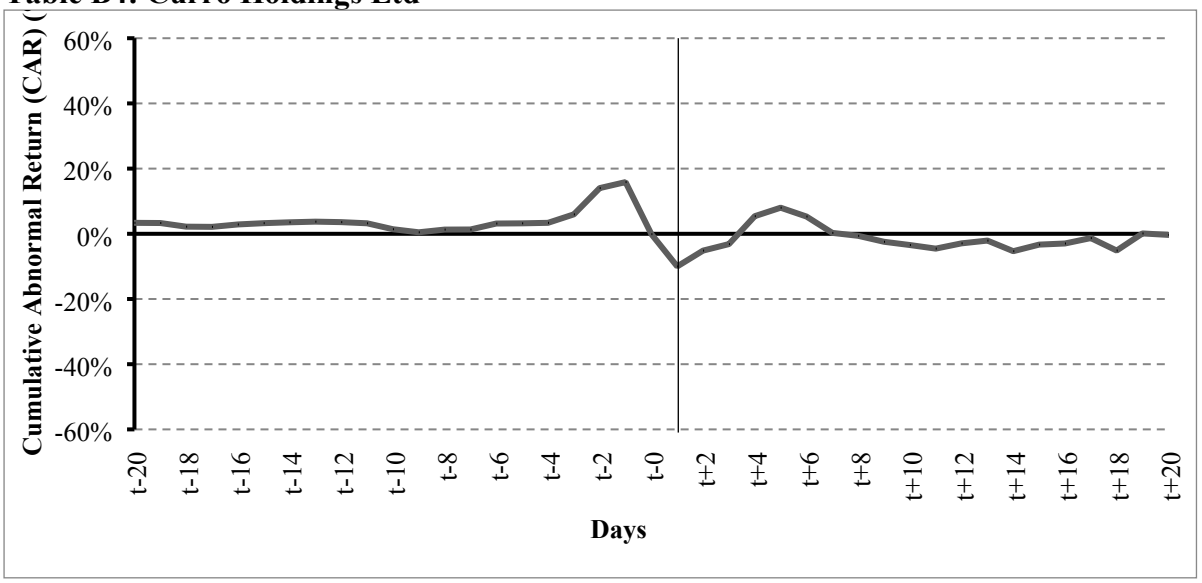


Table B4: Curro Holdings Ltd

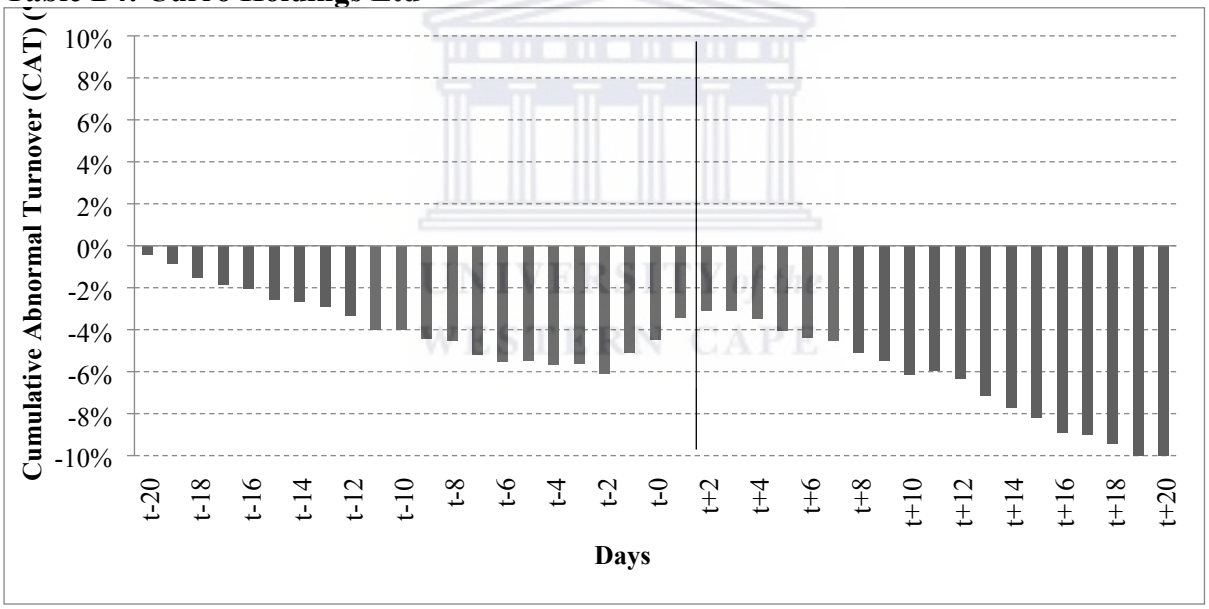


Table B5: Cognition Holdings Ltd

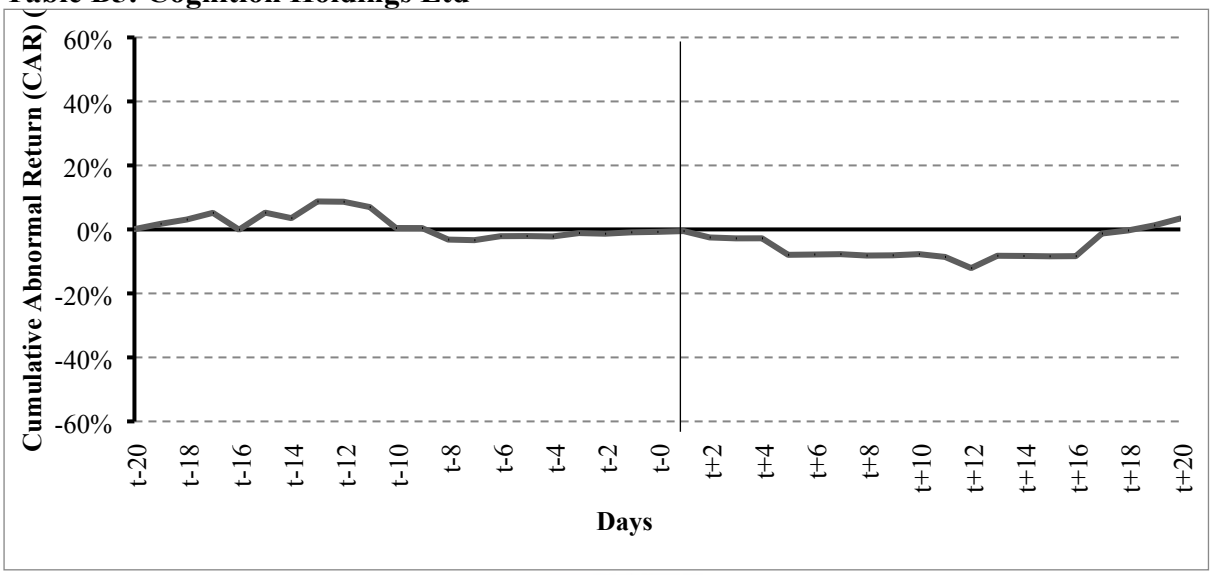


Table B5: Cognition Holdings Ltd

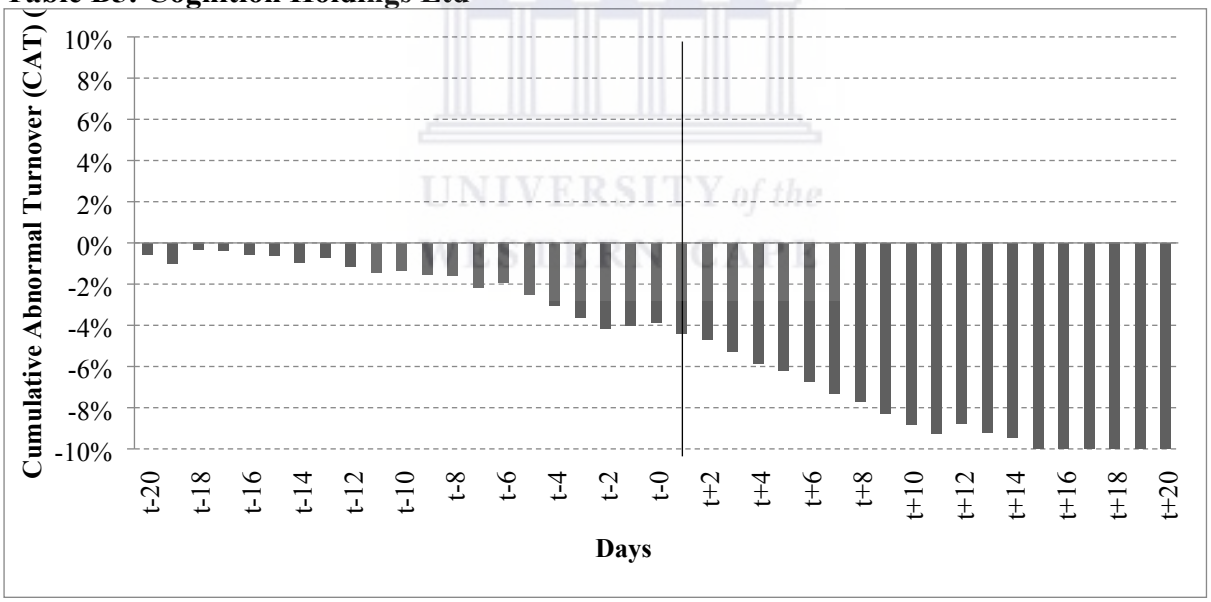


Table B6: Ellies Holdings Ltd

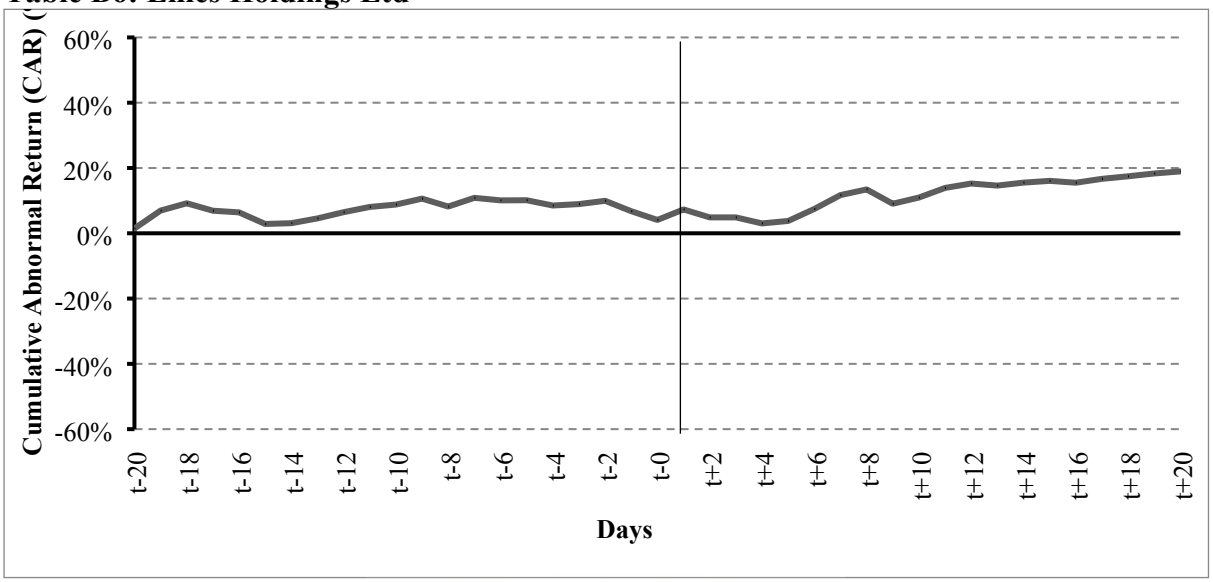


Table B6: Ellies Holdings Ltd

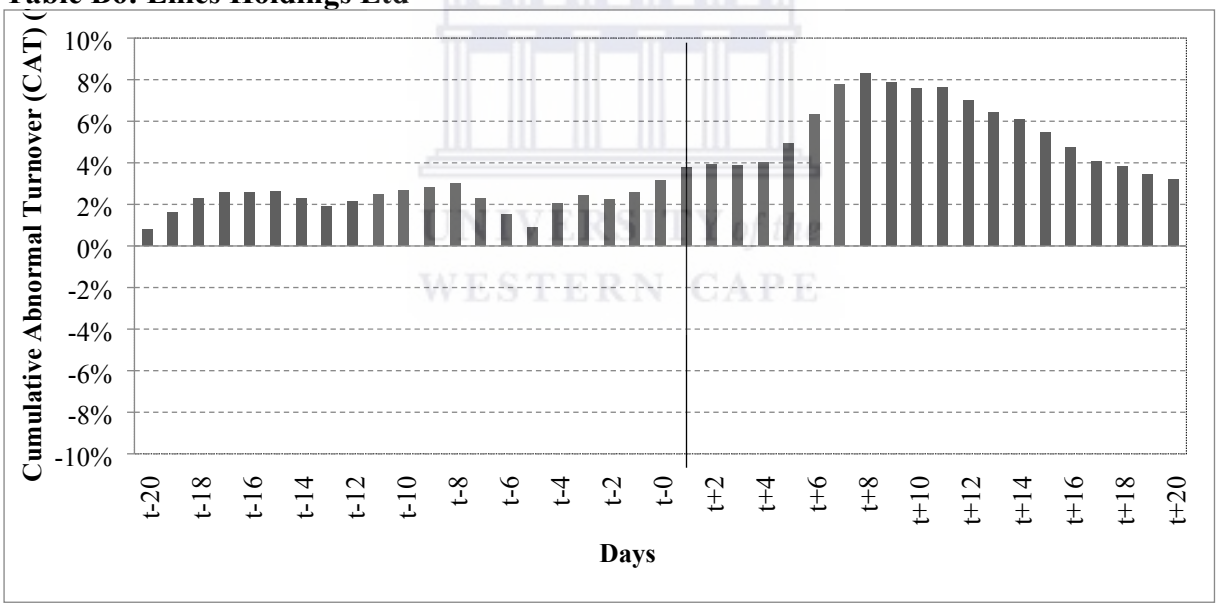


Table B7: Finbond Group Ltd

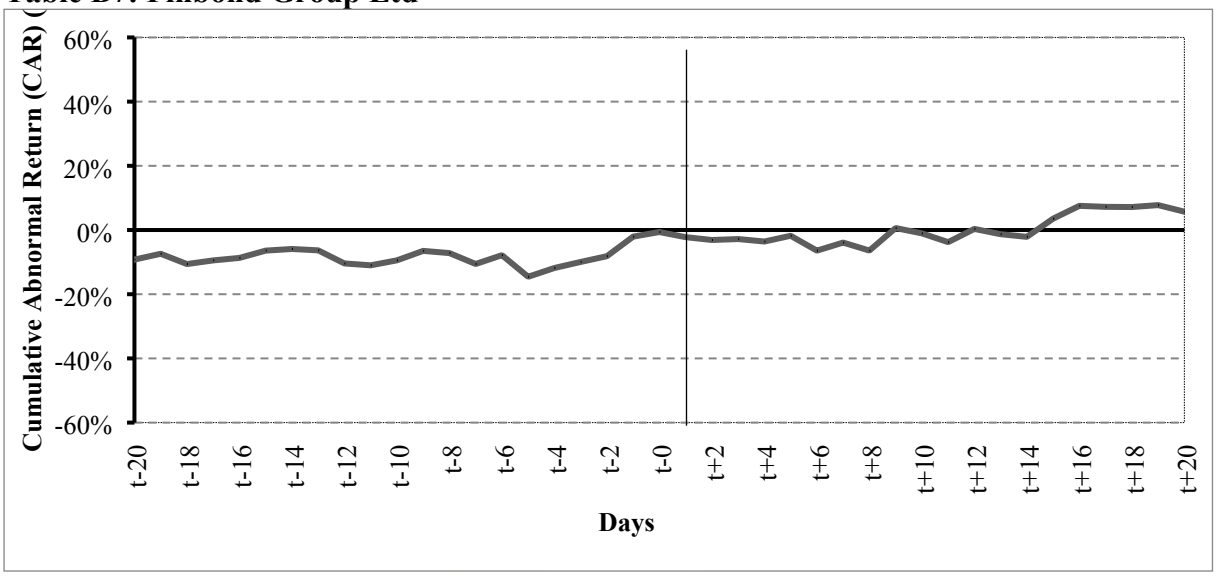


Table B7: Finbond Group Ltd

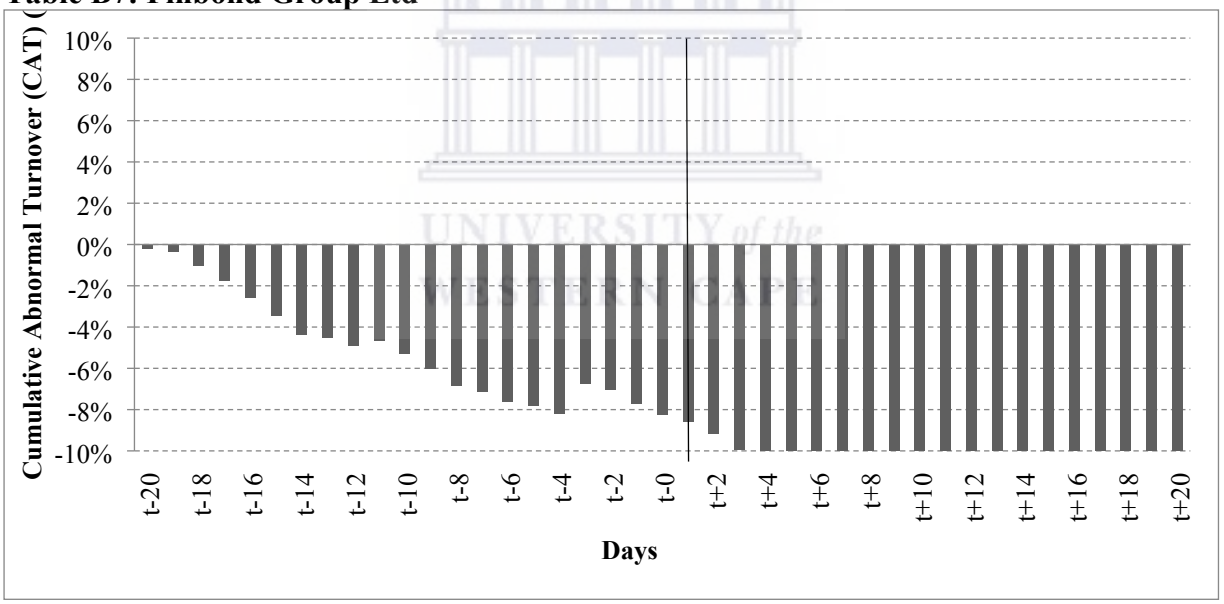


Table B8: Insimbi Refractory & Alloy Supply Ltd

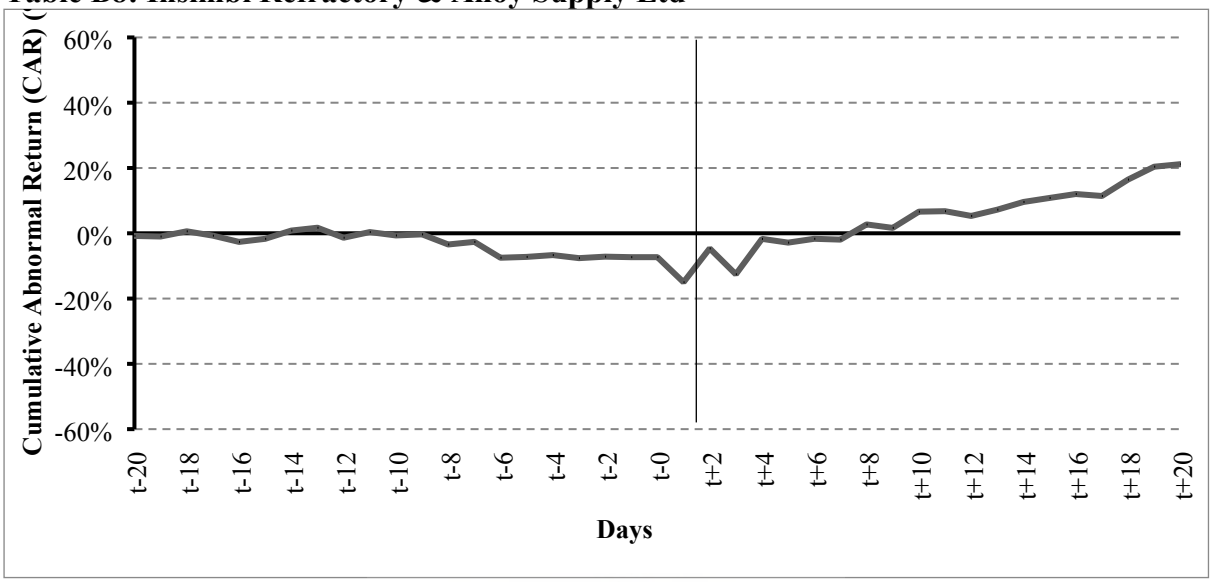


Table B8: Insimbi Refractory & Alloy Supply Ltd

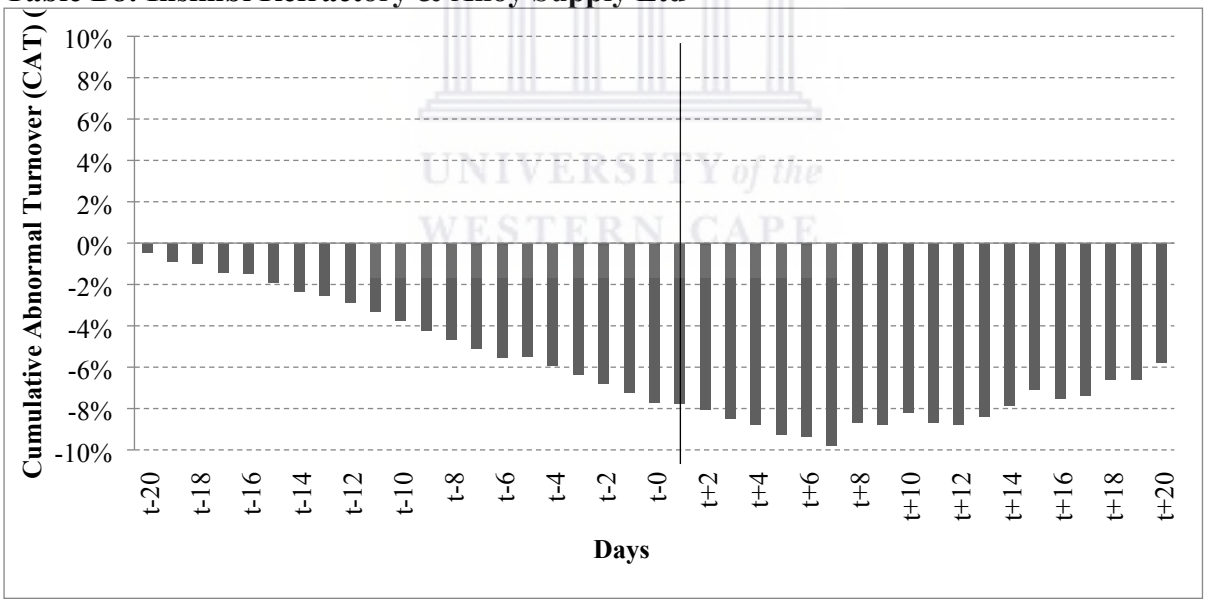


Table B9: Interwaste Holdings Ltd

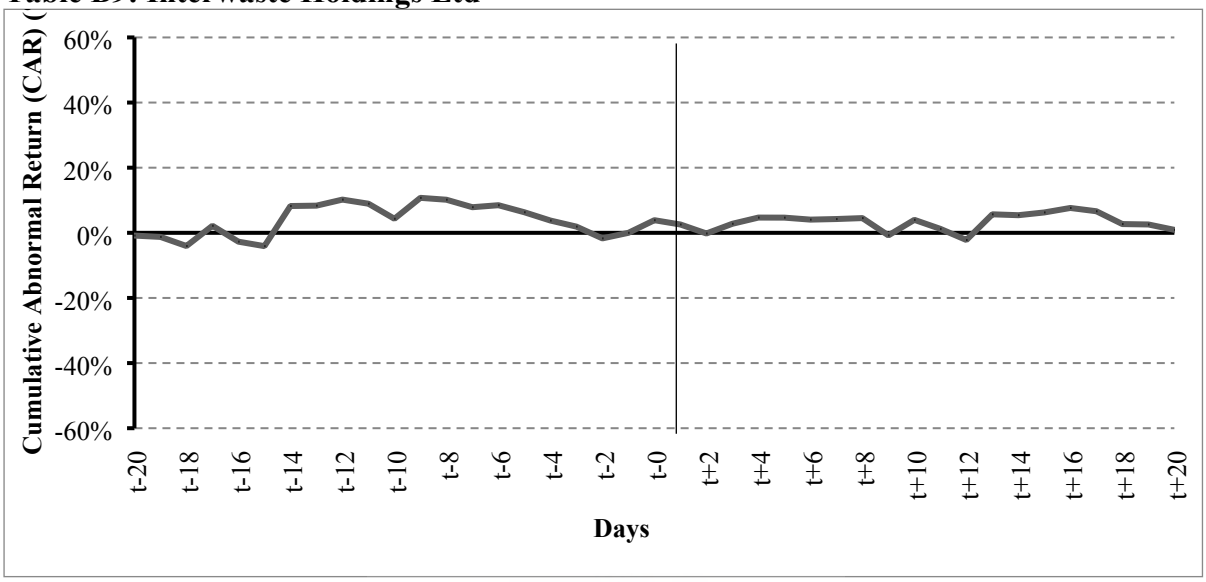


Table B9: Interwaste Holdings Ltd

