

**An Examination of Potential Backdating
of Executive Share Option Grants in South Africa**

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Abstract

This study investigates whether executives backdate share option grants to their advantage in South Africa. Using data of 175 option grants to executives among the 41 top companies in South Africa between 2001 and 2006, a pattern of negative cumulative abnormal stock returns before the grant dates but positive and increasing returns thereafter is observed. This pattern is much more pronounced for unscheduled grants. Statistical testing shows the mean cumulative abnormal returns are significantly different from zero after the grant date, but are not significantly different from zero before the grant date. The mean differences in average cumulative abnormal stock returns between pre- and post- grant periods are significantly different. The results suggest that some opportunistic behavior might have taken place around the executive option grants, including backdating.

Key words: Backdating, Executive share options, Executive compensation, Share option grants, Timing of share option grants.

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I certify that it is my own work and all references used are accurately reported in the text.

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Chapter I Introduction

1.1 Background

The backdating of stock options, which occurs when options are granted to executives on past dates chosen with the benefit of hindsight to be dates when the stock price was particularly low, is very topical in the U.S and has recently attracted increasing attention by scholars, regulators, shareholders and the media.

The first academic study which indicates that company stock options to executives might have been backdated is Erik Lie (2005). By noting share prices fell before the option grant date and rose soon afterwards, Lie's paper suggests that at least some of the option grants were timed retroactively. Later academic studies, including Collins, Gong and Li (2005), Heron and Lie (2006a) and Narayanan and Seyhun (2005), give strong evidence that option backdating might have taken place. Academics indicate that the backdating inquiry could be one of the most widespread and significant corporate scandals in 30 years.

The academic studies have attracted a great deal of attention from both media and regulators. With a report suggesting executives of six companies might have backdated their option grants published by the Wall Street Journal on 18 March 2006, backdating became a fully fledged scandal. In the U.S, the State and Federal regulators have launched many investigations into companies over the possible manipulation and illegal reporting of stock option grants. These investigations have led to discoveries of the latest option scandals to shake corporate America. A number of companies have publicly acknowledged

issues relating to backdating option grants, and dozens of executives and directors have been forced to resign.

The disclosure requirements for stock options in the U.S experienced a change in the reporting deadline. Prior to 29 August 2002, option grants meeting certain conditions could be reported on Form 5 which was required to be filed only within 45 days after the end of the company's fiscal year. Grants not meeting these conditions were reported on Form 4 which was required to be filed within the first 10 days of the month following the month of the grant. (Section 16(a) of the Securities and Exchange Act of 1934). On 29 August 2002, Section 403 of the Sarbanes-Oxley Act (SOX) of 2002 became effective. The new rules mandated by Section 403 of SOX accelerate the filing deadline of Form 4 to be within two business days following the transaction date. Moreover, it requires that all executive stock option grants must now be reported on Form 4. A study conducted by Collins and Gong (2005) finds that the new reporting requirement of stock option grants greatly reduces the apparent use of backdating. Studies by Narayanan (2006a) and Erik Lie (2006b) find that the accelerated reporting requirement has not eliminated executive opportunistic behavior associated with stock option grants.

1.2 Reasons for backdating

There are several reasons for option backdating to take place:

Benefit incentive

Executive stock options are usually granted at-the-money (strike price equal to the market price at the grant date). CEOs prefer to be granted options when the stock price is at its lowest, as the lower the exercise price the higher the option value. Such benefit incentives motivate executives to backdate the grants to dates with a lower market price, thereby inflating the value of the

options. Backdating represents a very effective and simple way of boosting the value of the awards.

Lack of independence

The role that the CEO plays on the board of directors suggests that they have the power to control the compensation committees and influence the timing of the option grants.

Ambiguity

Stock option plans are vague as to how the grant date should be determined, and do not specifically prohibit the grant date from preceding the decision date. It implies that backdating of executive stock options alone is not necessarily illegal under certain conditions.

Discovery

Usually, the individual stock option agreements are signed and dated by the employee-recipients; firms are not required to disclose the award dates in the proxy statements. It is difficult for outsiders to uncover backdating practices.