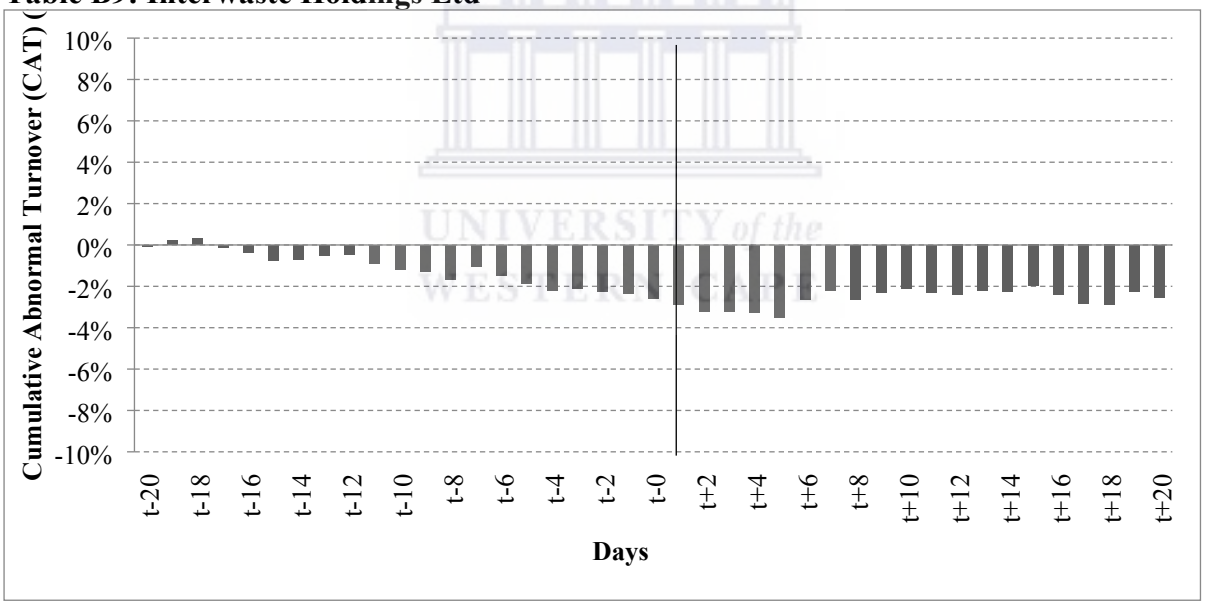


Table B10: Mas Real Estate Inc

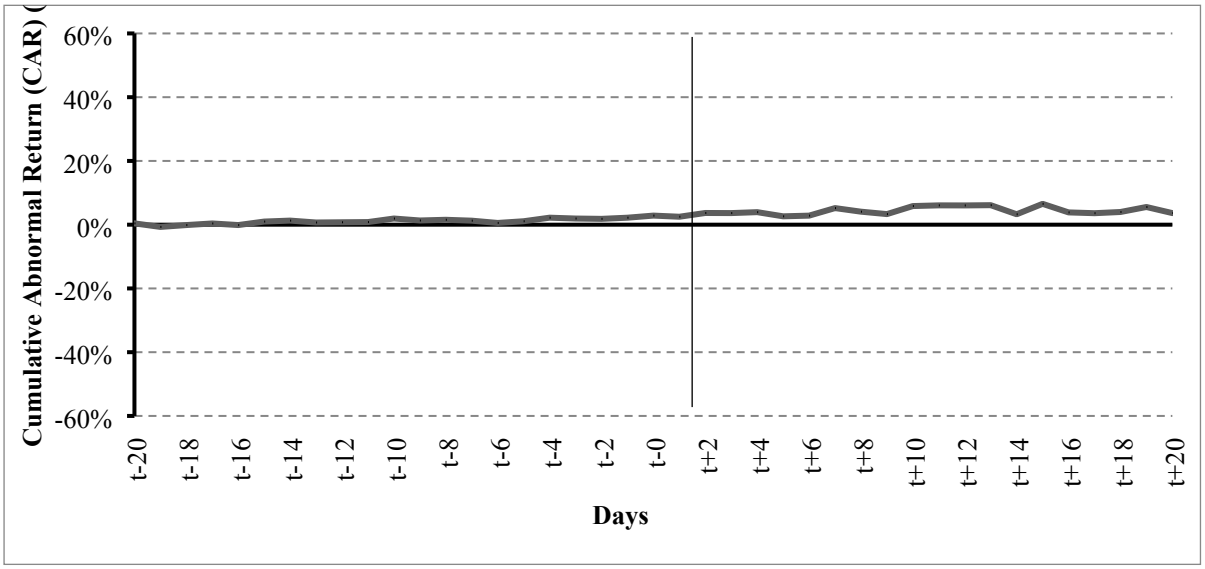


Table B10: Mas Real Estate Inc

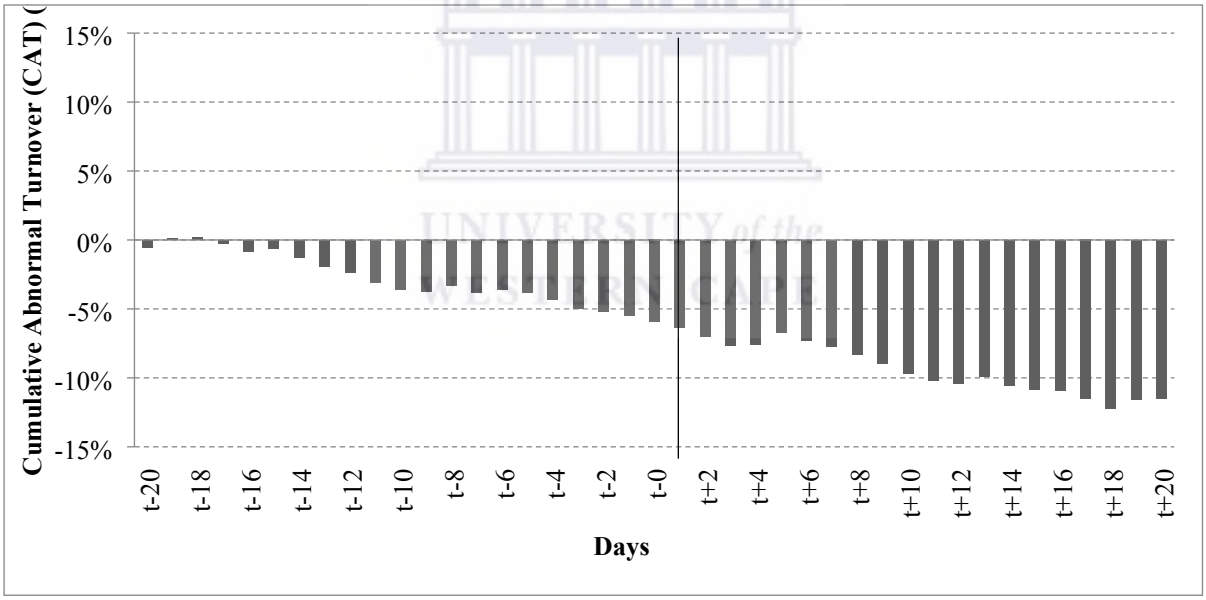


Table B11: Mazor Group Ltd

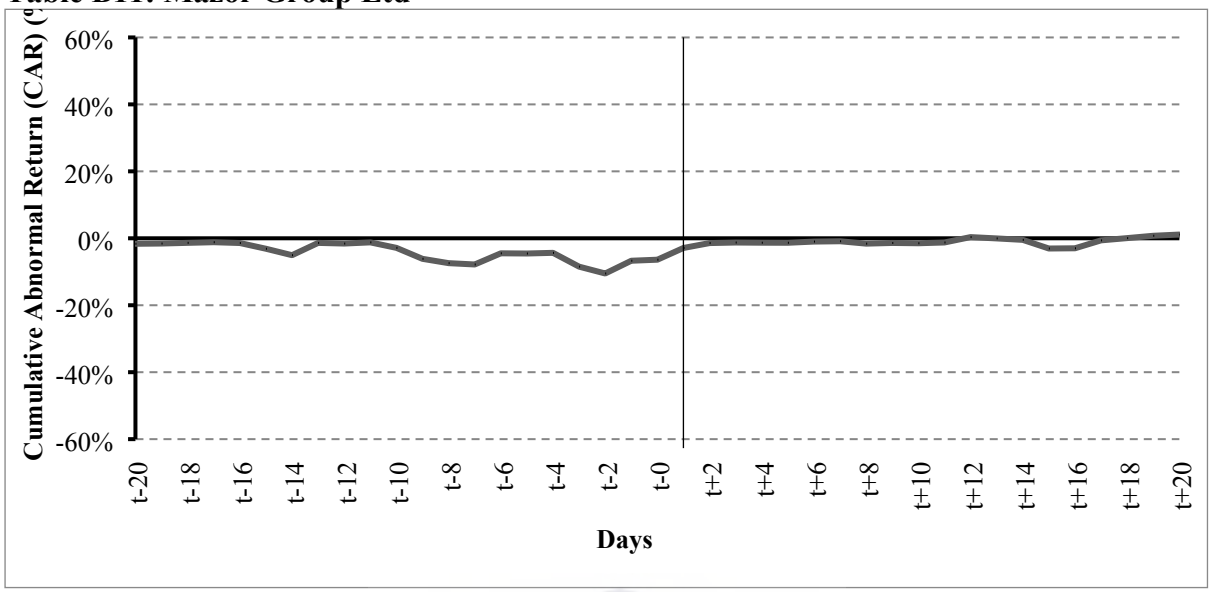


Table B11: Mazor Group Ltd

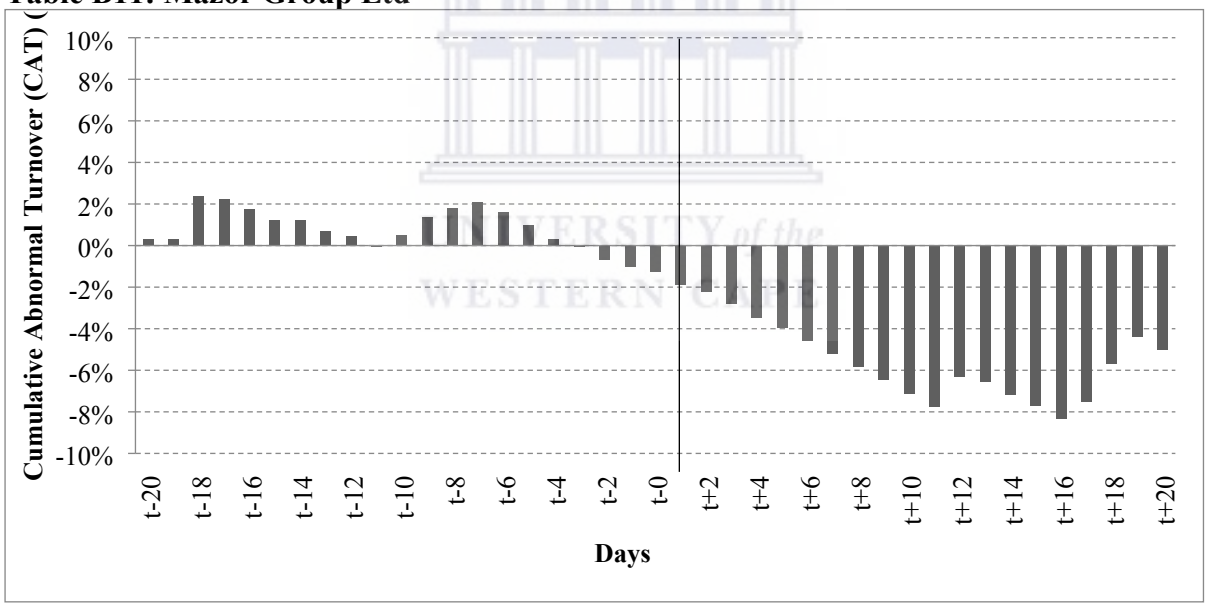


Table B12: Onelogix Group Ltd

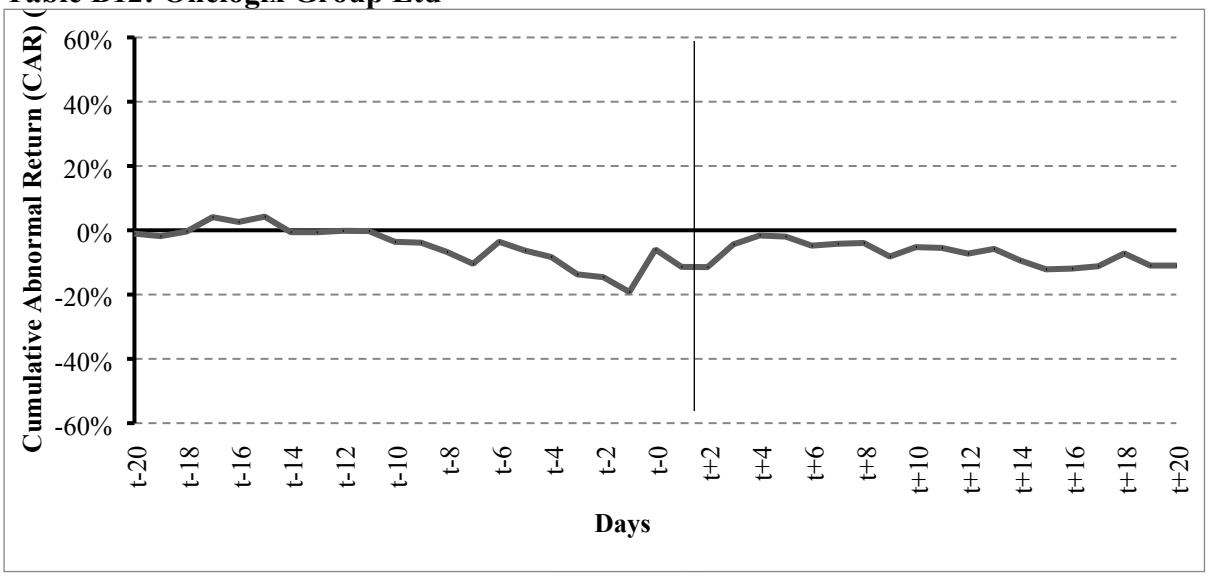


Table B12: Onelogix Group Ltd

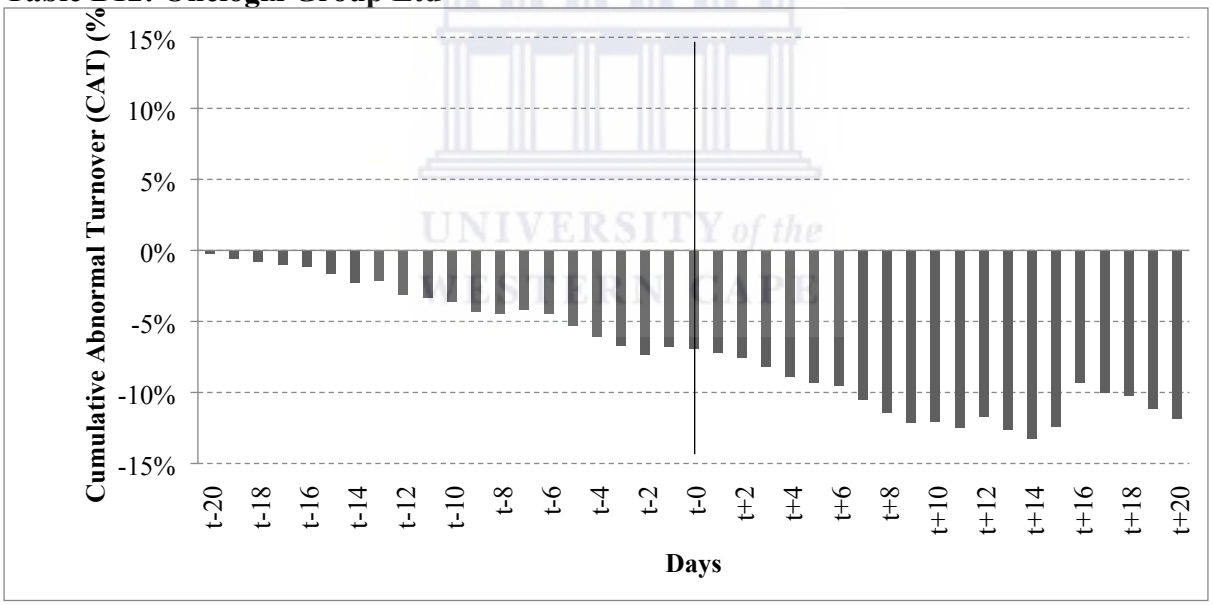


Table B13: Pan African Resources Plc

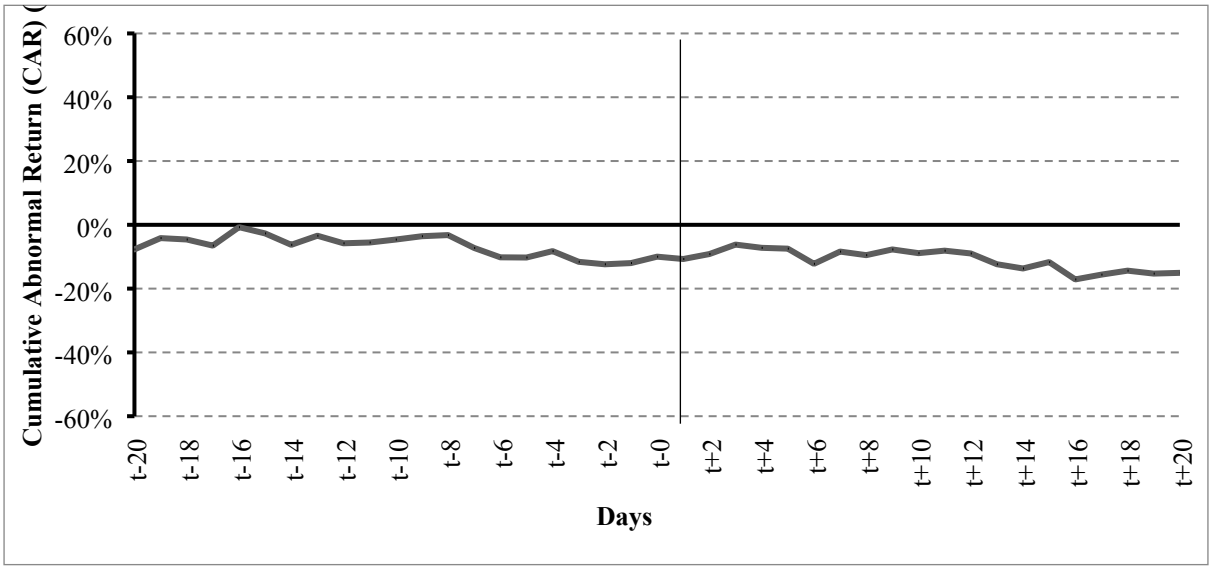


Table B13: Pan African Resources Plc

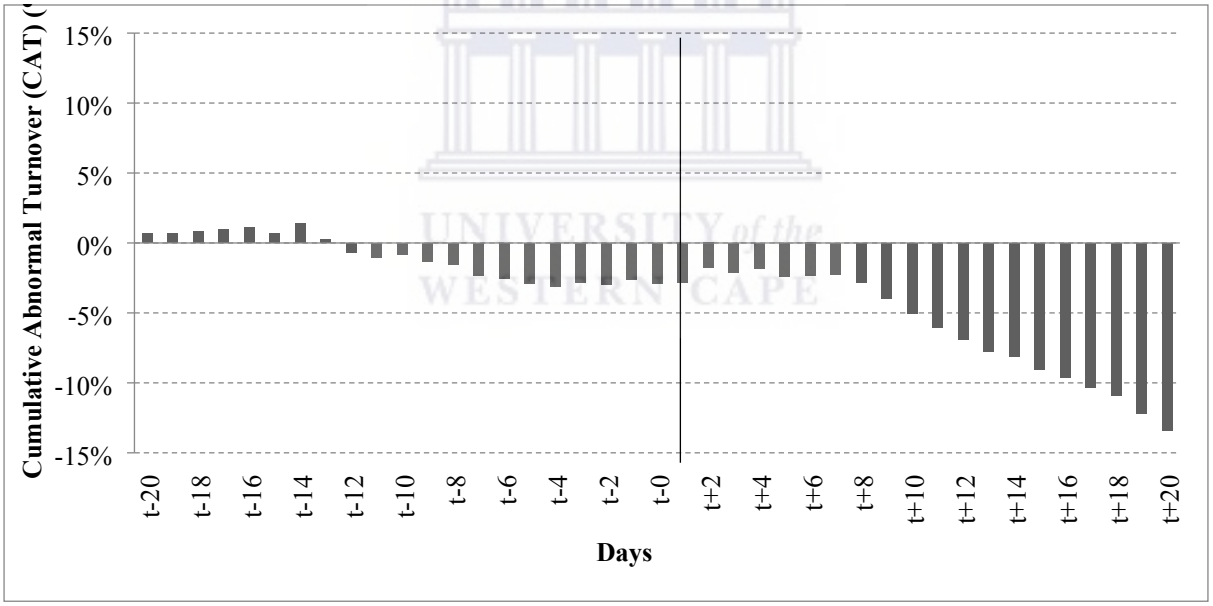


Table B14: Rockcastle Global Real Estate

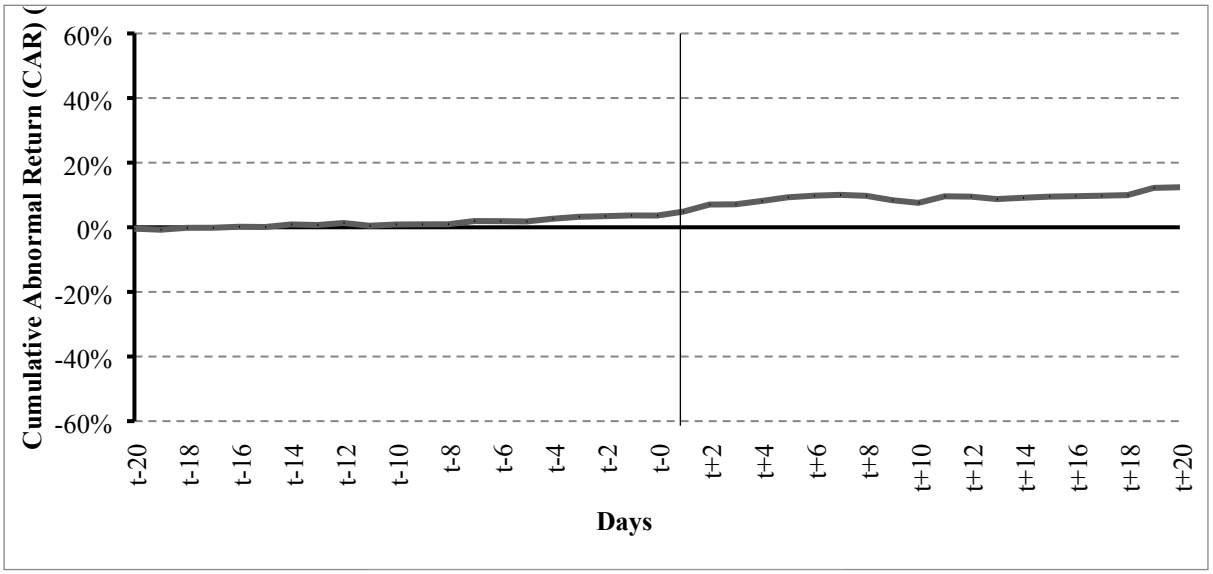


Table B14: Rockcastle Global Real Estate

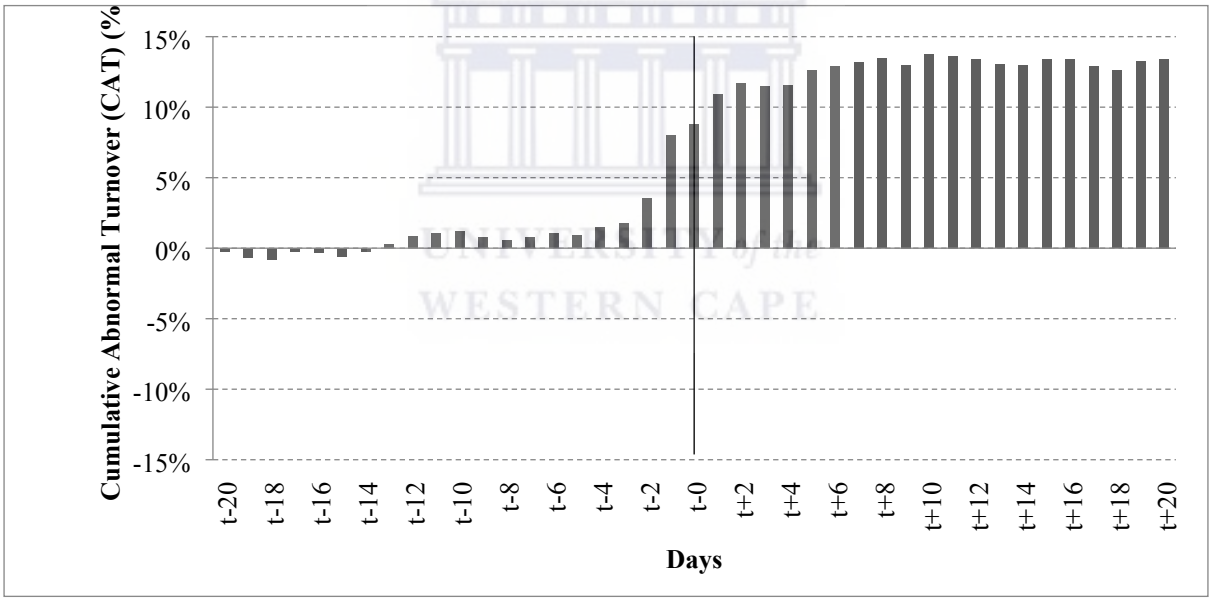


Table B15: Rolfes Technology Holdings Ltd

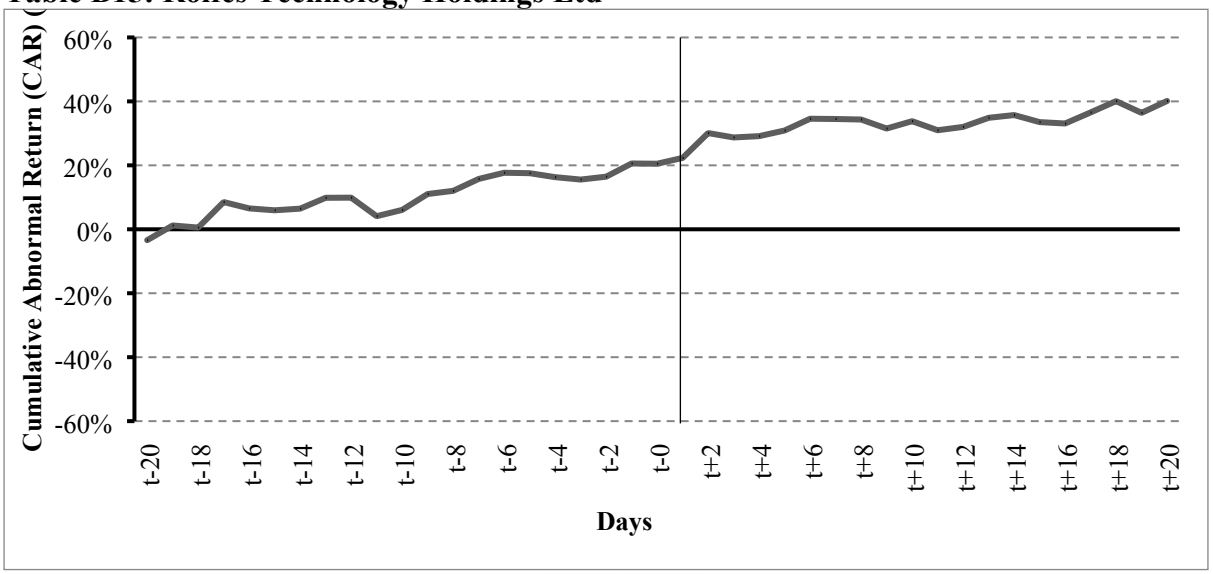


Table B15: Rolfes Technology Holdings Ltd

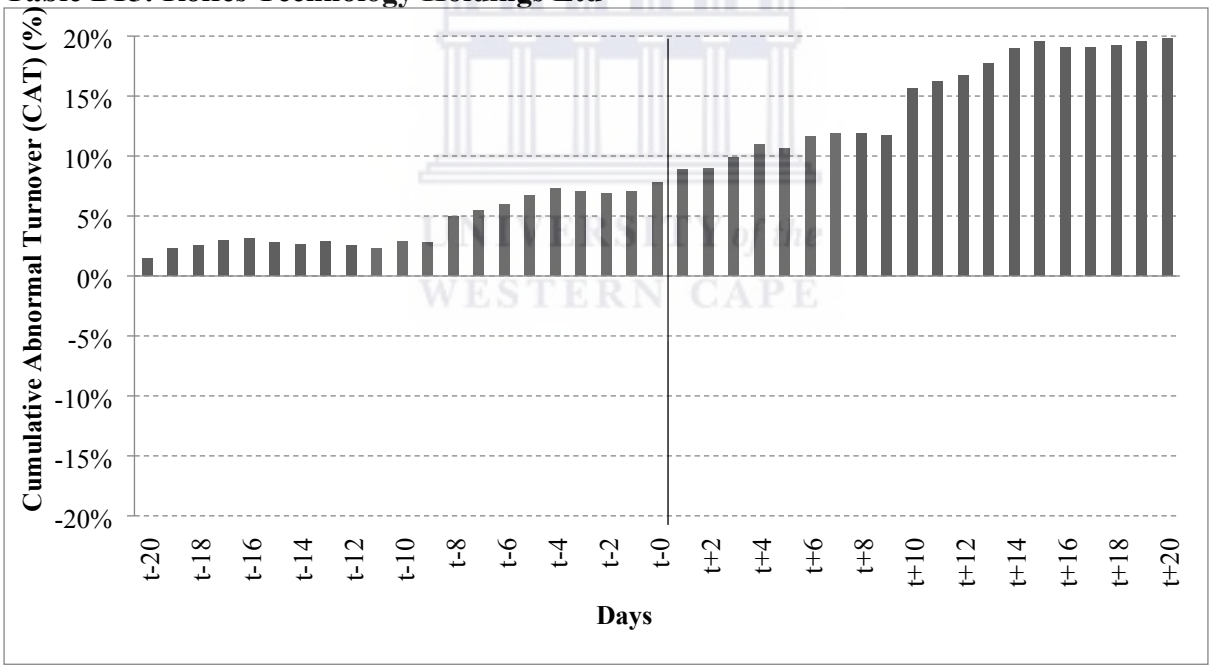


Table B16: Santova Ltd

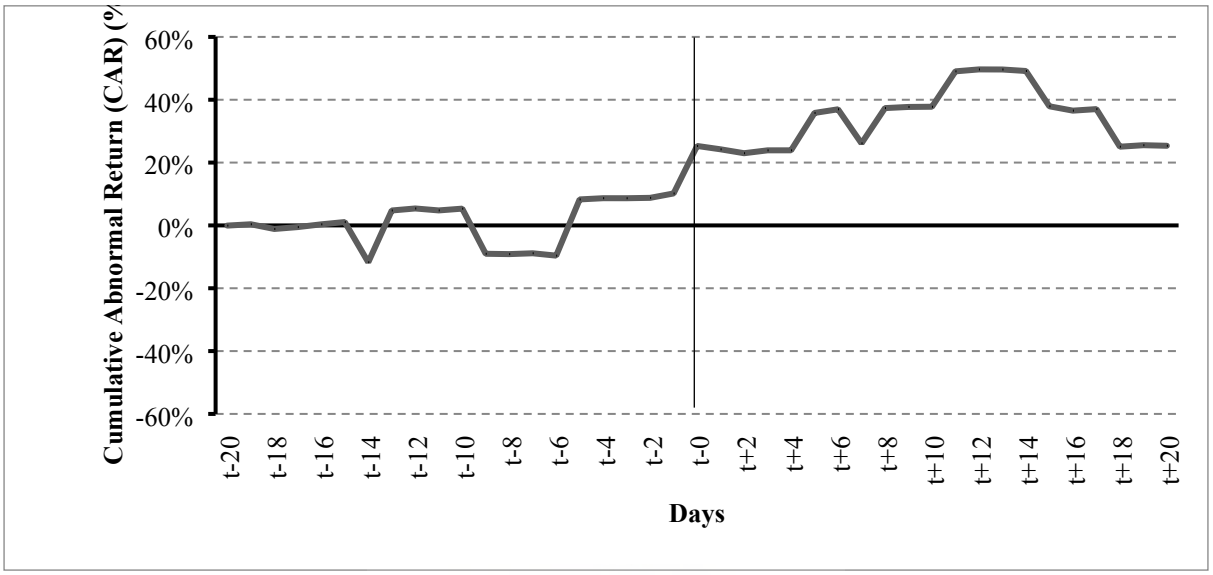


Table B16: Santova Ltd

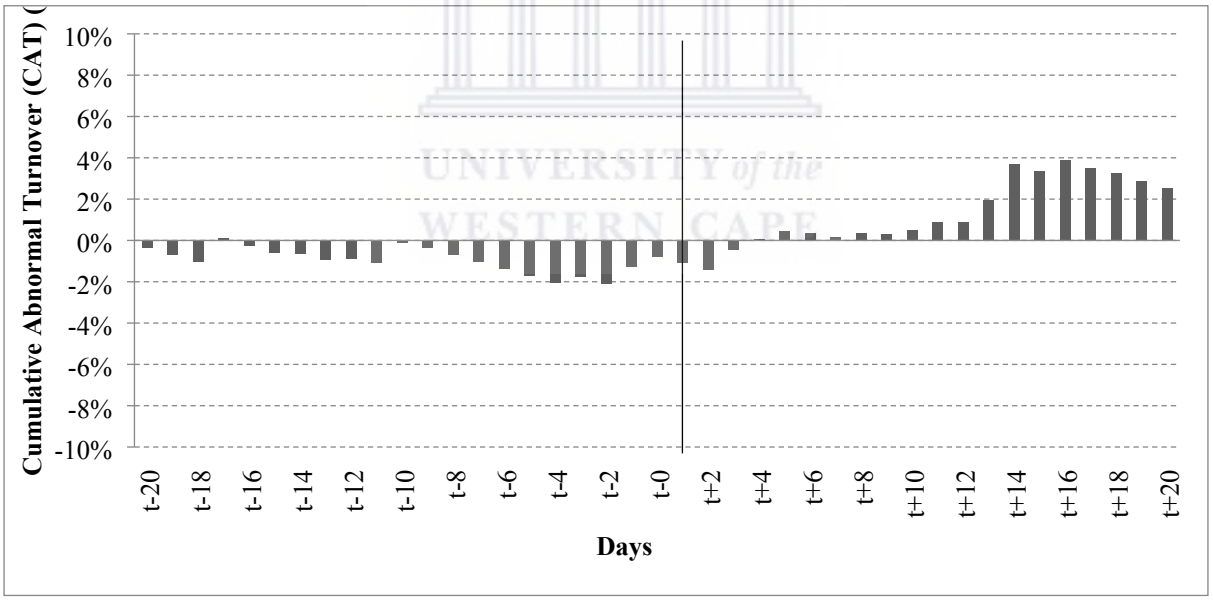


Table B17: Stenprop Ltd

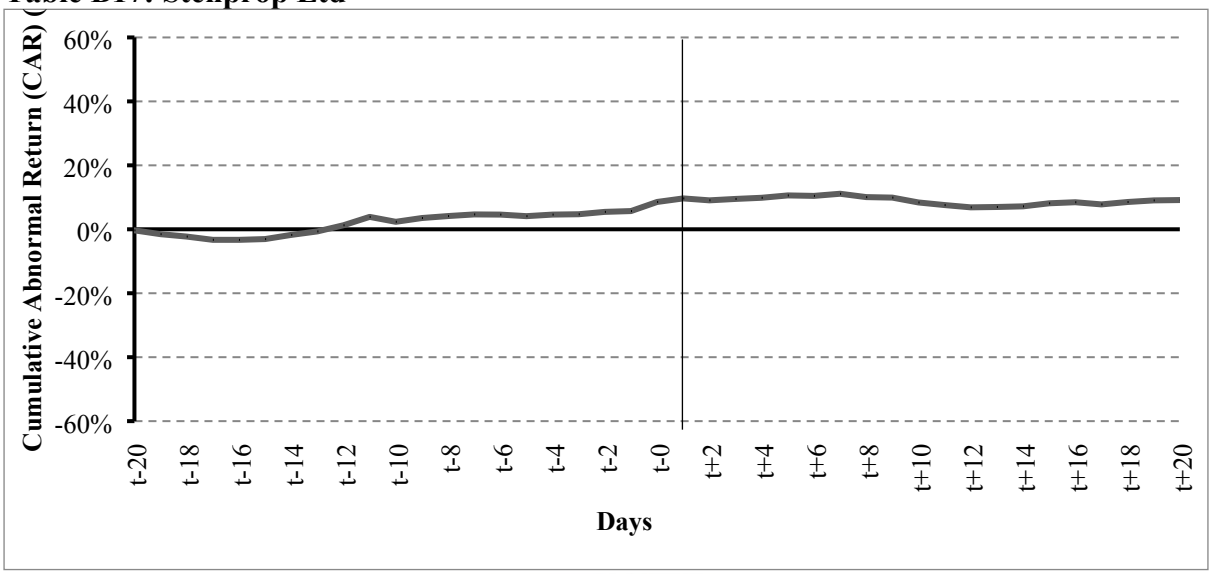


Table B17: Stenprop Ltd

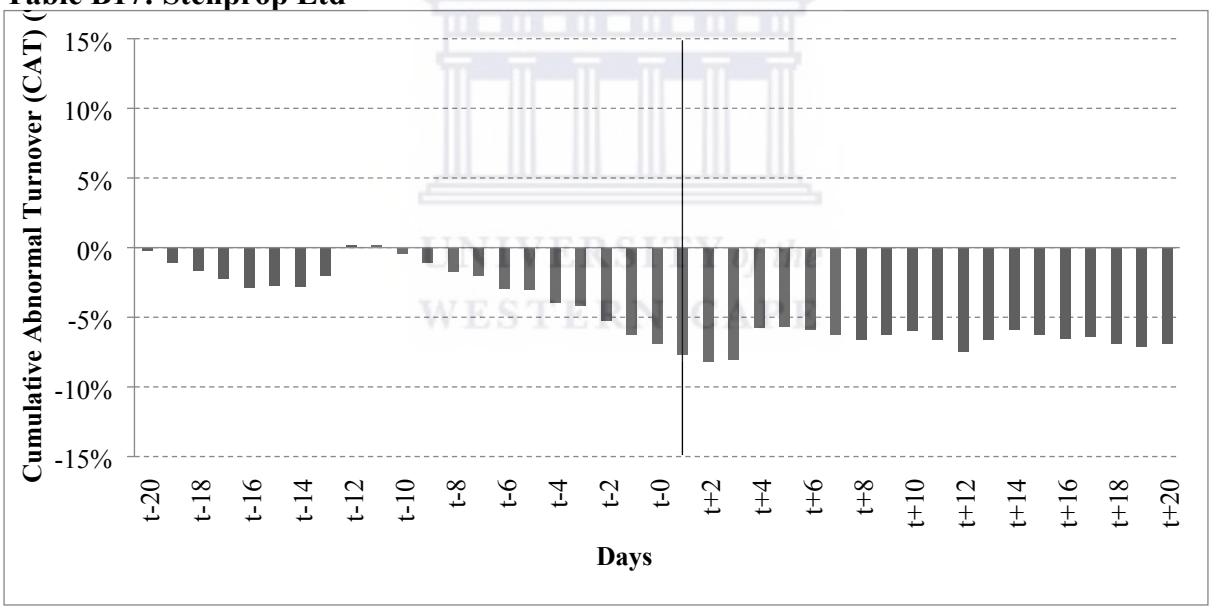


Table B18: Wescoal Holdings Ltd

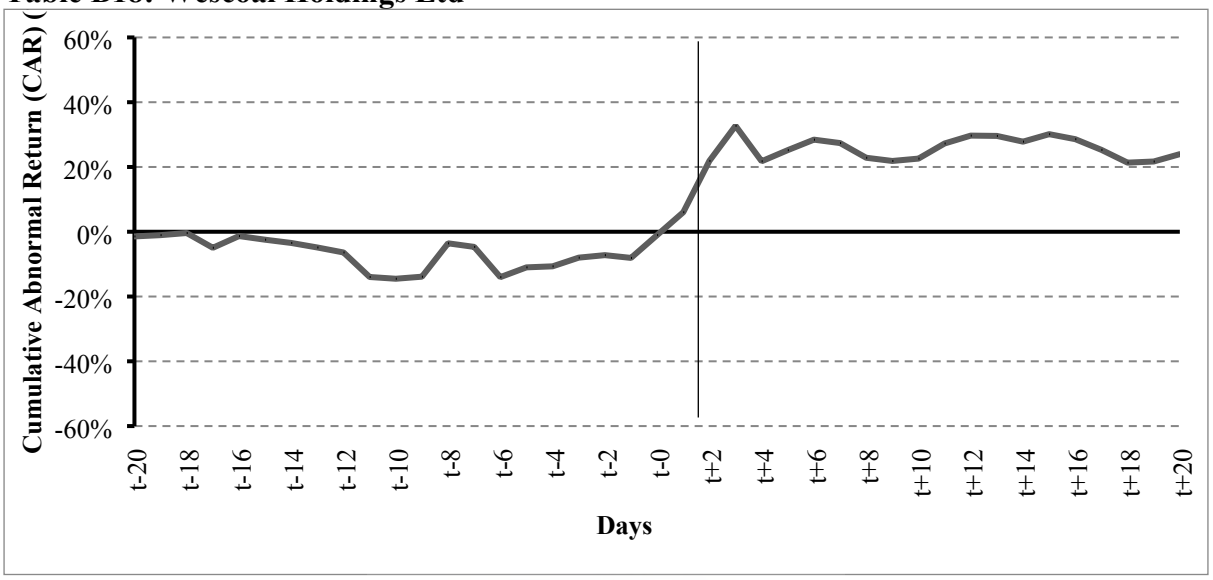


Table B18: Wescoal Holdings Ltd

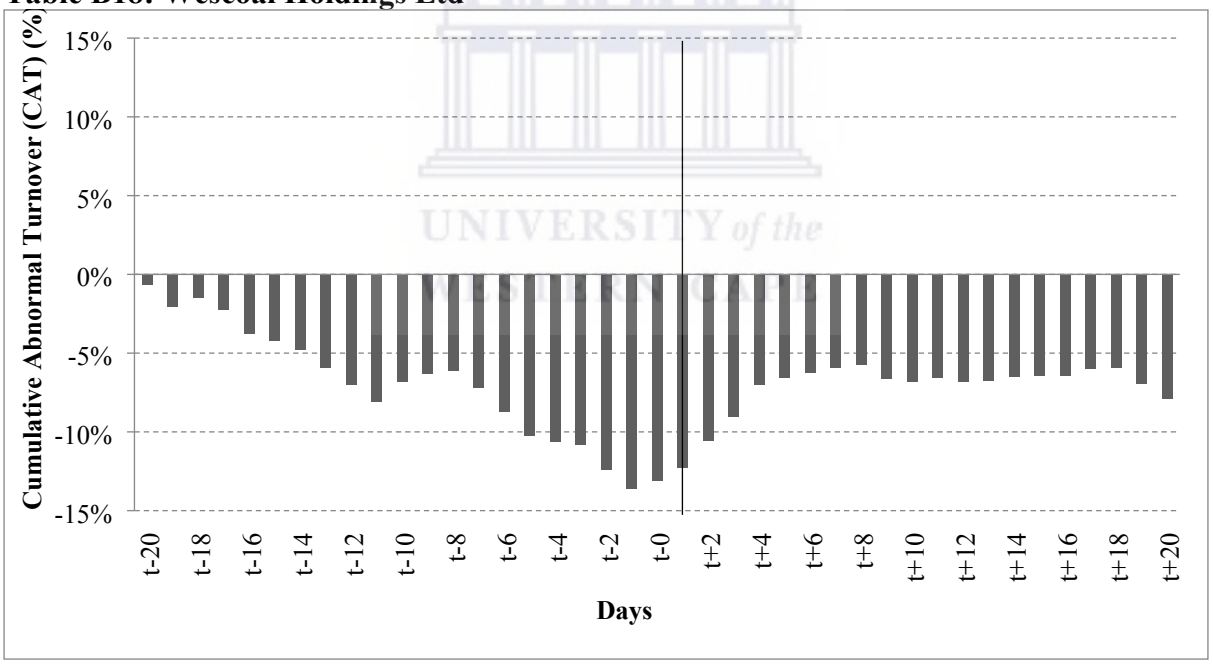


Table B19: Taste Holdings Ltd

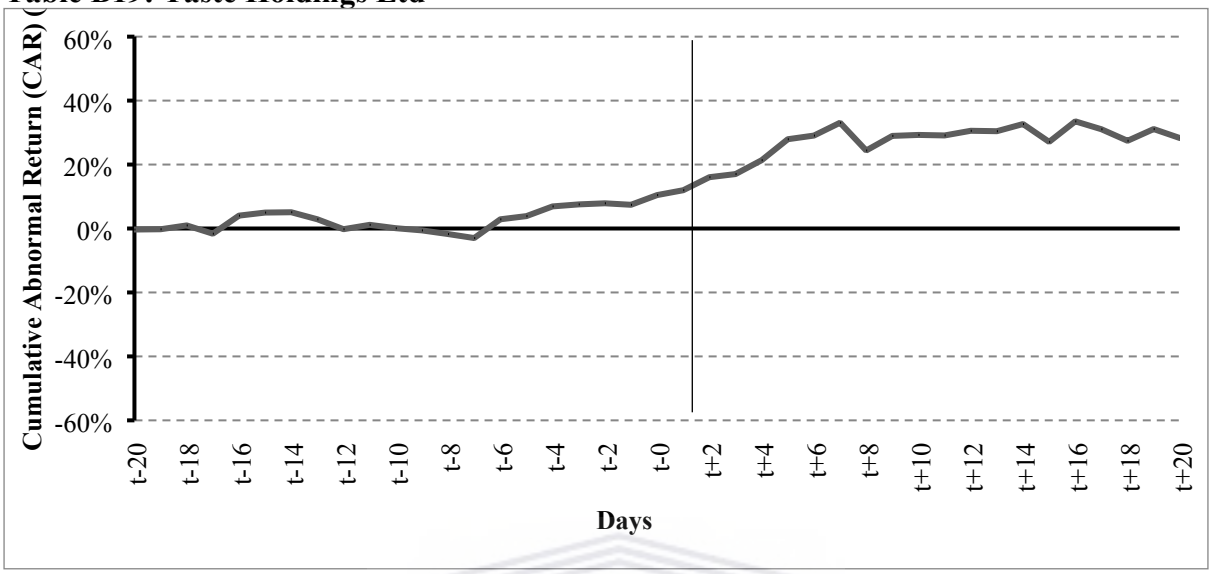


Table B19: Taste Holdings Ltd

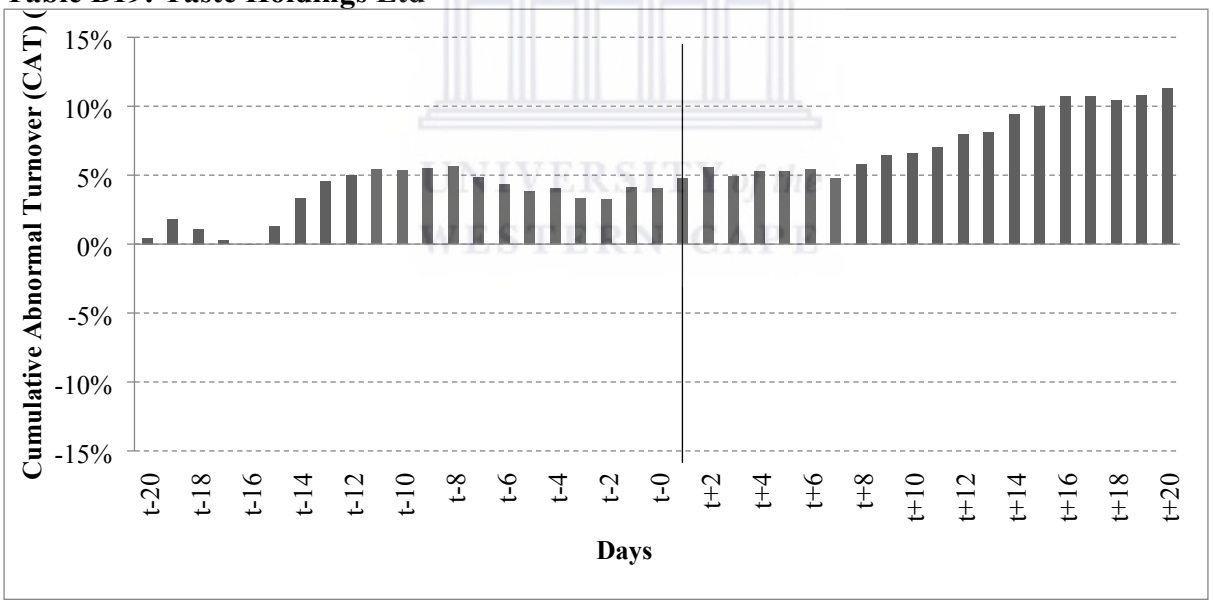


Table B20: Consolidated Infrastructure Group Ltd

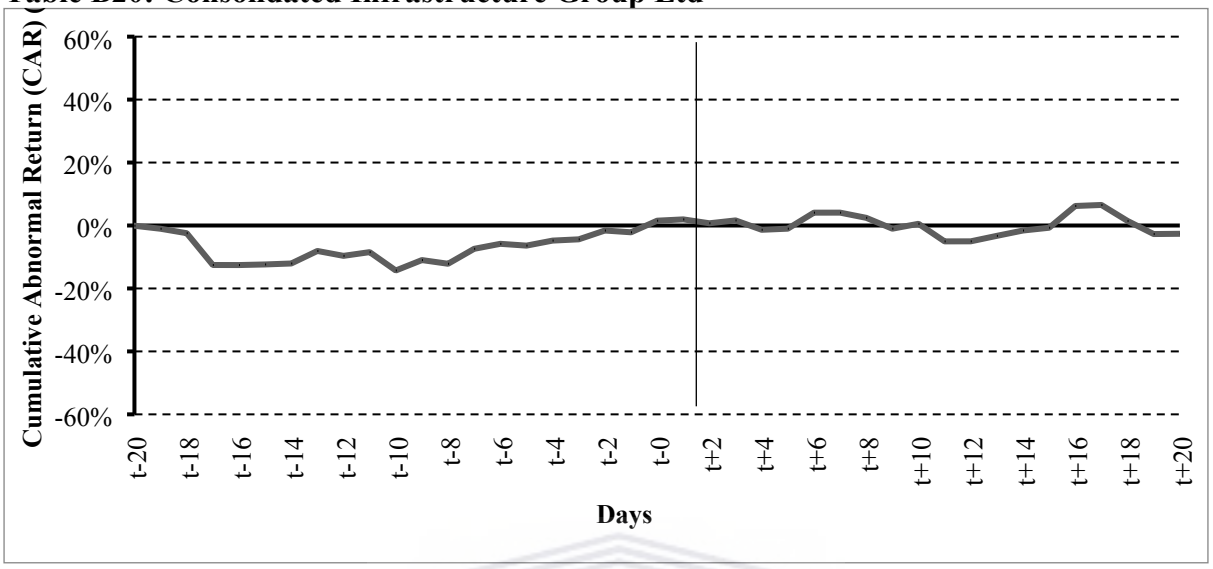
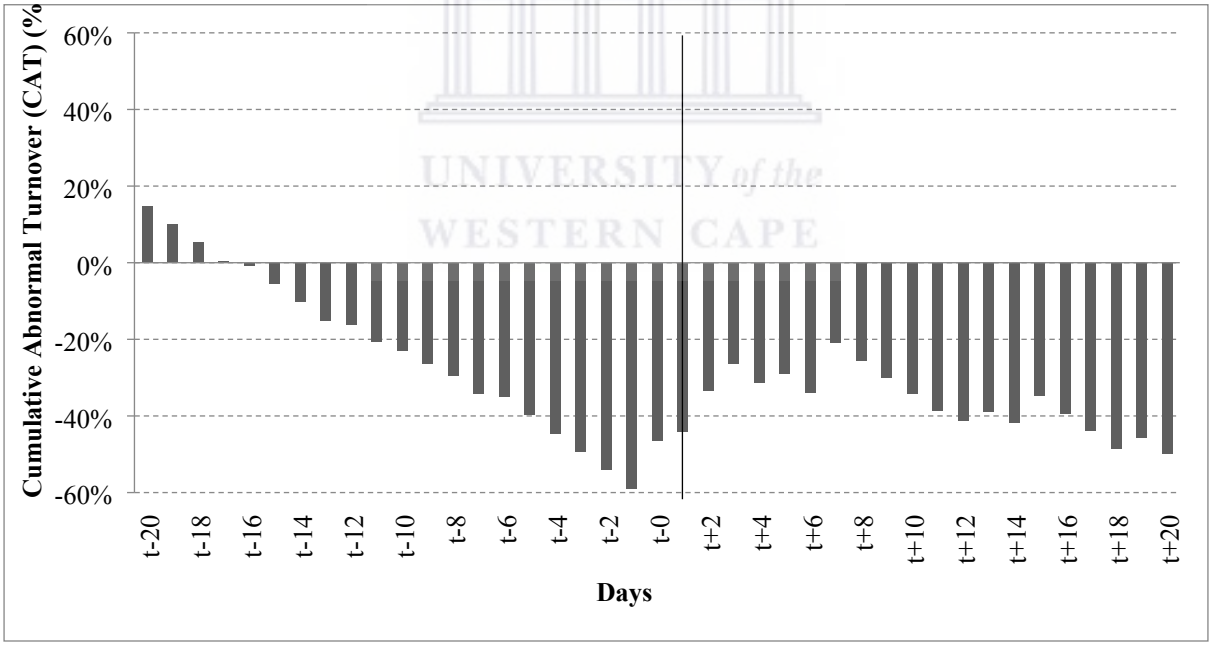