1.3 Consequences of backdating

Prior to SFAS 123R - Statement of Financial Accounting Standards 123(Revised) - becoming effective in the U.S, at-the-money option grants were not expensed and did not trigger any accounting consequence except for a footnote disclosure in terms of the accounting rules existing at the time. However, where an option was granted with an exercise price lower than the market price at the grant date (in-the-money grants), the company was required to recognize the compensation expense in the income statement over the vesting period of the option (the accounting and tax treatment of stock options is discussed in more detail later in this paper). The sole motive for

backdating a stock option grant is to capture a lower exercise price and create built-in value for the option recipients. This turns an at-the-money grant to an in-the-money grant and often involves an adjustment of the financial statements to properly record the expense associated with option awards. Failure to restate the financial statements usually leads to several consequences:

Forged documents

Backdated forged minutes have to be prepared for filing to support the backdated grants.

Tax issues

One aspect of backdating stock options lies in the realm of taxes. There are tax consequences for both companies (option granters) and individuals (option recipients) resulting from the backdating of stock options.

From the company's perspective, the option exercise price affects the basis on which the company estimates its compensation expense. Backdating option grants potentially lowers the exercise price thereby lowering the compensation expense. This will overstate the firm's pre-tax earnings and the company will needlessly pay more tax, robbing shareholders of wealth. A SEC press release alleged that from fiscal years 1997 through 2002, Engineered Support Systems Inc. did not recognize any compensation expense relating to stock option grants to the executives which were backdated, thus overstating its aggregate pre-tax operating income by approximately \$26 million, or 21%.¹ Another case filed by SEC alleged that from fiscal years 1999 through 2001,

¹ SEC Press Release: SEC Files Actions against Former CFO and Former Controller of Engineered Support Systems, Inc., Relating to Options Backdating Scheme; 2007-15; Feb 6, 2007.

Brocade Communication Systems overstated its income, totaling \$303 million, as a consequence of option backdating.²

Further, as the at-the-money option grants are considered performance-based compensation, they are tax deductible for the firm. However, if the options are effectively in-the-money on the grant date, they might not qualify for tax deductions.

For the individual, the option exercise price affects the basis on which the option recipient estimates capital gains and income tax. At-the-money option grants have no income tax implications. After the options are granted, any stock price increases above the option exercise price are treated as capital gains, and are subject to tax at a relatively low rate compared to gains of a revenue nature, which may be postponed until the exercised options are sold. In contrast, the in-the-money option grants have income tax implications. Academics refer to such grants as a windfall to option recipients. The windfall (the difference between market price and the exercise price at the time of the grant) is considered income for option recipients. Narayanan and Seyhun (2005) have pointed out that if the grant date is backdated by 20 days, large option (500,000 shares or greater) recipients increase their value by about 10% (\$0.7 million per grant).

Inflated earnings

As stated above, incorrect compensation expense records relating to backdated stock option grants, often inflate the earnings for the fiscal year of the grant, which could mislead outside investors and result in poor decisions.

Harm to shareholders

² SEC Complaint, civil action No. 06-4435, available at : [http:// www.sec.gov / litigation / complaints /2006/comp19768.pdf](http://www.sec.gov/litigation/complaints/2006/comp19768.pdf)

Backdating option grants lowers the exercise price, reducing the money the firm should receive, and leaves the tax collector and the executives better off at the shareholders expense, thus harming shareholders. An academic study, using a sample of firms that have already been implicated in backdating, found that the granting of options via backdating resulted in an average loss to shareholders of about 7% in market capitalizations (\$400 million per firm)³.