Table B20: Consolidated Infrastructure Group Ltd



Appendix C: Migration CAR & CAT

Table C1: 1 Time Holdings Ltd

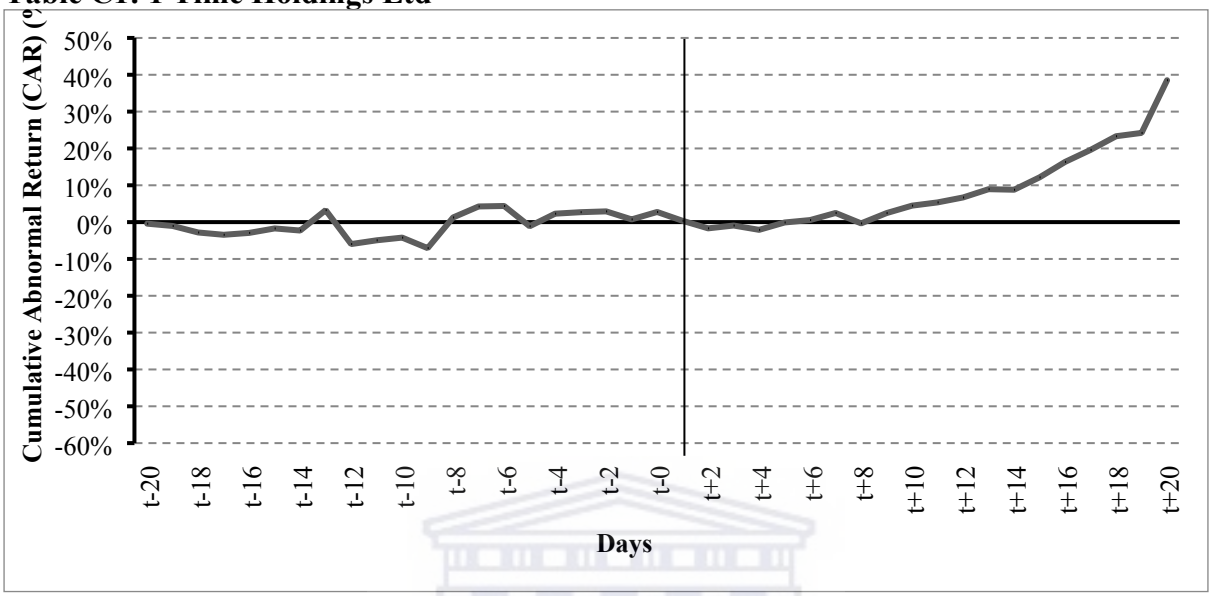


Table C1: 1 Time Holdings Ltd

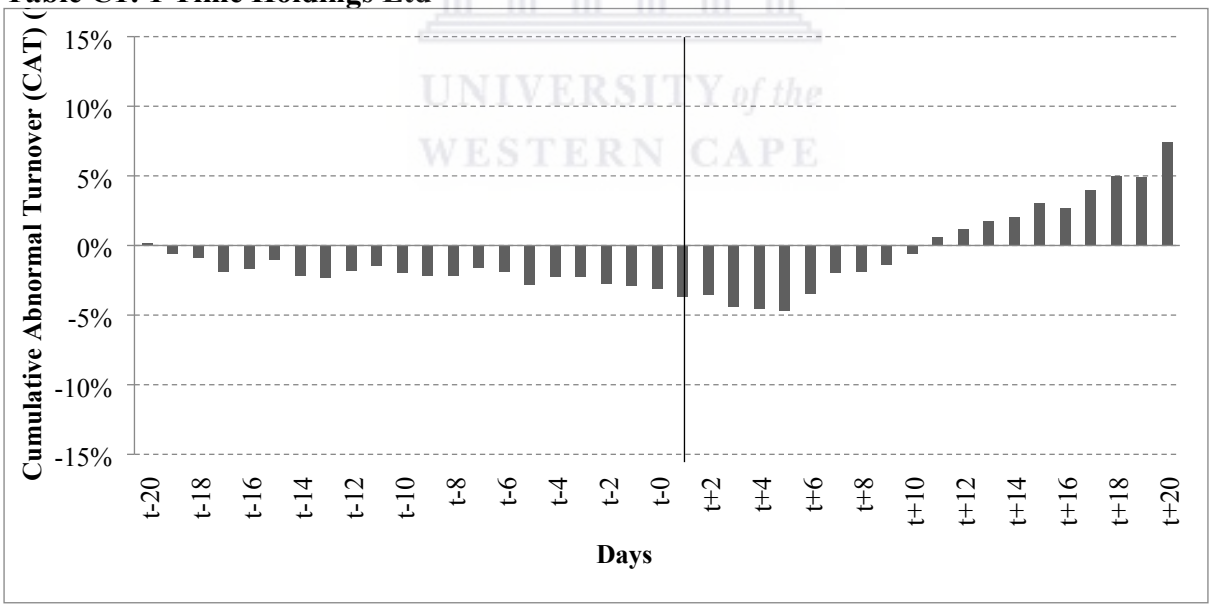


Table C2: Esor Ltd

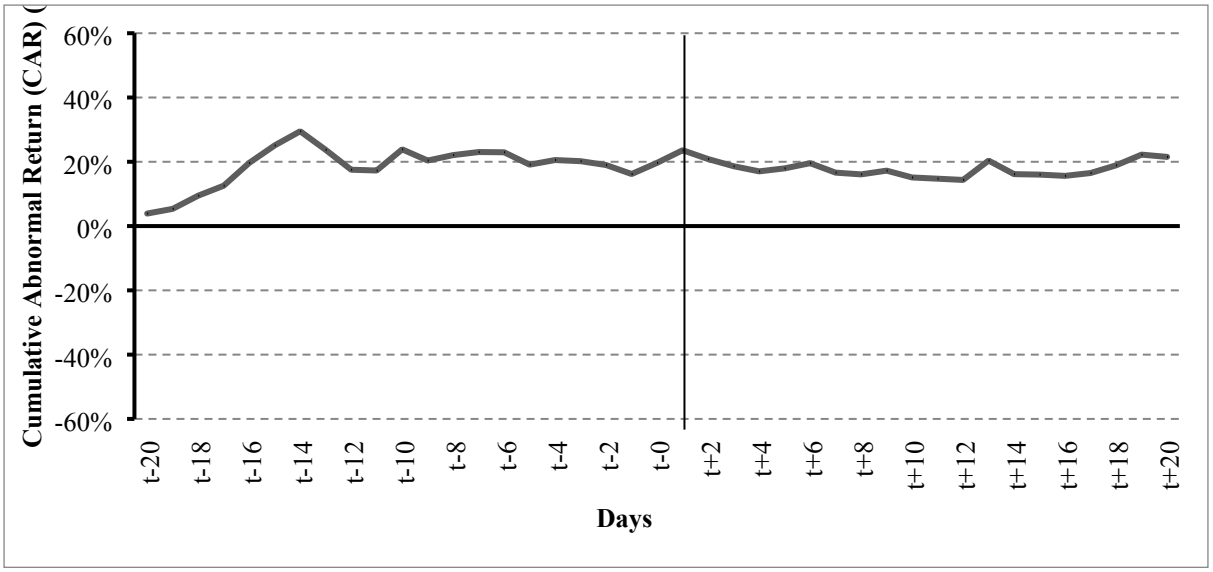


Table C2: Esor Ltd

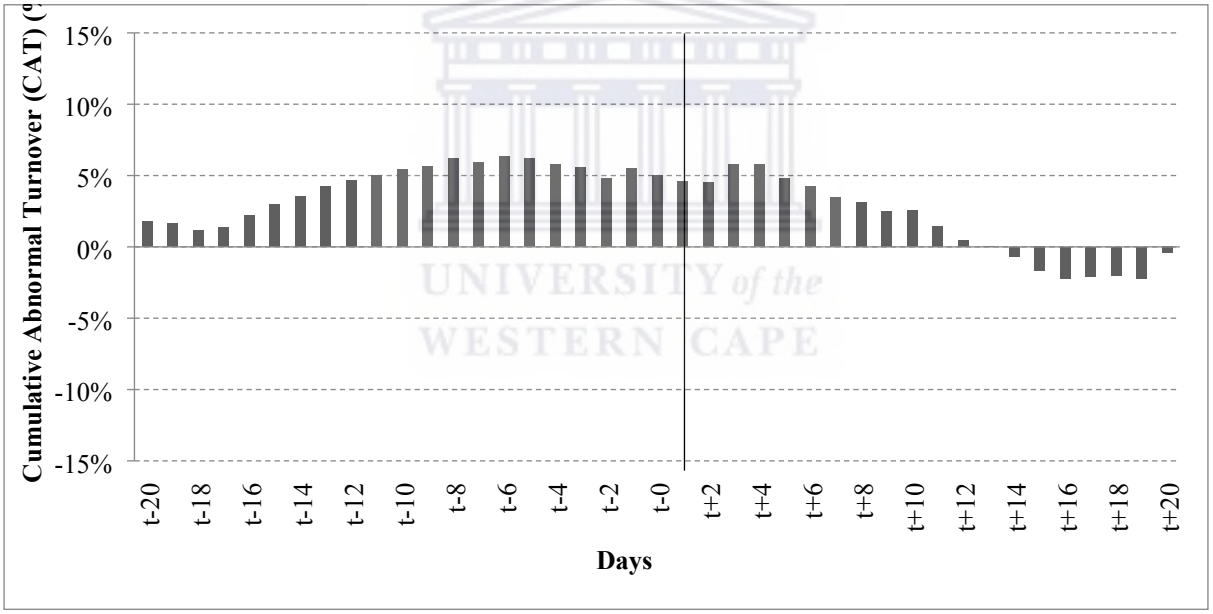


Table C3: Calgro M3 Holdings Ltd

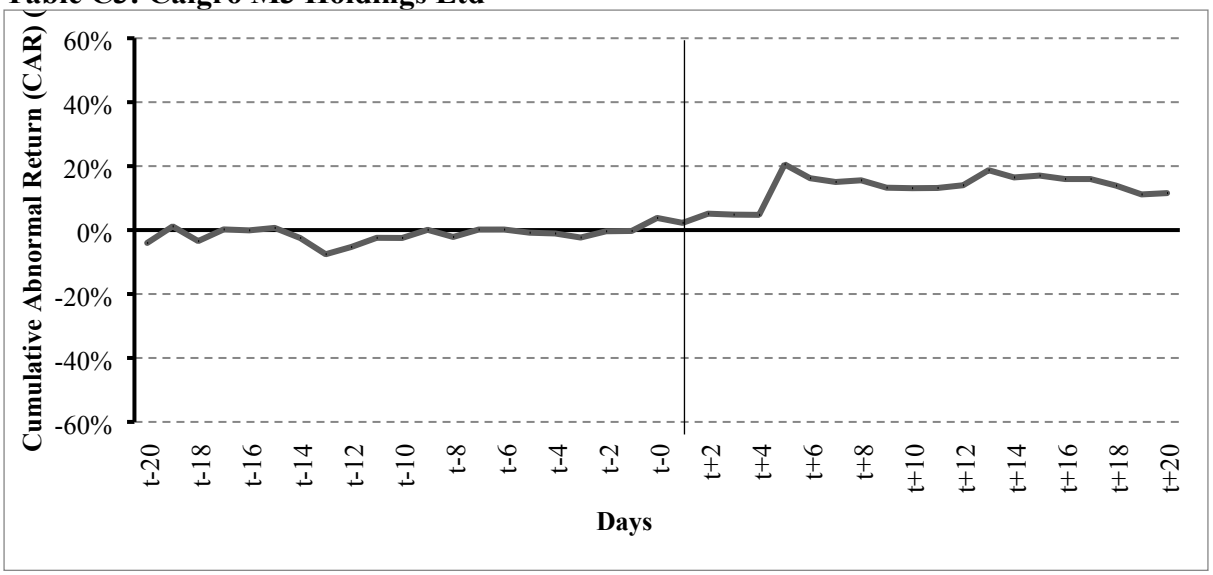


Table C3: Calgro M3 Holdings Ltd

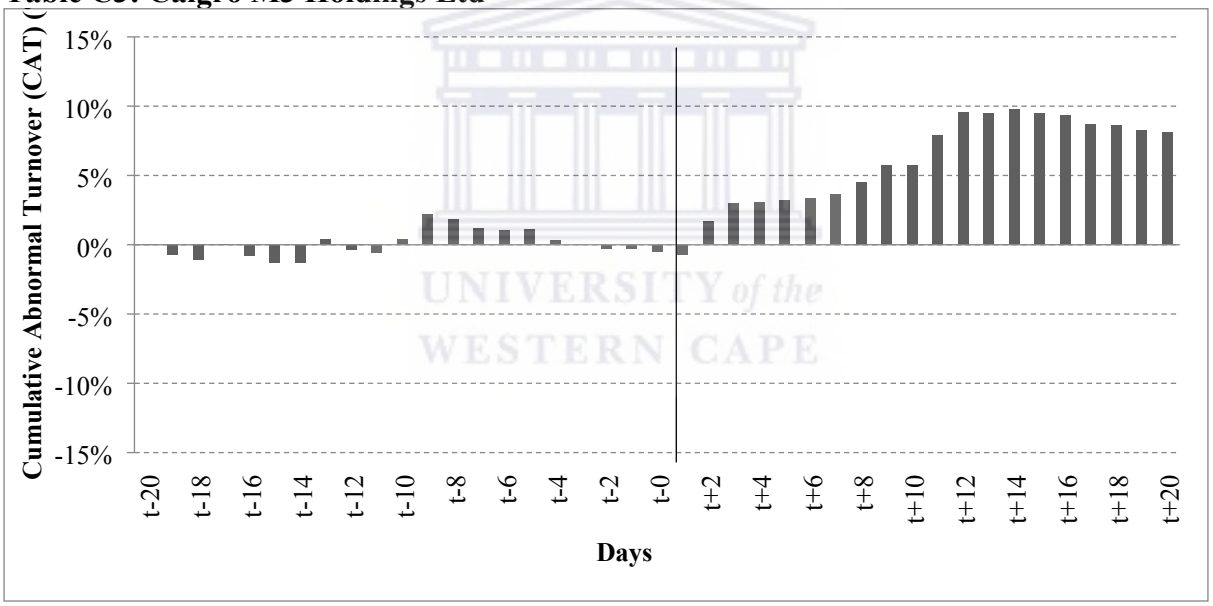


Table C4: Curro Holdings Ltd

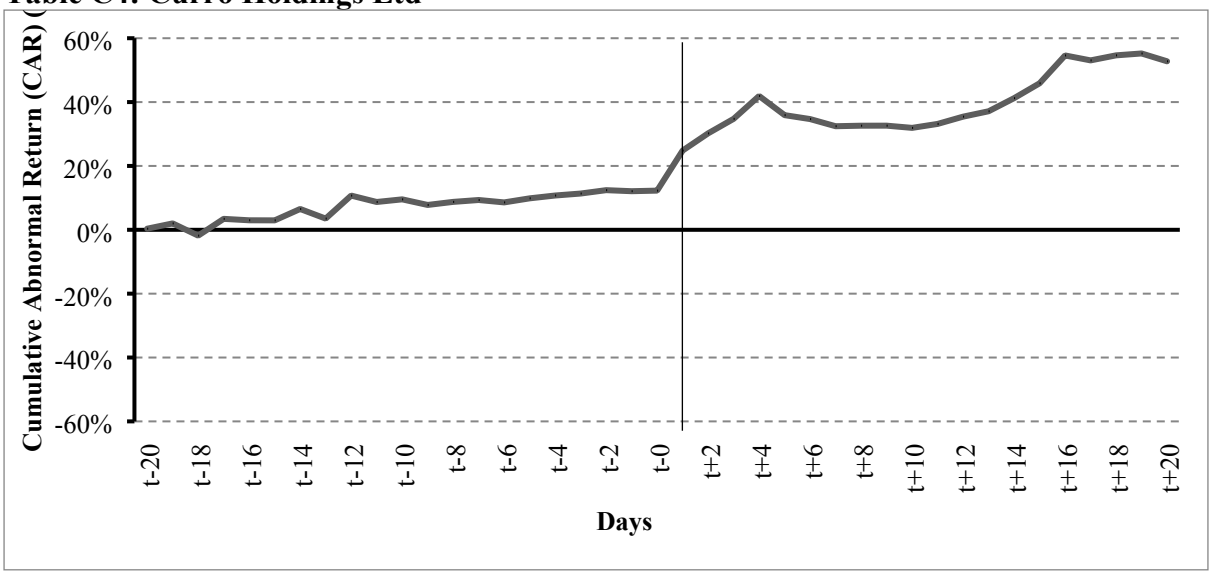


Table C4: Curro Holdings Ltd

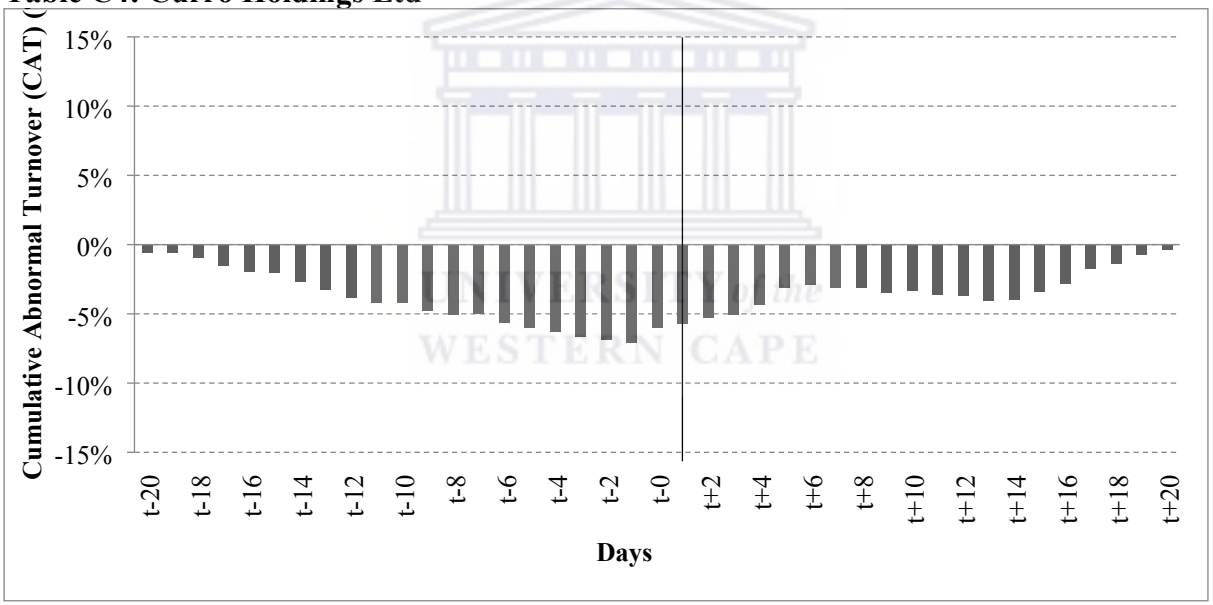


Table C5: Cognition Holdings Ltd

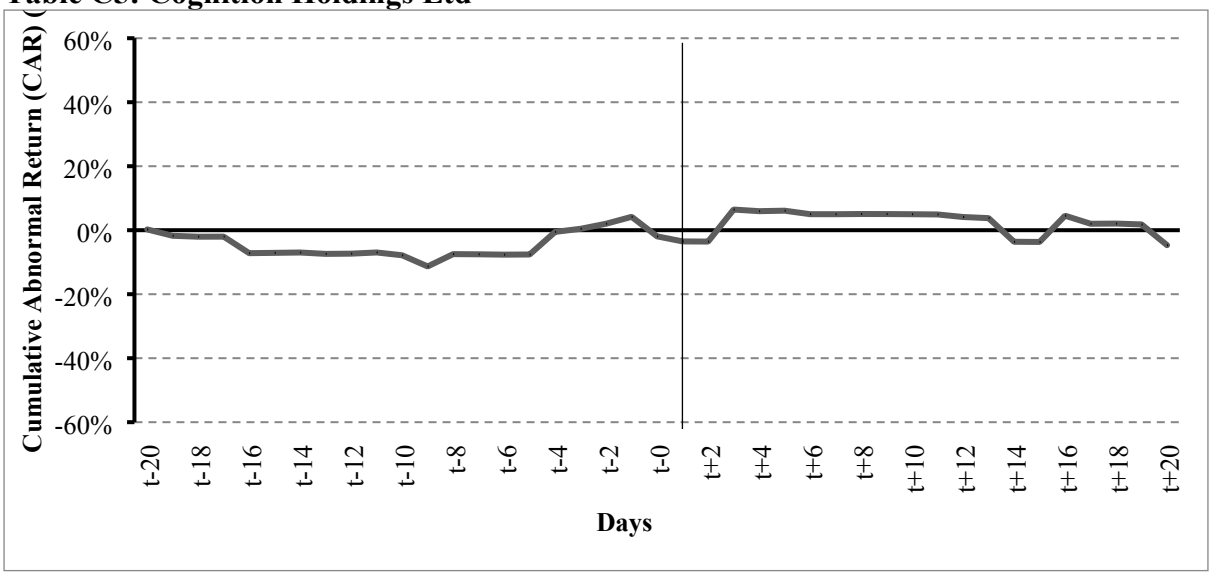


Table C5: Cognition Holdings Ltd

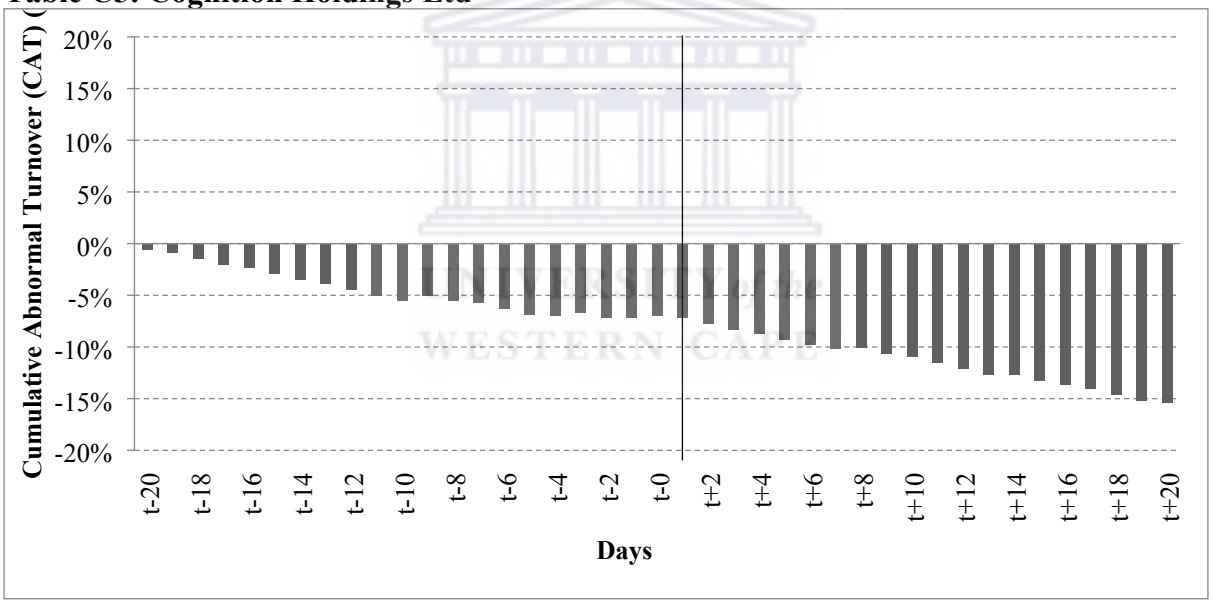


Table C6: Ellies Holdings Ltd

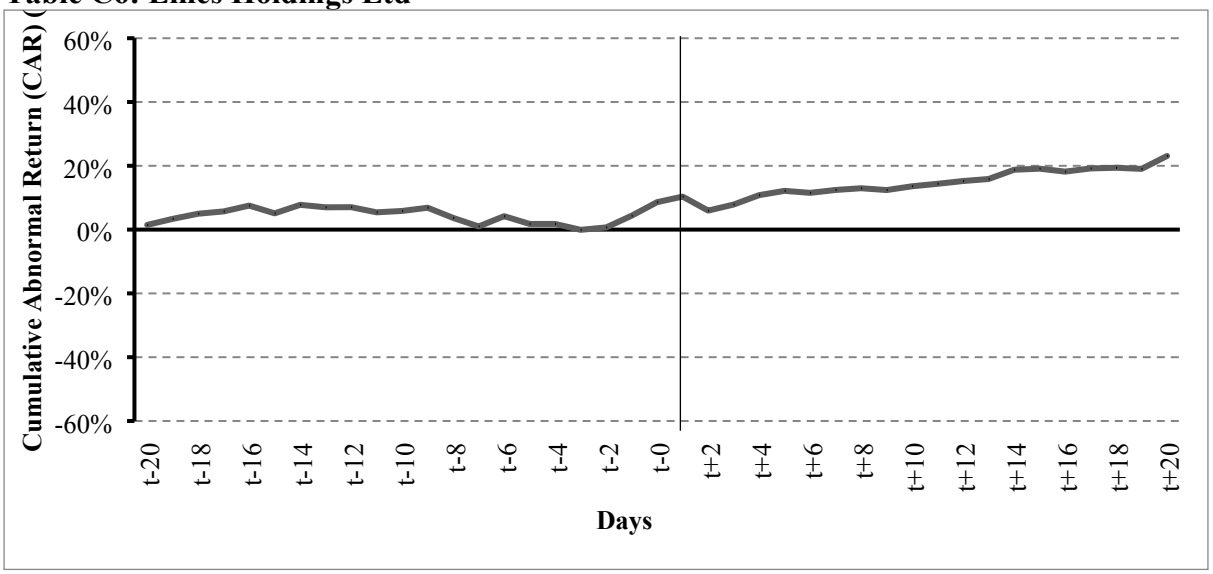


Table C6: Ellies Holdings Ltd

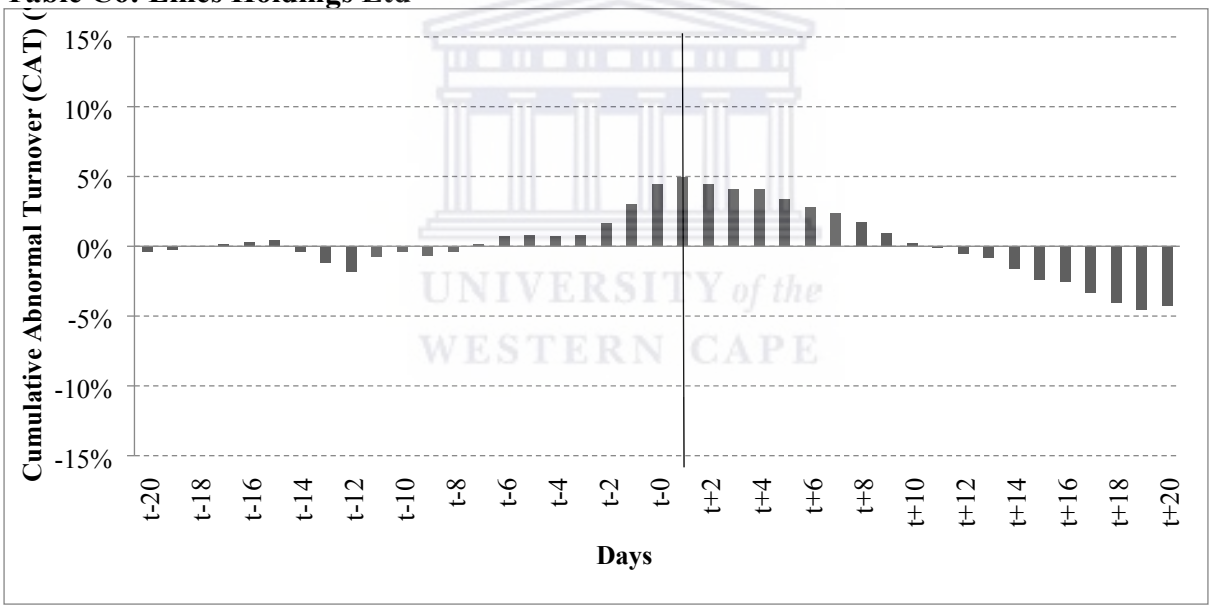


Table C7: Finbond Group Ltd

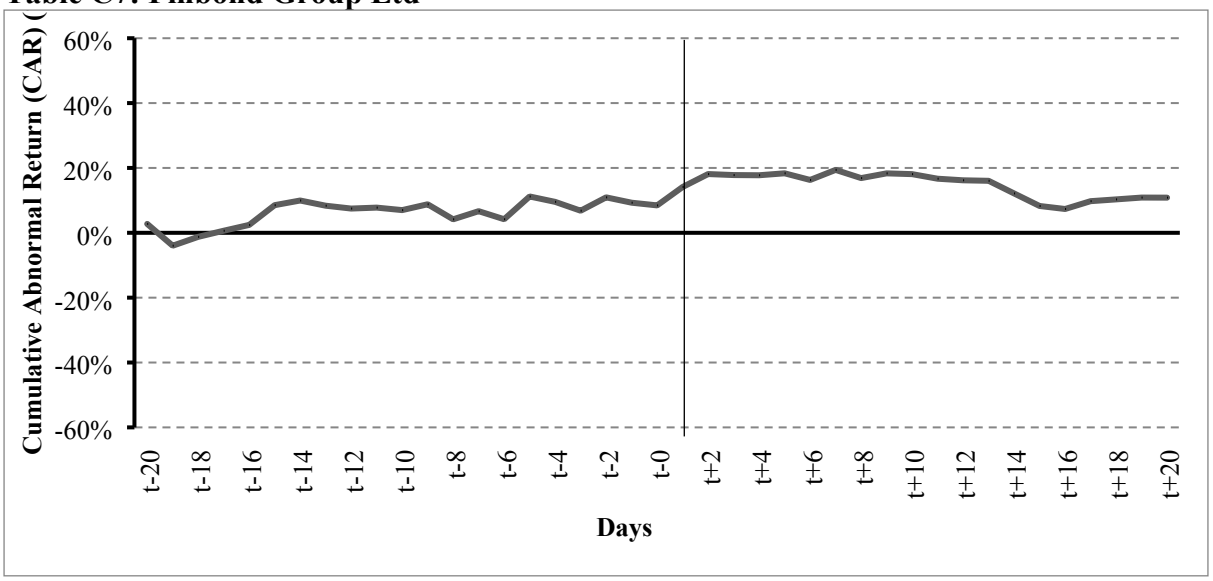


Table C7: Finbond Group Ltd

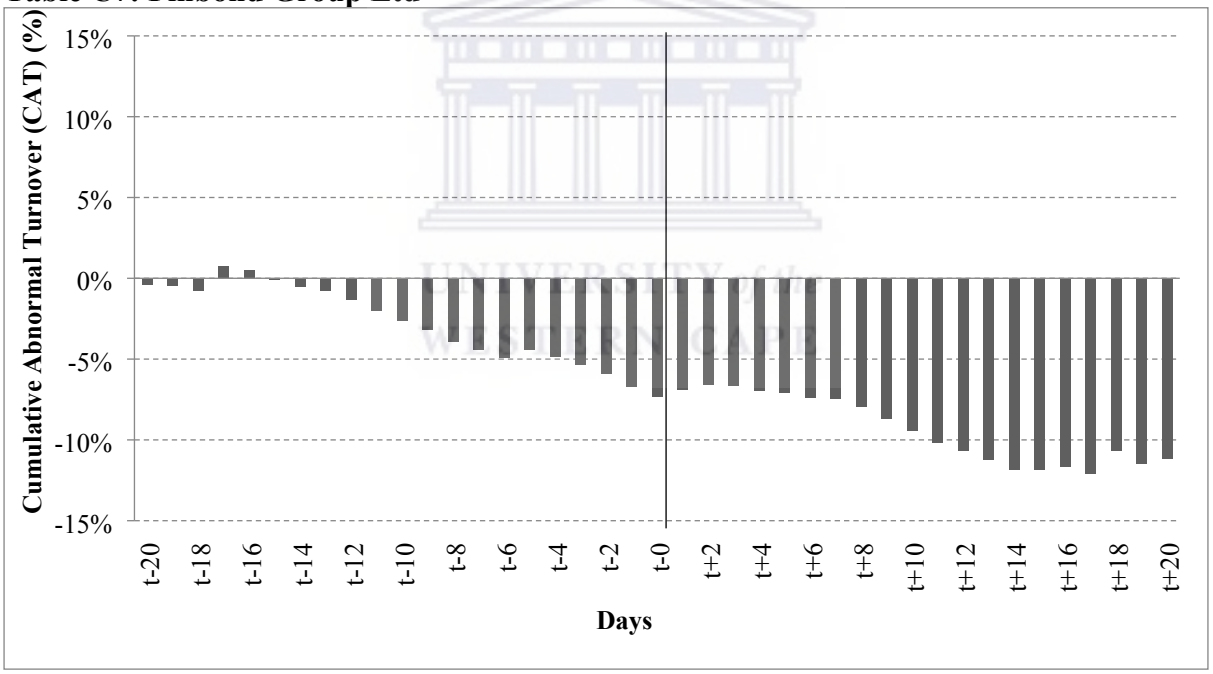


Table C8: Insimbi Refractory & Alloy Supply Ltd

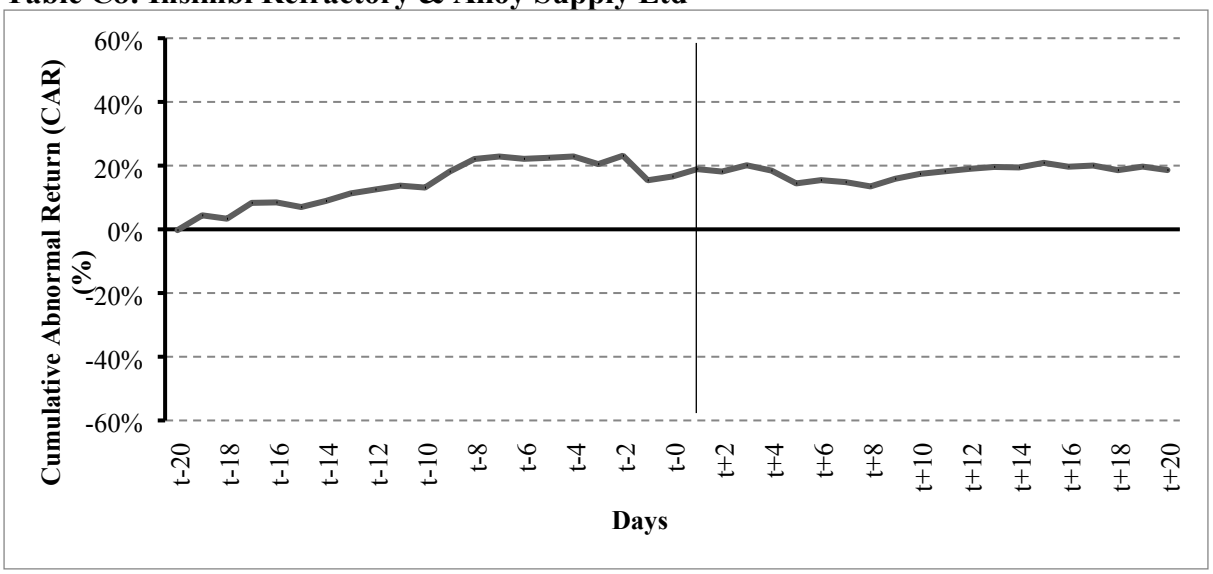


Table C8: Insimbi Refractory & Alloy Supply Ltd

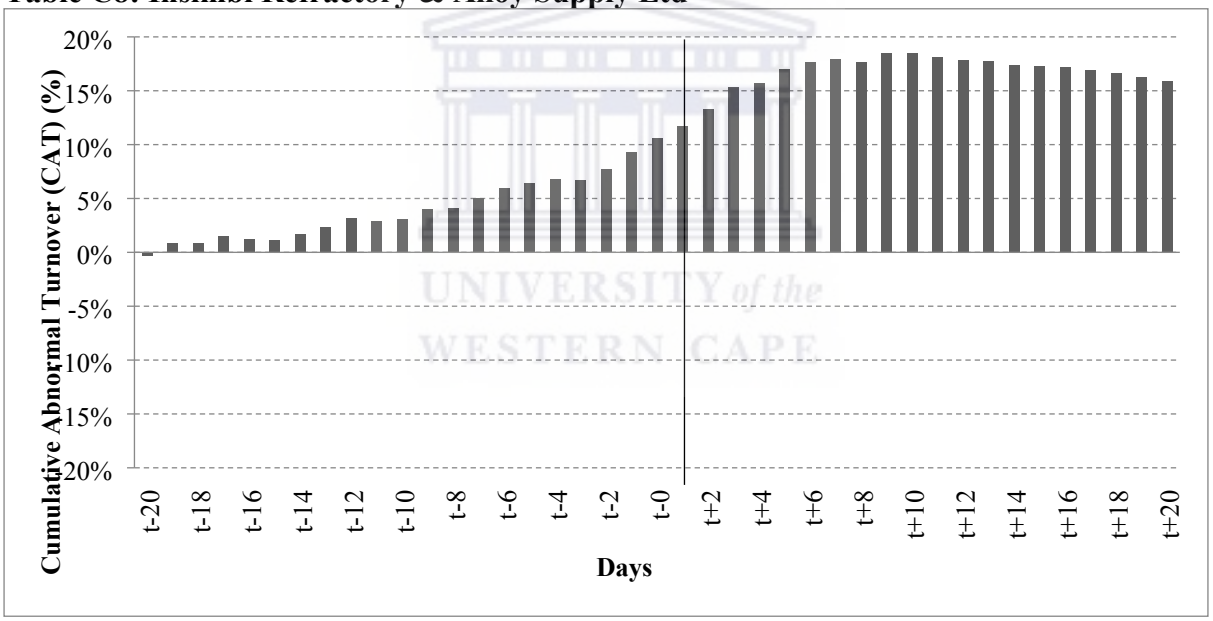


Table C9: Interwaste Holdings Ltd

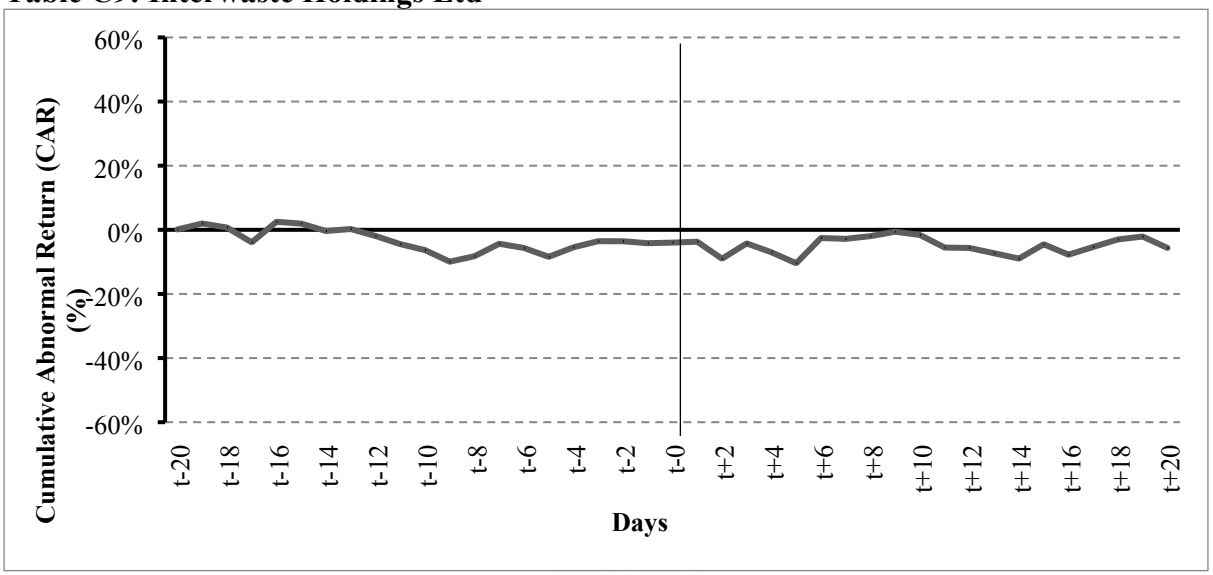


Table C9: Interwaste Holdings Ltd

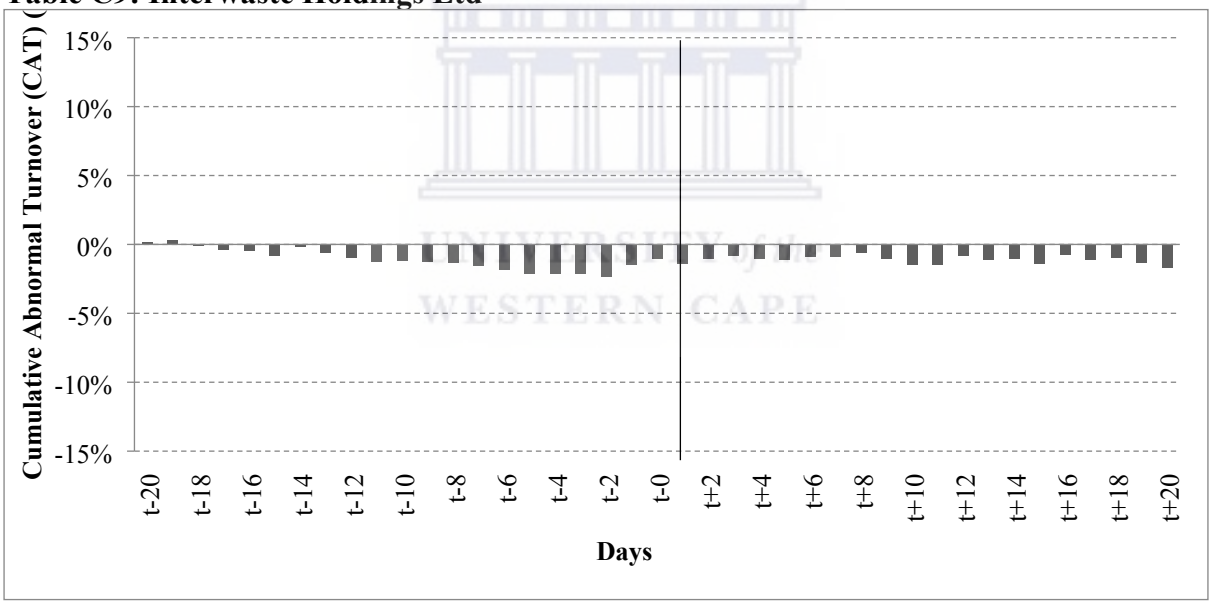


Table C10: Mas Real Estate Inc

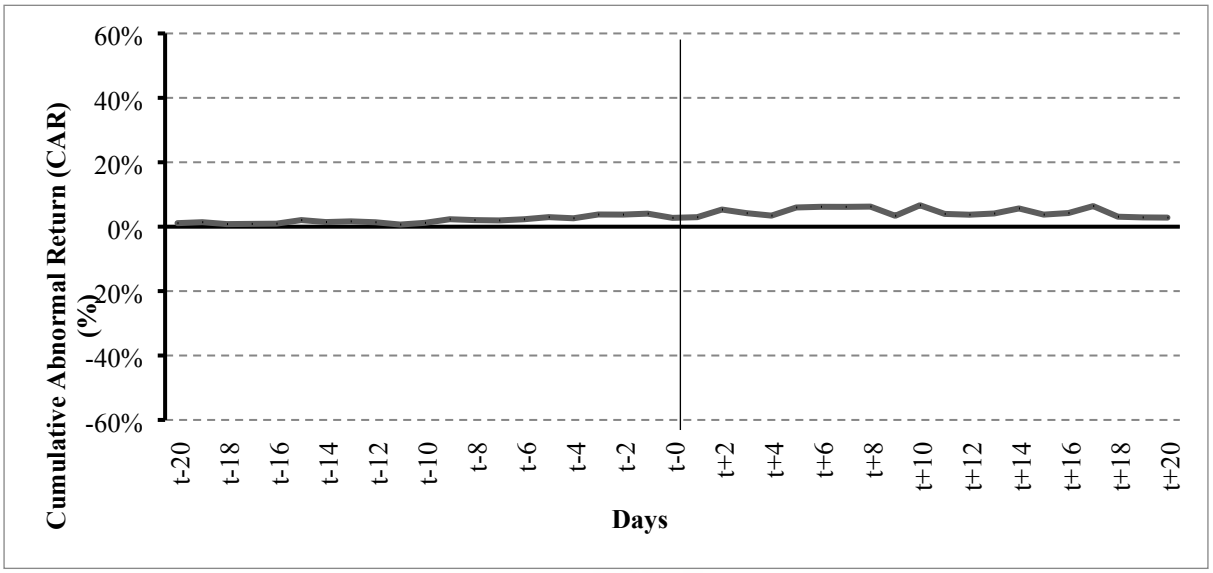


Table C10: Mas Real Estate Inc

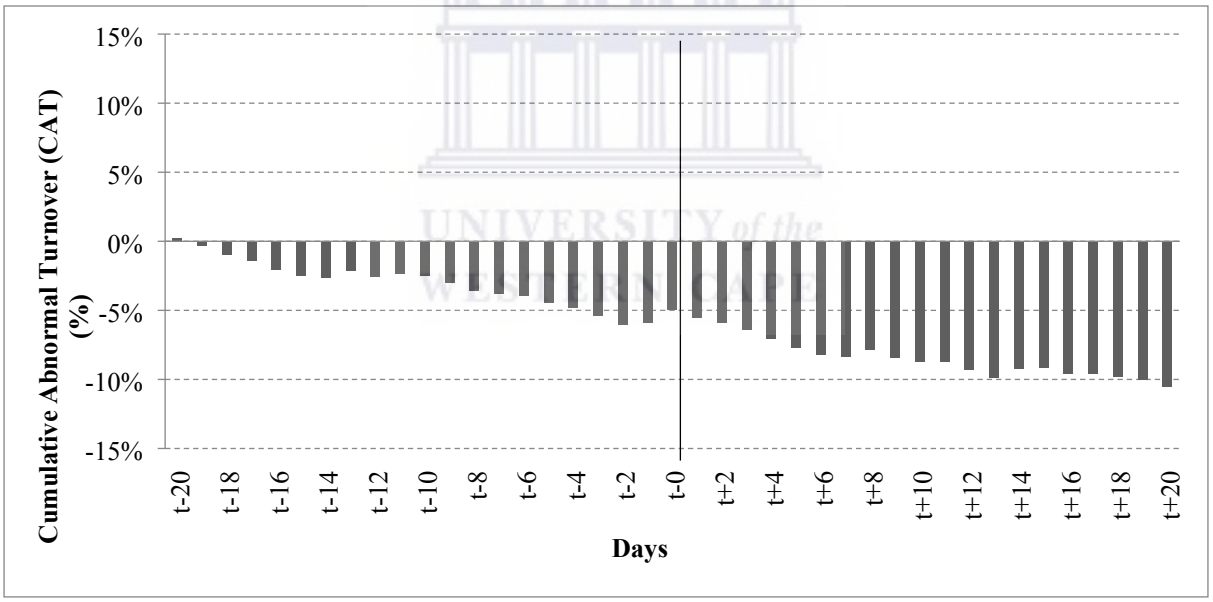


Table C11: Mazor Holdings Ltd

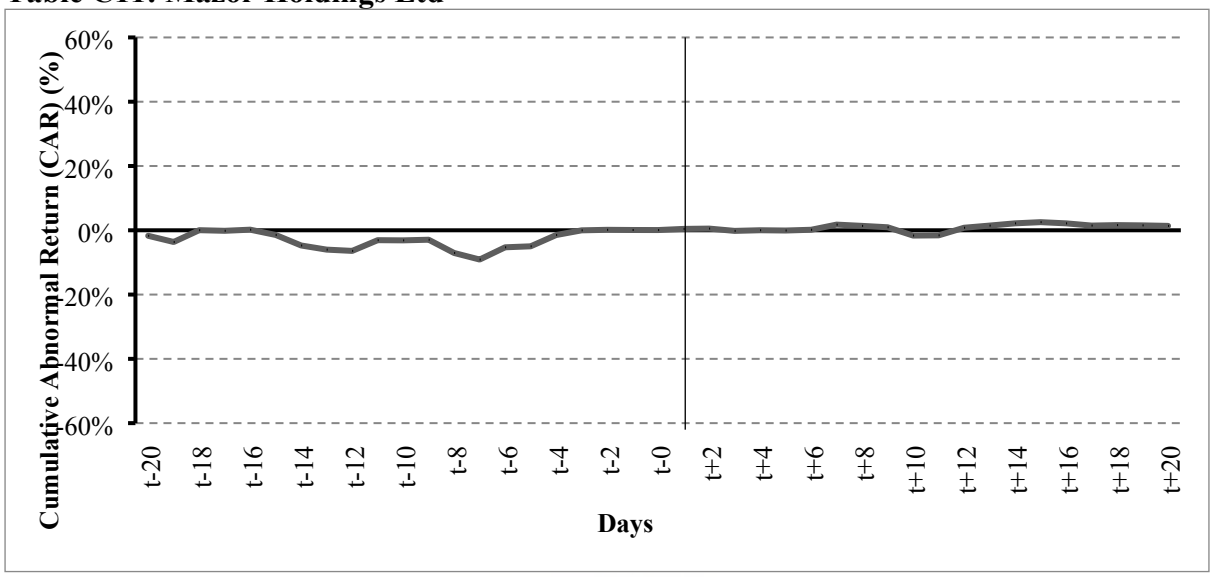


Table C11: Mazor Holdings Ltd

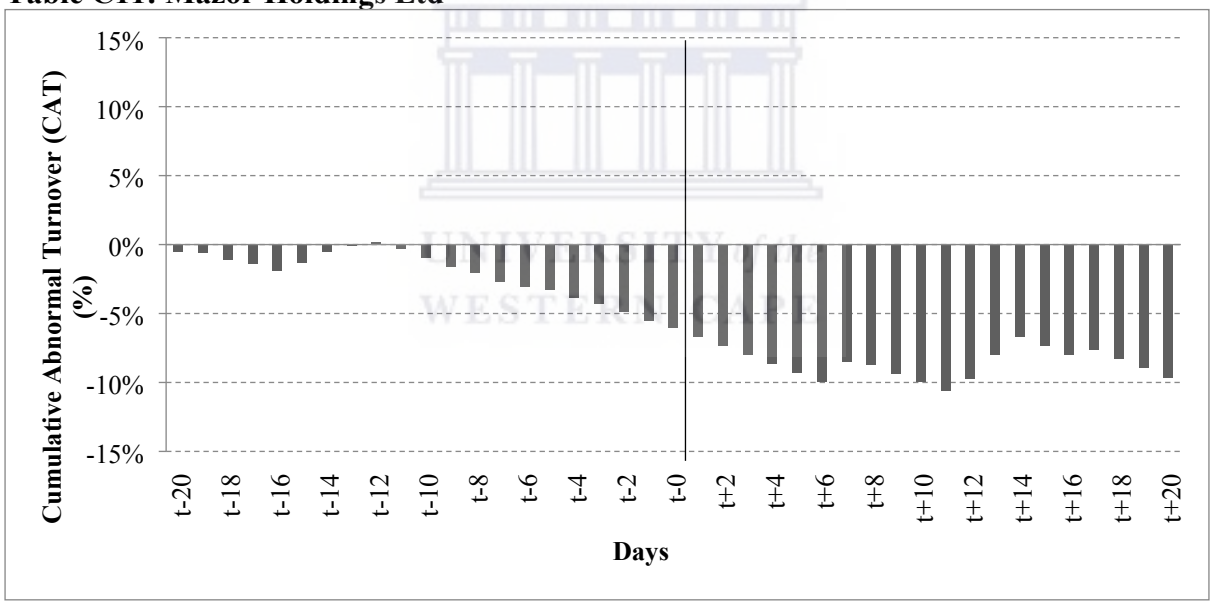


Table C12: Onelogix Group Ltd

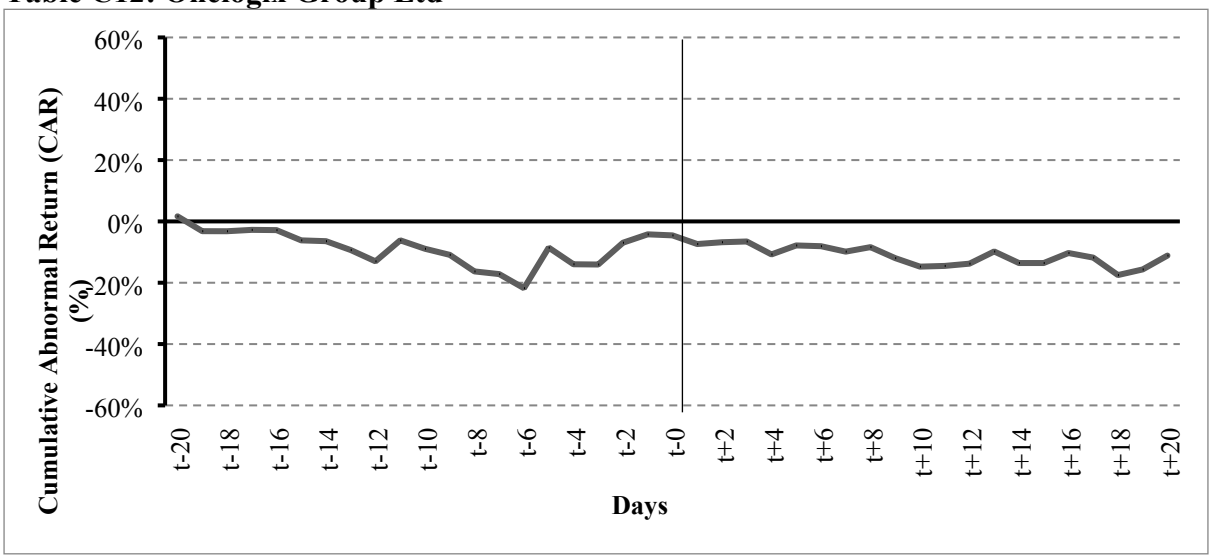


Table C12: Onelogix Group Ltd

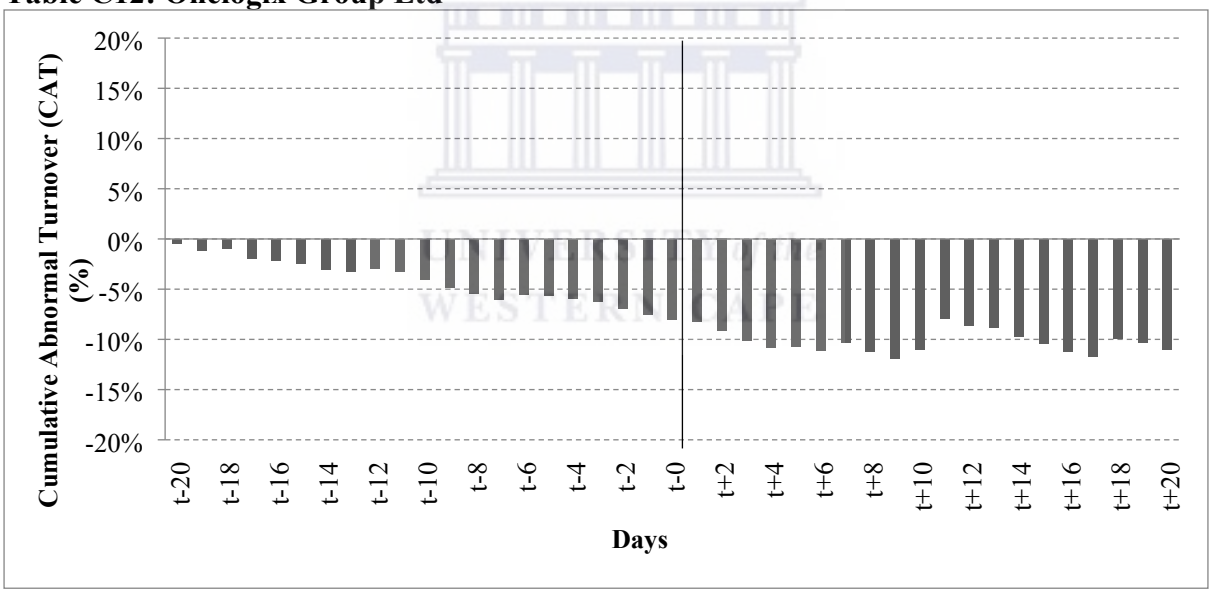


Table C13: Pan African Resources Plc

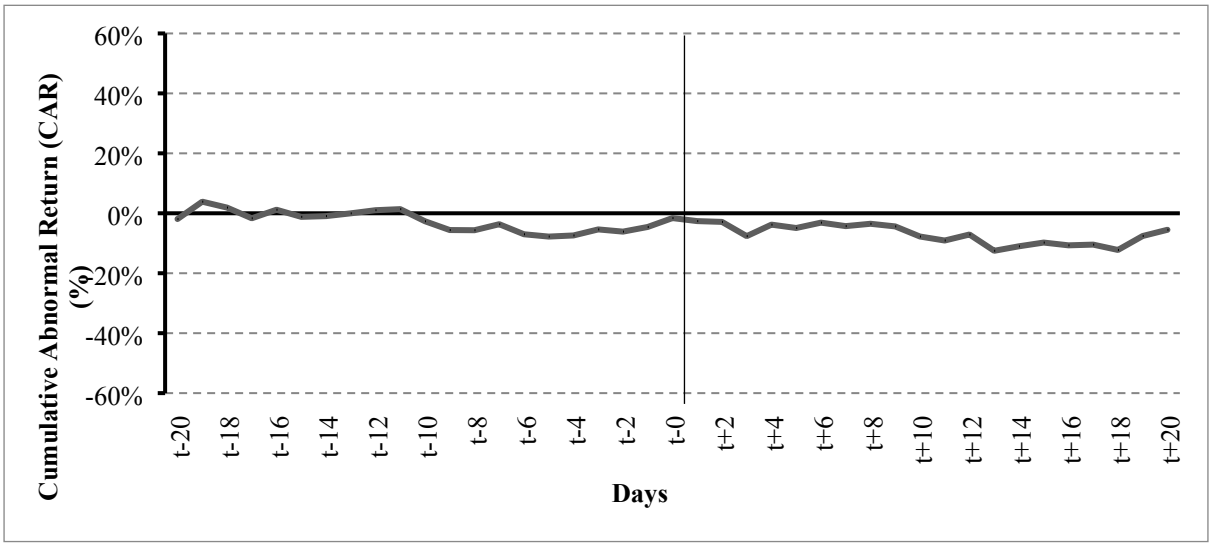


Table C13: Pan African Resources Plc

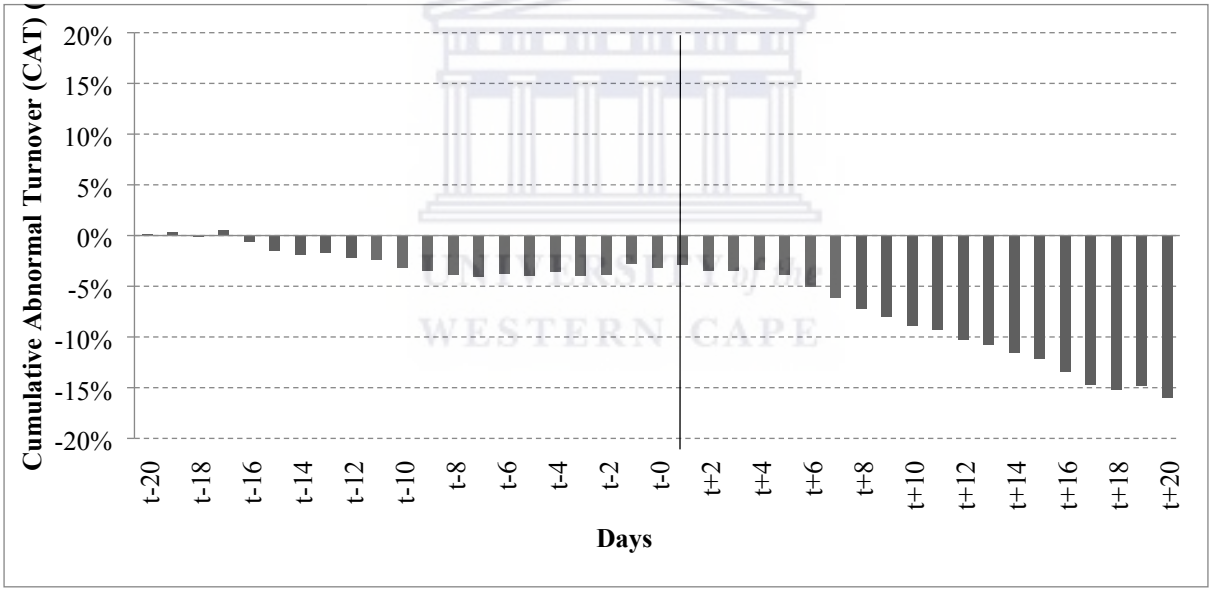


Table C14: Rockcaslte Global Real Estate

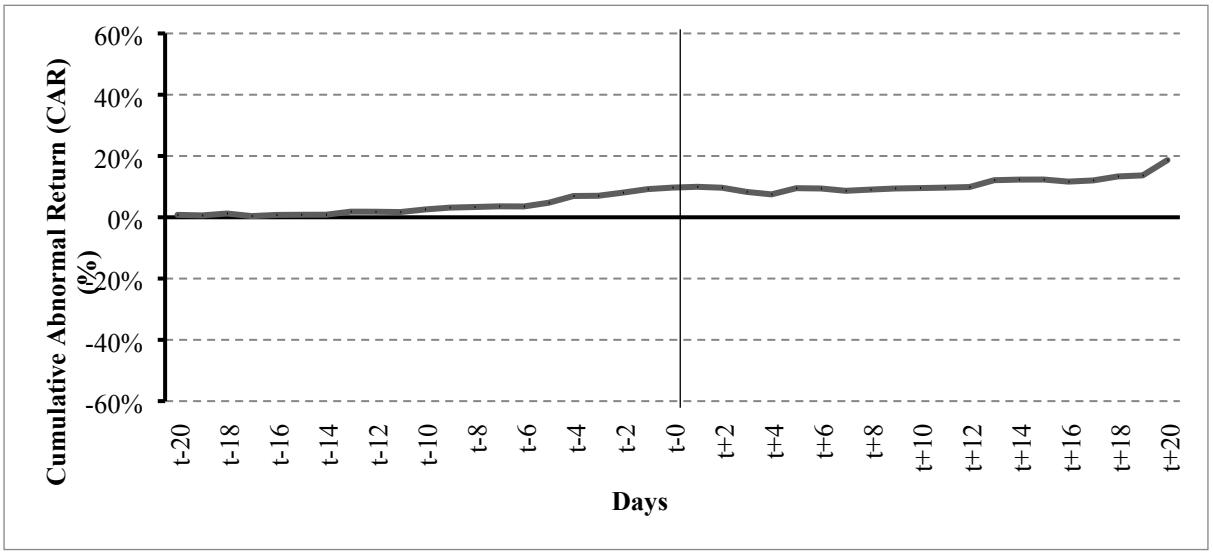


Table C14: Rockcaslte Global Real Estate

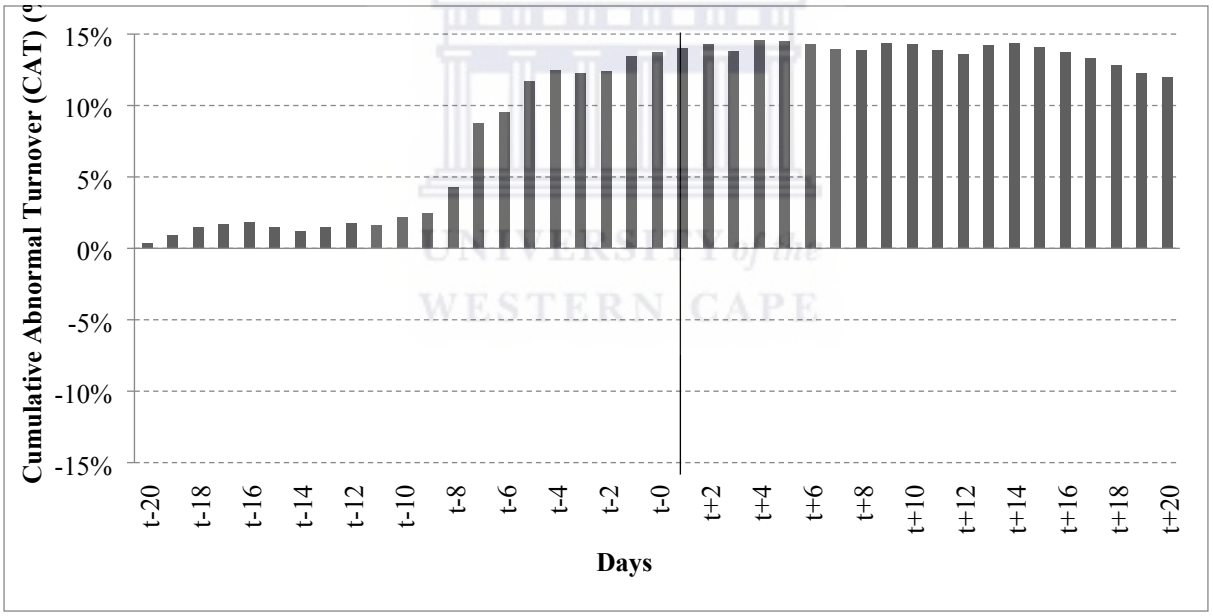


Table C15: Rolfes Technology Holdings

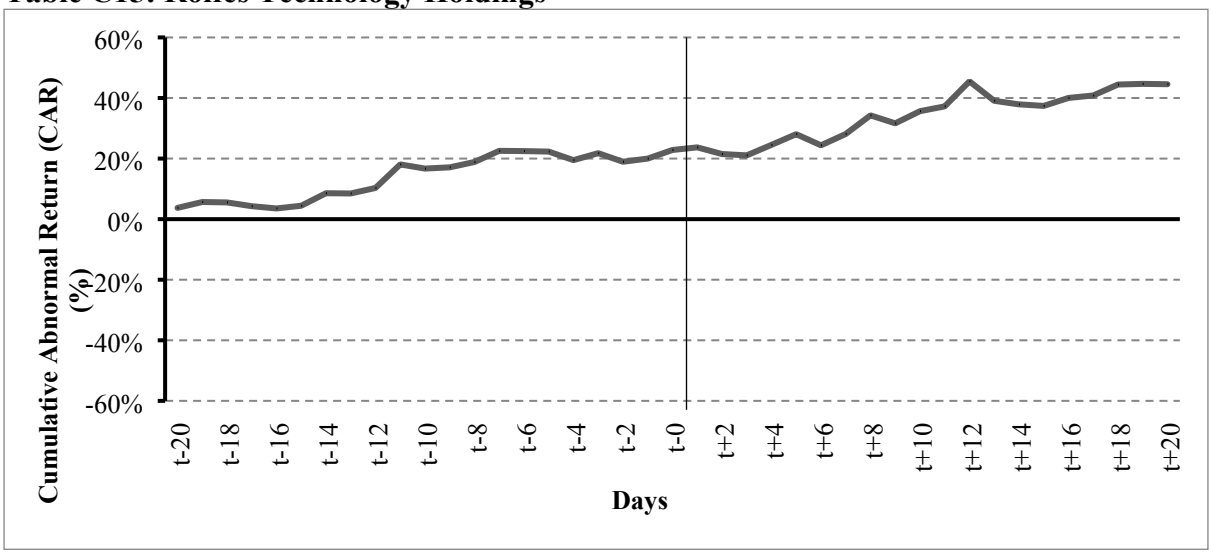


Table C15: Rolfes Technology Holdings

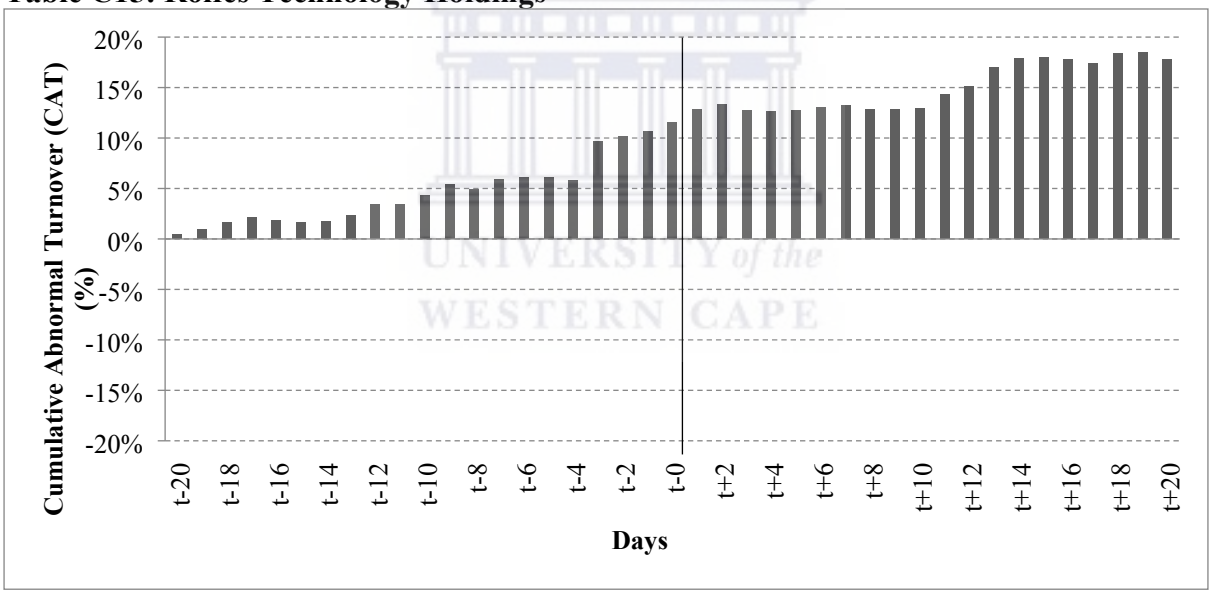


Table C16: Santova Ltd

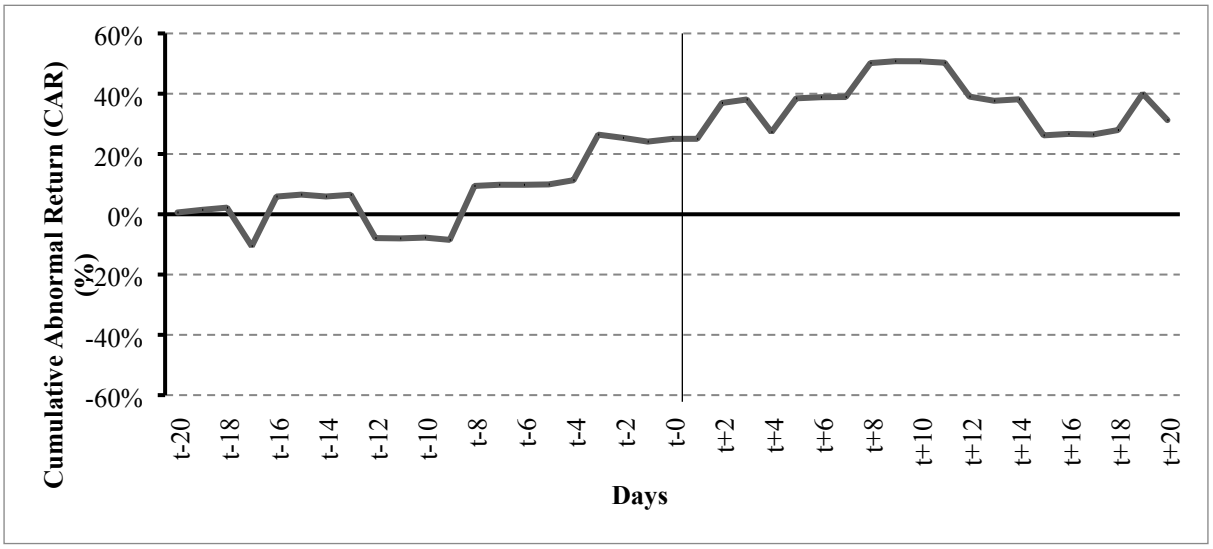


Table C16: Santova Ltd

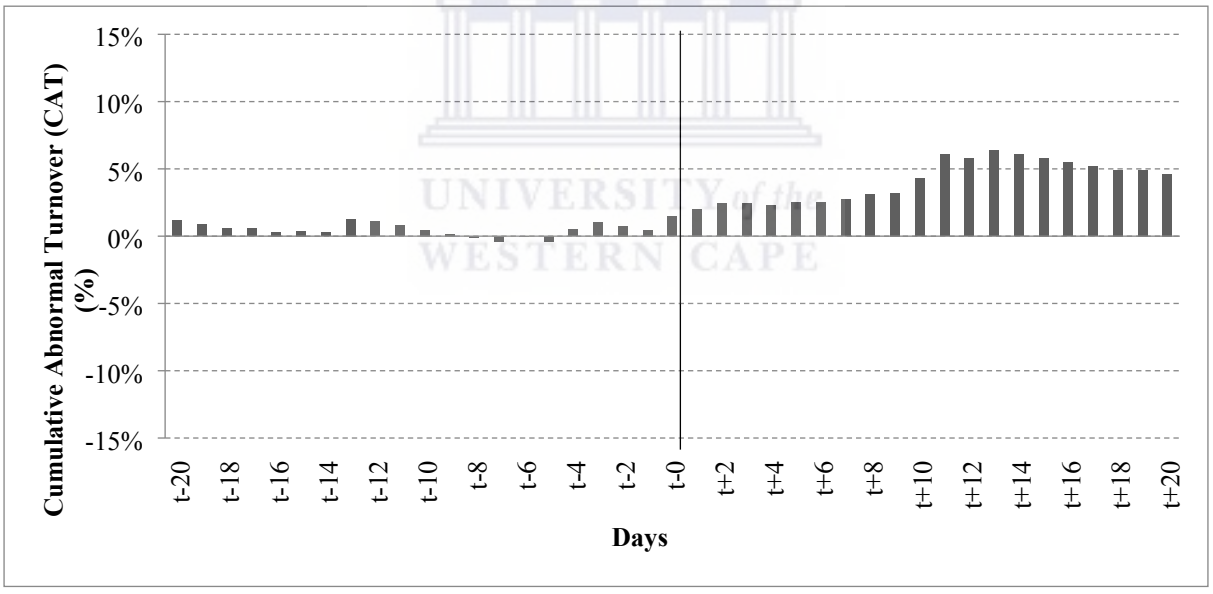


Table C17: Stenprop Ltd

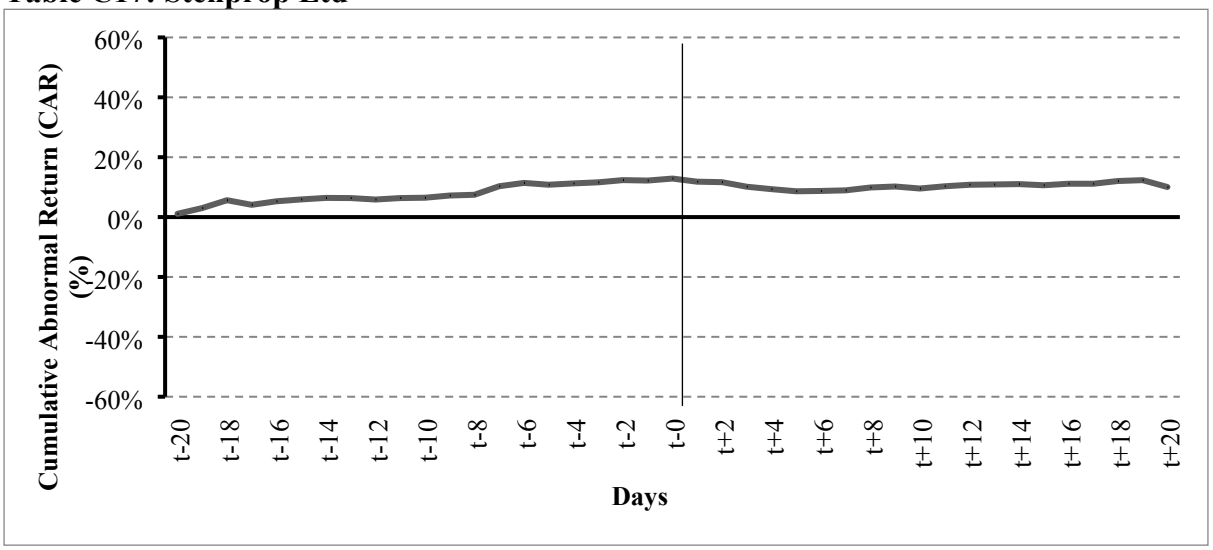


Table C17: Stenprop Ltd

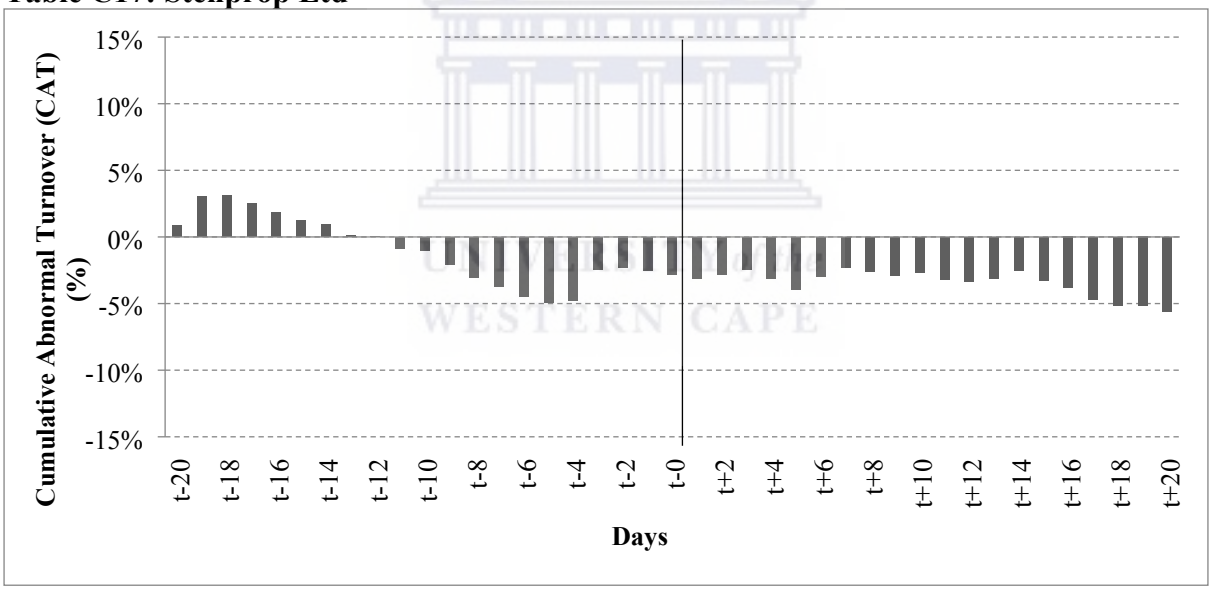


Table C18: Wescoal Holdings Ltd

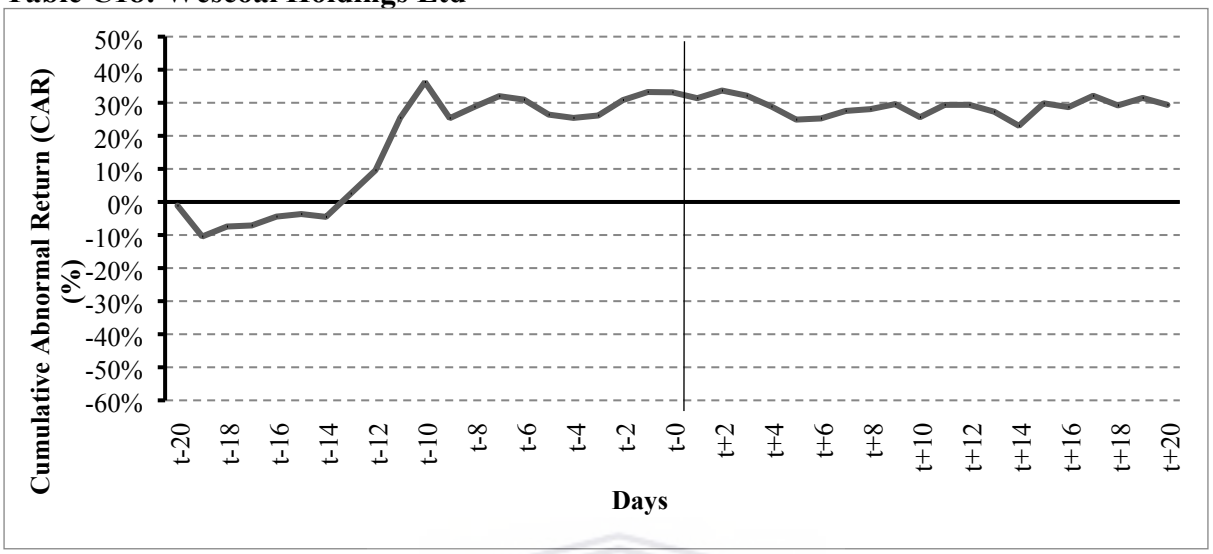


Table C18: Wescoal Holdings Ltd

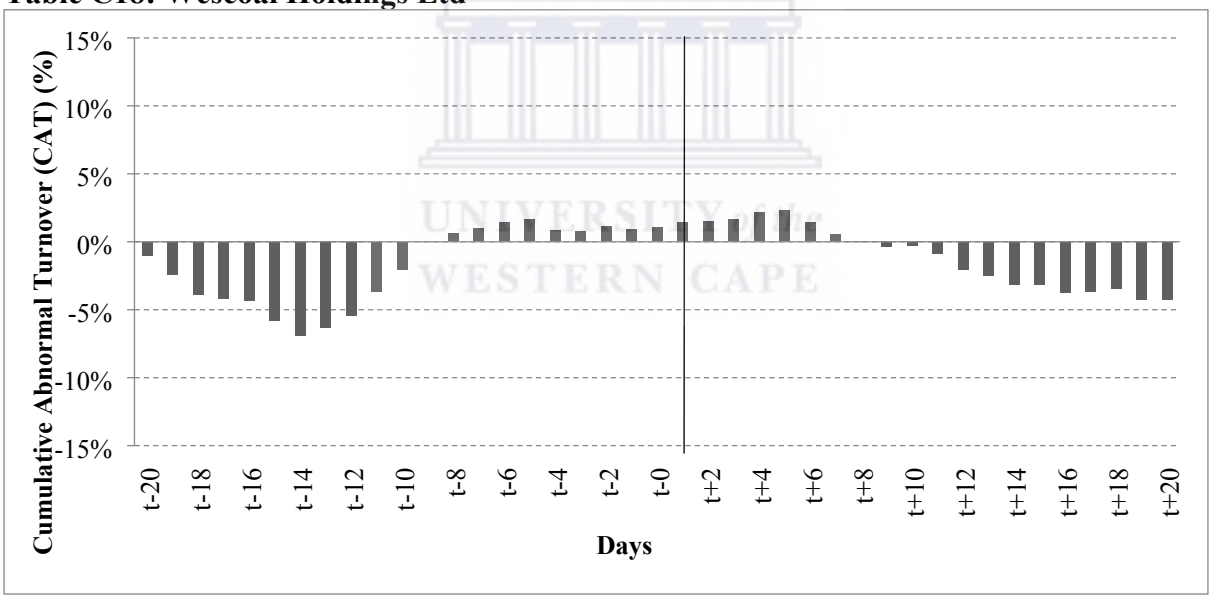


Table C19: Taste Holdings Ltd

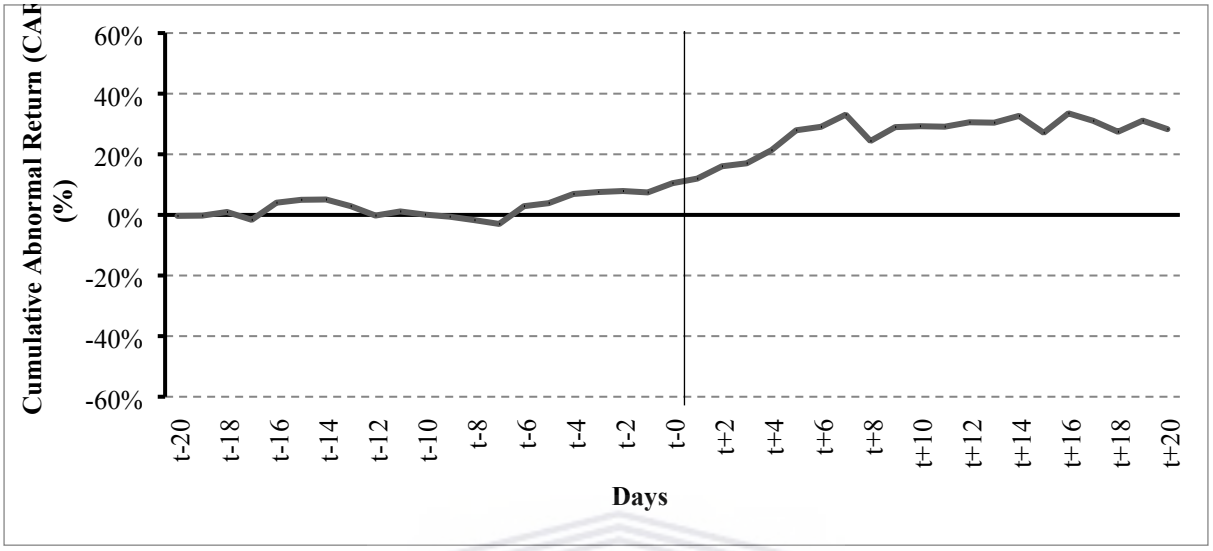


Table C19: Taste Holdings Ltd

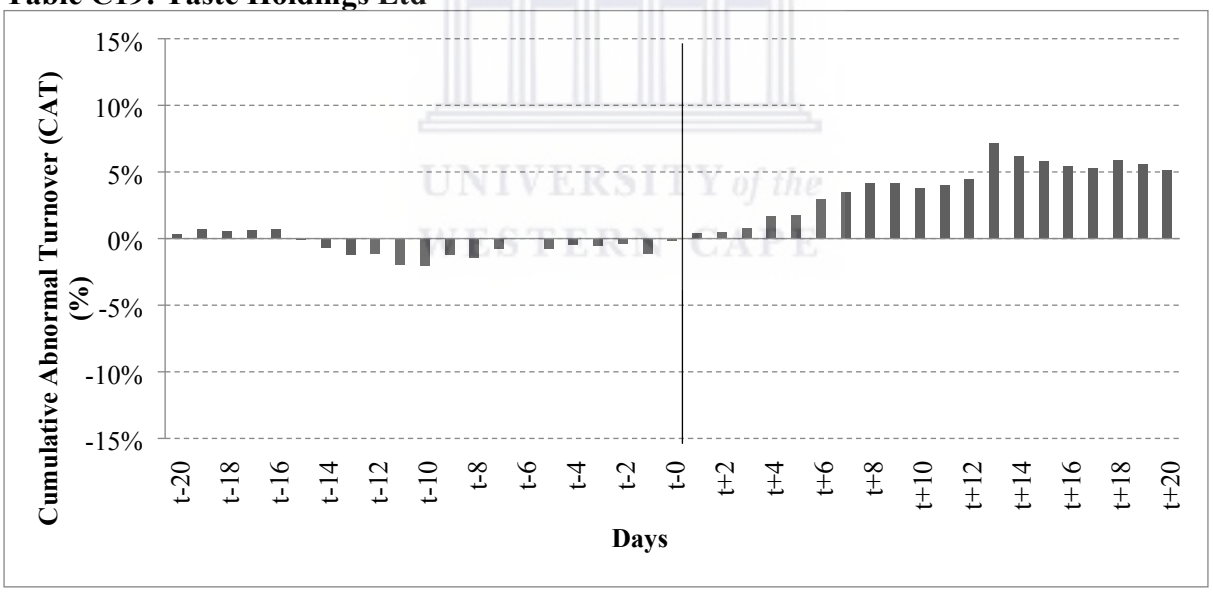


Table C20: Consolidated Infrastructure Group Ltd

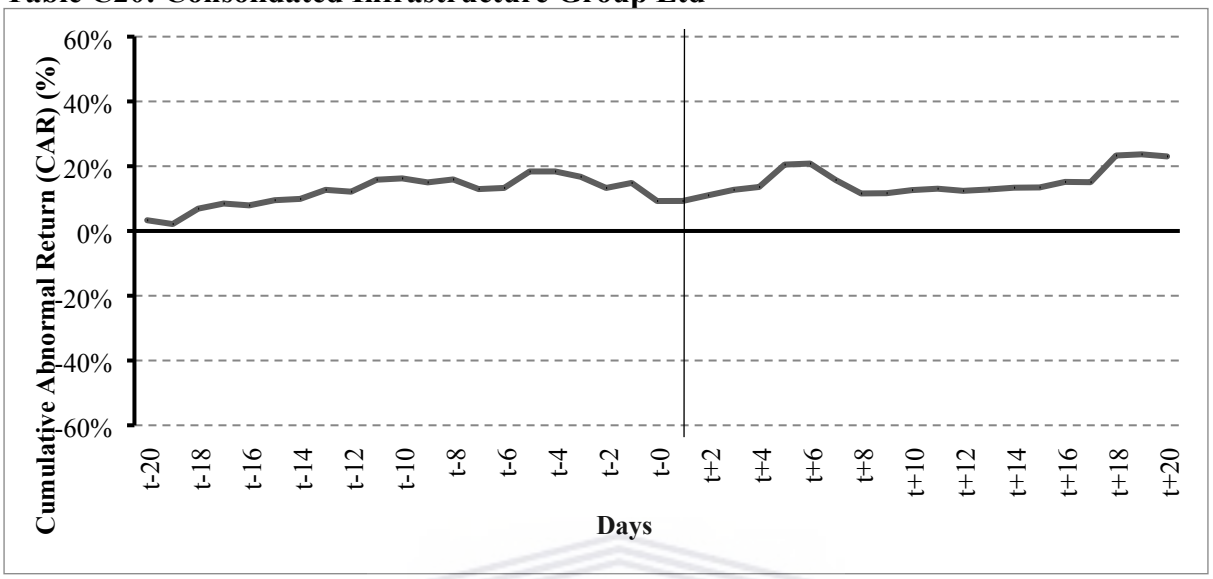
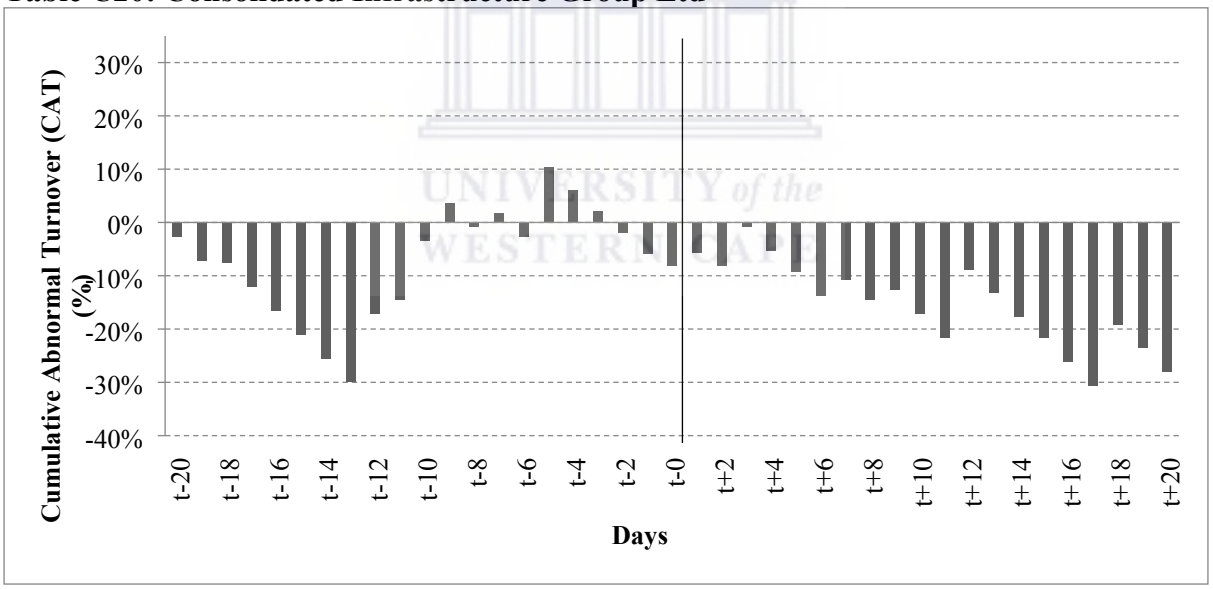


Table C20: Consolidated Infrastructure Group Ltd



Appendix D: Regression Analysis of AltX firms on the ALS

Table D1: 1 Time Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,079577466							
R Square	0,006332573							
Adjusted R Square	-0,019146079							
Standard Error	0,03688512							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,000338147	0,000338147	0,24854428	0,62090218			
Residual	39	0,053059972	0,001360512					
Total	40	0,053398119						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,009395049	0,005808594	1,617439339	0,11384442	-0,00235394	0,021144039	-0,00235394	0,02114404
X Variable 1	0,251483164	0,504437115	0,49854215	0,62090218	-0,76883721	1,271803535	-0,76883721	1,27180354

Table D2: Esor Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,242744453							
R Square	0,05892487							
Adjusted R Square	0,034794738							
Standard Error	0,032909795							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,002644778	0,002644778	2,441962216	0,126207441			
Residual	39	0,04223913	0,001083055					
Total	40	0,044883908						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,005250242	0,005165077	1,016488548	0,3156616	-0,005197113	0,015697597	-0,005197113	0,015697597
X Variable 1	0,531841829	0,340340021	1,562677899	0,126207441	-0,156560841	1,2202445	-0,156560841	1,2202445

Table D3: Calgro M3 Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,0562498							
R Square	0,00316404							
Adjusted R Square	-0,022395856							
Standard Error	0,035519647							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,000156178	0,00015618	0,12379	0,726854564			
Residual	39	0,049204168	0,00126165					
Total	40	0,049360346						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,002820035	0,005547388	0,50835372	0,61407	-0,00840062	0,01404069	-0,00840062	0,01404069
X Variable 1	0,281764399	0,800838023	0,35183694	0,72685	-1,3380834	1,9016122	-1,3380834	1,9016122

Table D4: Curro Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,032206339							
R Square	0,001037248							
Adjusted R Square	-0,024577181							
Standard Error	0,035854919							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	5,2059E-05	5,2059E-05	0,040494685	0,84156234			
Residual	39	0,050137433	0,001285575					
Total	40	0,050189492						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,012871609	0,005645862	2,279830472	0,028167736	0,001451775	0,024291444	0,001451775	0,024291444
X Variable 1	0,141913439	0,705219824	0,201232912	0,84156234	-1,284528297	1,568355174	-1,284528297	1,568355174

Table D5: Cognition Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,068794019							
R Square	0,004732617							
Adjusted R Square	-0,020787059							
Standard Error	0,033160814							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,000203928	0,0002	0,18545	0,669101765			
Residual	39	0,042885945	0,0011					
Total	40	0,043089873						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0,001141861	0,005179195	-0,2205	0,82665	-0,01161777	0,00933405	-0,01161777	0,00933405
X Variable 1	-0,192787727	0,447678546	-0,4306	0,6691	-1,09830306	0,7127276	-1,09830306	0,7127276