1.4 Area of study

Evidence in the U.S indicates that an increased use of stock options as executive remuneration results in managers taking greater risks, including backdating option grants to their advantage. The focus of this research will be to investigate whether there is similar opportunistic behavior from executives awarded share option grants by firms listed on the Johannesburg Stock Exchange (the JSE) in South Africa. The scope will be to review data relating to executive share option grants for the top 41 listed companies by market capitalization on the JSE as at 30 November 2006 over the period of 2001 to 2006. It was decided not to include all the firms listed on the JSE as thin trading for small companies has been observed and the low liquidity of shares causes the share prices to lack sensitivity or reflects market inefficiency. It was also decided not to include the options granted to junior management and ordinary employees as they have little or no power to control or influence option grants. It has been observed that the granting of share options in South Africa is at the discretion of senior management and the eligibility for share options extends to directors and senior managers. (Sacho,2003). The implementation of IFRS 2 with regard to share based payment in South Africa requires companies to disclose shares, share options or other equity instruments granted after 7 November 2002 in their annual financial reports.

³ M.P. Narayanan, Cindy A. Schipani and H. Nejat Seyhun, the Economic Impact of Backdating of Executive Stock Options, working paper, 2006, P2

Companies normally provide the prior year's information in their annual reports for comparative purposes, therefore data prior to 2001 is not readily available.

1.5 Hypothesis

The purpose of this paper is to establish whether stock option grants have been opportunistically manipulated by executives at South African listed public companies. On the basis of prior research and empirical evidence on the backdating of stock options, it is hypothesized that:

- Negative abnormal returns appear before option grants and positive abnormal returns appear thereafter;
- A significant abnormal stock return reversal around the grant date is exhibited.

1.6 Terminology and relevant abbreviations used

The following terms are used interchangeably in the text:

- "Stock options" and "Share options".
- "Option grants" and "Option awards"
- "Compensation committee" and "Remuneration committee"
- "Exercise price" and "Strike price"
- "Executives" and "Executive directors"
- "Event date" and "Option grant date"
- "Abnormal stock (or share) return" and "Excess stock (or share) return"

The following abbreviations are used with their meanings specified:

- **AAR**: Average abnormal stock return
- **AR**: Abnormal stock return
- **APB**: Accounting Principles Board
- **CAR**: Cumulative abnormal stock return
- **CEO**: Chief Executive Officer

- **CFO:** Chief Financial Officer
- **ESO:** Employee Share Option (The term “executive stock (or share) option” is also used in the literature)
- **FASB:** Financial Accounting Standards Board
- **IAS:** International Accounting Standards
- **IFRS:** International Financial Reporting Standards
- **IRC:** Internal Revenue Code
- **ISO:** Incentive stock option
- **NQSO:** Nonqualified stock option
- **JSE:** Johannesburg Stock Exchange
- **SEC:** Securities and Exchange Commission
- **SFAS:** Statement of Financial Accounting Standards
- **SOX:** Sarbanes-Oxley Act
- **UCTD:** Union Catalogue for Thesis and Dissertations
- **U.S:** United States

The remainder of this paper is organized as follows. Chapter two introduces executive stock option grants by describing the key features and the institutional background of the option grants. It also reviews related literature on CEOs opportunistically timing the option grants, backdating practice in the U.S. and salient features of stock options in South Africa. Chapter three briefly discusses the accounting and tax treatment of stock options in the U.S and South Africa. Chapter four discusses the potential research methodologies and the methodology selected for this paper. Chapter five describes the data and the significance tests to be used in this research. Chapter six presents the results of the study. Finally, chapter seven concludes.

Chapter II Literature review

2.1 Executive stock option grants

Stock options are characterized as instruments for aligning the long-term interests of shareholders and managers, forming the major share of performance-based incentive compensation received by CEOs in many companies worldwide. Options exploded during the bull market of the 1990s. In 1992, there were 940 option grants made by 126 firms in the U.S, totaling 17 million shares. By 2002, the number of option grants had increased to 120,425, totaling 1.2 billion shares, made by 2,543 firms⁴. Most CEOs of the largest U.S companies now receive annual stock option awards that are larger on average than their salaries and bonuses combined. In contrast, in 1980 the average stock option grant represented less than 20% of direct pay and the median stock option grant was zero.⁵ Sacho (2003) cited research conducted by Rosen in 2002, 65% to 70% of the total options granted in the U.S were granted to executive management, the research concluded that on the whole, most U.S companies did not grant share options broadly and that share options were concentrated at the top of the organization. He also cited a 1998 U.S survey conducted by the Financial Markets Center and found that almost 11% of U.S share options went to the CEO in 1998 and 21% went to the top five executives. David (2006) cited a survey conducted by Pearl Meyers & Partners in 2001, on average, stock options accounted for over two-thirds of the total compensation granted to CEOs of 200 large U.S public companies.