Table D6: Ellies Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,424477406							
R Square	0,180181068							
Adjusted R Square	0,15916007							
Standard Error	0,018345503							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,002884796	0,00288	8,57148	0,00567361			
Residual	39	0,013125741	0,00034					
Total	40	0,016010537						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,004283937	0,002911079	1,4716	0,14915	-0,001604277	0,01017215	-0,001604277	0,01017215
X Variable 1	-1,120741414	0,382804919	-2,9277	0,00567	-1,895037447	-0,346445381	-1,895037447	-0,346445381

Table D7: Finbond Group Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,22677796							
R Square	0,051428243							
Adjusted R Square	0,02710589							
Standard Error	0,029296984							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,001814855	0,001814855	2,11444	0,153916094			
Residual	39	0,033474219	0,000858313					
Total	40	0,035289074						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,002644167	0,004621683	0,572122111	0,57052	-0,006704069	0,011992402	-0,006704069	0,011992402
X Variable 1	-1,020250135	0,70163074	-1,45411265	0,15392	-2,439432262	0,398931993	-2,439432262	0,398931993

Table D8: Insimbi Refractory & Alloy Supply Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,368537897							
R Square	0,135820182							
Adjusted R Square	0,113661725							
Standard Error	0,023723704							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,003449767	0,003449767	6,1294964	0,017742716			
Residual	39	0,021949752	0,000562814					
Total	40	0,025399519						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,004538148	0,003806082	1,192341043	0,24033207	-0,00316038	0,01223667	-0,0031604	0,01223667
X Variable 1	1,308659276	0,528584216	2,475781978	0,01774272	0,239496782	2,37782177	0,23949678	2,37782177

Table D9: Interwaste Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,237374555							
R Square	0,056346679							
Adjusted R Square	0,03215044							
Standard Error	0,030092257							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,002108774	0,002108774	2,32874	0,135074655			
Residual	39	0,035316213	0,000905544					
Total	40	0,037424987						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0,00137736	0,004700489	-0,29302478	0,77106	-0,010885	0,00813028	-0,010885	0,00813028
X Variable 1	0,668569514	0,4381132	1,52602002	0,13507	-0,21759808	1,55473711	-0,21759808	1,55473711

Table D10: Mas Real Estate Inc

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,195677934							
R Square	0,038289854							
Adjusted R Square	0,013630619							
Standard Error	0,013516458							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,000283681	0,000283681	1,55276	0,220162149			
Residual	39	0,007125091	0,000182695					
Total	40	0,007408772						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,000687862	0,002112816	0,325566647	0,74649	-0,00358571	0,004961435	-0,00358571	0,004961435
X Variable 1	0,18121224	0,145423794	1,246097598	0,22016	-0,11293515	0,475359627	-0,11293515	0,475359627

Table D11: Mazor Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,156929121							