Executive stock options (ESO), as pay instruments, are used by companies to

⁴ Narayanan and Seyhun, 2005, Do Managers Influence their Pay? Evidence from Stock Price Reversals around Executive Option Grants. P34

⁵ Hall, Brian J., "The Pay to Performance Incentives of Executive Stock Options" (July 1998). NBER Working Paper No. 6674, HBS Working Paper No. 99-002. P1.

reward managers for long-term success. Companies issue stock options as an incentive for executives to improve their firms' performance and share prices. The options usually give executives the right to buy a number of their company's common stocks in the future at a stated exercise price. Typically the price is normally equivalent to the market value of the stock on the date of the grant, called at-the-money grants. A study by Murphy and Hall (2002) finds that 94% of the ESOs of S&P 500 companies in 1998 were granted at-the-money.

Institutionally, the stock options awarded to top executives is administrated by the company's compensation committee, which is a sub-committee of the board of directors. The compensation committees review and determine the parameters of the stock option grants, such as the size and timing of stock option awards. These parameters differ substantially within companies and vary over time. Typically, the compensation committee holds three to five meetings per year relating to executive compensation issues. Finally it will be decided who is eligible and the size of the options. Most options are granted with an exercise price based upon the market price of the stock at the close of the trading on the day of this meeting. However, this option grants process is in reality not an arms-length transaction for the CEOs. Academics have pointed out CEOs have the power to control the compensation committees through various channels and influence the value of option compensation. Yermack (1997) reports that many of Fortune 500 companies have CEOs who serve as members of their own compensation committees, and some companies have CEOs who sit on each other's compensation committees. Chauvin and Shenoy (2001) indicate that through inside information, executives know when compensation committee meetings are scheduled. Often top executives are given the opportunity to propose the parameters of the stock option grants.⁶

⁶ Also see Erik Lie (2005) discussed that "three reasons suggest the executives affect the committee's decisions".

On 20 October 2006, CNNMoney news quoted a survey released by the Corporate Library, a corporate governance research firm, which states that of 120 companies which have backdating scandal implications, 51 have directors sitting on more than one board, and additionally in this group, 43 directors on two boards and 9 directors on three boards⁷.

The key feature of executive option awards is that the exercise price is usually equal to the market price on the grant date – the day the company's board of directors awards the options, i.e. stock options are usually granted at-the-money to the executives. Option compensation at the grant date is:

$$\text{Option compensation} = (P-X)n$$

Where P is the market price of the stock on the grant date, X is the exercise price determined on the date options are granted; n is the number of options granted. At-the-money option grants give executives zero value of option compensation at the grant date. Once the options have been granted, if the CEO makes any decision that increases the stock price, he exercises his options and captures a portion of the value created for shareholders.

There are both accounting and tax reasons for granting the options at-the-money on the day of grant.

In the U.S, prior to 15 June 2005, Generally Accepted Accounting Principles provided that firms had to recognize a compensation expense which was equal to the difference between the exercise price and the market price of the company's stock on the date of the option grant, for options issued for a fixed number of shares at a fixed exercise price. Under these accounting rules, an

⁷ CNNMoney news: Shaheen Pasha, Pssst! Heard about how easy backdating is? 20 October 2006, 10:53AM EDT. Available at: [Http://money.cnn.com/2006/10/20/news/companies/backdating_study/index.htm](http://money.cnn.com/2006/10/20/news/companies/backdating_study/index.htm). (Accessed: 22 /03/ 2007)

at-the-money option grant resulted in no expense being recognized for financial reporting purposes, thus triggering no accounting consequence except for footnote disclosure in the financial statements. On the other hand, an in-the-money option grant would result in the recognition of compensation expense, which would decrease pre-tax earnings.