R Square	0,024626749							
Adjusted R Square	-0,000382821							
Standard Error	0,017133064							
Observations	41							
ANOVA								
	df	*0*	*MS*	*F*	*Significance F*			
Regression	1	0,000289049	0,000289049	0,98469	0,327160014			
Residual	39	0,011448134	0,000293542					
Total	40	0,011737183						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,000333918	0,002739669	0,121882661	0,90362	-0,00520759	0,005875422	-0,00520759	0,005875422
X Variable 1	0,1650092	0,166286784	0,992316987	0,32716	-0,17133757	0,501355968	-0,17133757	0,501355968

Table D12: Onelogix Group Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,072601951							
R Square	0,005271043							
Adjusted R Square	-0,020234827							
Standard Error	0,038871876							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,000312268	0,000312268	0,206660002	0,651918277			
Residual	39	0,058929886	0,001511023					
Total	40	0,059242154						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0,00271617	0,0060763	-0,447010456	0,657340216	-0,015006646	0,009574307	-0,015006646	0,009574307
X Variable 1	0,194456514	0,4277542	0,454598726	0,651918277	-0,670758021	1,05967105	-0,670758021	1,05967105

Table D13: Pan African Resources Plc

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,50637961							
R Square	0,256420309							
Adjusted R Square	0,237354164							
Standard Error	0,025407725							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,008682026	0,008682026	13,449	0,000729961			
Residual	39	0,025176548	0,000645553					
Total	40	0,033858574						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0,001342649	0,004019876	-0,33400257	0,74017	-0,00947361	0,00678832	-0,00947361	0,00678832
X Variable 1	1,83412078	0,500130312	3,667285774	0,00073	0,822511738	2,84572982	0,822511738	2,84572982

Table D14: Rockcaslte Global Real Estate

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,180397386							
R Square	0,032543217							
Adjusted R Square	0,007736633							
Standard Error	0,010683999							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,000149748	0,000149748	1,311878195	0,259034983			
Residual	39	0,004451765	0,000114148					
Total	40	0,004601513						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,004551815	0,001671227	2,72363701	0,009609816	0,00117144	0,007932191	0,00117144	0,007932191
X Variable 1	0,157281681	0,137319238	1,145372514	0,259034983	-0,120472695	0,435036058	-0,120472695	0,435036058

Table D15: Rolfes Technology Holdings

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,226531188							
R Square	0,051316379							
Adjusted R Square	0,026991158							
Standard Error	0,030166909							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,001919821	0,001919821	2,109595592	0,154376623			
Residual	39	0,035491653	0,000910042					
Total	40	0,037411474						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,010866882	0,004712171	2,306130634	0,026505611	0,001335616	0,020398147	0,001335616	0,020398147
X Variable 1	0,547431798	0,376903713	1,452444695	0,154376623	-0,21492792	1,309791516	-0,214927919	1,309791516

Table D16: Santova Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,114199052							
R Square	0,013041423							
Adjusted R Square	-0,012265207							
Standard Error	0,07488536							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,002889911	0,002889911	0,515336	0,477116335			
Residual	39	0,21870487	0,005607817					
Total	40	0,221594782						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,007621607	0,011971735	0,636633464	0,528083	-0,016593512	0,031836726	-0,016593512	0,031836726
X Variable 1	-0,629799516	0,877317889	-0,717869229	0,477116	-2,404342444	1,144743412	-2,404342444	1,144743412

Table D17: Stenprop Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,165121064							
R Square	0,027264966							
Adjusted R Square	0,002323042							
Standard Error	0,010054335							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,000110505	0,000110505	1,09314	0,302214172			
Residual	39	0,003942496	0,00010109					
Total	40	0,004053001						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,002448068	0,001590278	1,539395933	0,13178	-0,000768574	0,005664709	-0,000768574	0,005664709
X Variable 1	0,152352616	0,145717735	1,045532417	0,30221	-0,142389324	0,447094557	-0,142389324	0,447094557

Table C18: Wescoal Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,14524201							
R Square	0,021095241							
Adjusted R Square	-0,004004881							
Standard Error	0,050720033							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,00216206	0,00216206	0,84044	0,364904375			
Residual	39	0,100328348	0,00257252					
Total	40	0,102490408						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,005845079	0,00804402	0,72663654	0,47179	-0,01042549	0,02211565	-0,01042549	0,02211565
X Variable 1	0,877695478	0,957391411	0,91675721	0,3649	-1,05881144	2,81420239	-1,05881144	2,81420239

Table C19: Taste Holdings Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,247690094							
R Square	0,061350383							
Adjusted R Square	0,037282444							
Standard Error	0,032509489							
Observations	41							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0,002694007	0,00269401	2,54905	0,118432912			
Residual	39	0,041217807	0,00105687					
Total	40	0,043911814						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0,006901314	0,005182745	1,33159429	0,19072	-0,003581778	0,017384405	-0,003581778	0,017384405
X Variable 1	0,896219461	0,561338954	1,5965745	0,11843	-0,239195745	2,031634666	-0,239195745	2,031634666

Table C20: Consolidated Infrastructure Group Ltd

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,325577905							
R Square	0,106000972							
Adjusted	0,098424709							
Standard	0,033467245							
Observati	120							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regressio	1	0,015670928	0,01567	13,99119498	0,000284985			
Residual	118	0,132166664	0,00112					
Total	119	0,147837592						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-9,07465E-05	0,003055193	-0,0297	0,976354588	-0,00614086	0,005959367	-0,00614086	0,005959367
X Variabl	-0,911098454	0,243577913	-3,7405	0,000284985	-1,393449035	-0,428747872	-1,393449035	-0,428747872