The relevant tax rules in the U.S provide that qualifying performance-based compensation is tax deductible for firms and limits the corporate deduction for non-performance based compensation paid to certain senior executives (the accounting and tax treatment of stock options is discussed in more detail later in this paper). Stock options which meet certain requirements automatically qualify as performance-based compensation; one of these requirements is that the options be granted at- or out-of-the-money.

Other salient features of stock option grants are as follows:

Vesting Period and Marketability

Executive stock options differ from listed options in that there is usually a minimum holding period required before the options can be exercised, this restriction is known as the “vesting period”. This means that the executives often do not gain control over the stock options for a period of time, usually 3 to 5 years. During the vesting period, the stock options are not exercisable. In addition, the options are long-term in nature (typically ten years) and are strictly non-marketable.

Self-interest influence

Through various channels, CEOs have the power to control the compensation committees. Many companies have CEOs who served as members of their own compensation committees, some companies have CEOs who sat on each

other's compensation committees.⁸ Self-interest suggests that the CEOs exert influence over their own compensation, including the size, term, frequency and even the dating of stock option grants. "If the awards are unscheduled, executives might use their influence to time the awards on a date when the stock prices are particularly lowIf the awards are scheduled, executives could try to control the release of information to the capital market in an effort to depress the price on the award date" (Erik Lie, 2005).

Scheduled and unscheduled option grants

Stock options are usually granted to CEOs once a year. In terms of the timing of the grants, academics have categorized option grants as scheduled grants and unscheduled grants. Scheduled grants are defined as grants that were given on the identical date to the previous year. Unscheduled grants do not occur on the same day every year. Aboody and Kasznik (2000) identify a grant as a scheduled award when the option award date is the same every year. Erik Lie (2005) defines an award to be scheduled if it occurs within one week of the one-year anniversary of the prior year's award date and unscheduled if it does not or if no options were awarded during the prior year. Narayanan (2005) classifies an option grant as scheduled if at least one manager has been granted options in the same calendar month the previous year.

2.2 Prior research

The explosion of option grants has attracted considerable attention from academics. Many academic studies related to such incentive compensation have found an interesting pattern of share price return around option grants, and cited this as supportive of the CEOs opportunistically timing the option grants.

⁸ Yermack (1997) and Chauvin and Shenoy (2001) describe the option granting process in great detail.

2.2.1 Empirical evidence of timing of the option grants date

The seminal work on the timing of option grants was conducted by David Yermack (1997). This study investigated the relationship between the stock price and option grants. He examined the stock returns around a sample of 620 scheduled and unscheduled stock option awards to CEOs of Fortune 500 companies between 1992 and 1994, focusing on the abnormality of returns prior to or after the grant dates. This study finds that the stock returns leading up to the award dates are normal, while the stock returns during the 50 trading days thereafter exceed those of the market by more than 2%. He interprets these results as evidence that executives opportunistically time awards to occur before anticipated stock price increases.

2.2.2 Empirical evidence of timing information disclosures around the options award date

Two subsequent studies by Aboody and Kasznik(2000) and Chauvin and Shenoy (2001) resulted in similar findings to Yermack (1997). Aboody and Kasznik(2000) investigated a sample of 2,039 scheduled CEO option awards by 572 firms between 1992 and 1996, focusing on the changes in the stock price relative to the arrival of good or bad news. The investigation of the scheduled option grants allowed them to remove the possibility that the results are attributable to timing the award date. They find that the abnormal returns before scheduled awards are statistically indistinguishable from zero; however the abnormal returns during the subsequent 30 days are statistically different from zero. Chauvin and Shenoy (2001) examined abnormal stock price changes prior to executive option grants. By testing 783 CEO option grants between 1981 and 1992, they found a statistically significant abnormal decrease in the stock price during the 10-day period immediately preceding the executive stock option grants — negative abnormal returns before stock

option grants, and an upward trend in prices following the grants. They interpret these findings to indicate that executives opportunistically time the release of information around fixed option awards, thus maximizing their stock option compensation.

2.2.3 Empirical evidence of backdating of stock option grants

A frequently cited paper by Erik Lie (2005) took these researches one step further. From a S&P ExecuComp database, he collected a large sample of 5,977 stock option awards to CEOs during the decade of 1992 to 2002, examining options that were not granted the same date every year (unscheduled). Similar to the earlier studies, Lie also focused on the abnormality of returns prior to and after the grant date. He found a strong and striking stock return pattern for the unscheduled awards. The average abnormal return during the 30 trading days prior to option grants is -3%, most of which occurs during the 10 days immediately before the grants. During the first 10 days afterward, the average abnormal return is 2%, and almost another 2% during the next 20 days. He discovered that the stock market as a whole also often rose following option grants at certain companies. Based on the paper's premise that executives do not possess the ability to forecast future market-wide movements, he suggested the results as "at least some of the option awards are timed retroactively". He was the first to identify another questionable way to issue stock options which could be utilized by top executives to manipulate the options price—backdating.

This celebrated study attracted a great deal of attention from both academics and regulators, as well as the general public.

Later academic studies concerning backdating include: Collins, Gong, and Li (2005), Heron and Lie (2006a), Narayanan and Seyhun (2005). These studies

looked at how the patterns of pre- and post-grant stock returns were influenced by the change in regulatory law (Sarbanes-Oxley Act) which now accelerates the reporting deadline of executive stock option grants to be within two business days after the grants. Collins, Gong, and Li (2005) compare abnormal returns around CEO option awards between the pre- and post-SOX period. They find the abnormal returns prior to option awards are significantly negative in the pre-SOX period, but are not significantly different from zero in the post-SOX period. The abnormal returns following option awards are significantly positive in both the pre- and post-SOX period, but in the pre-SOX period are significantly smaller than those in the post-SOX period. Heron and Lie (2006a) show that the pattern of abnormal returns around option grants disappeared for the subset of their sample that reported option grants immediately, and explains that backdating is the primary source of the average abnormal returns around executive option grants.

Narayanan and Seyhun(2005) use more comprehensive data on option grants (the data covers a period of 11 years, contains all option grants made by publicly traded firms). They find significant abnormal stock return reversals around the grant date. (Abnormal stock return reversals are based on specified thresholds for both the pre-grant and post-grant cumulative abnormal returns. Should both the cumulative abnormal return for pre-grant and post-grant exceed the specified thresholds, an abnormal stock return reversal is qualified.) The reversals are more pronounced for unscheduled grants. The extent of reversals is positively related to the magnitude of the time interval between the grant date and the date the grants are reported to the SEC (reporting lag). The study reported the overall average reporting lag was 170 days for its sample of option grants, compared to the reporting lag of no more than 40 days where there was full compliance, giving a picture of a significant delay in option grant reporting. The observation cannot be completely explained by both opportunistic timing of information releases by firms and opportunistic timing of

grant dates. Thus it provides additional evidence of some firms setting the grant date on a backdating basis.

These later studies confirming the existence of backdating option grants, also show that the changes of regulation reduced but did not eliminate the CEOs opportunistically timing the option grants.

2.2.4 Further research re backdating of stock option grants

Several studies concerning the backdating of stock option grants were conducted to estimate the proportion of backdated or manipulated stock option grants.

A Harvard study⁹, titled “Lucky CEOs”, researched all the at-the-money, unscheduled grants awarded to public companies’ CEOs during the decade of 1996-2005. It focuses on the ranking of a grant date’s price in the distribution of prices during the month of the grant and finds that the excess incidence of grants is concentrated at the lowest price of the grant month. The author defines this as “lucky grants” — grants given at the lowest price of the month. The study estimates 1,163 lucky grants (50% of all lucky grants) were manipulated over the sample period and provides strong evidence that backdating has been a major driver of the high incidence of “lucky grants” among “old economy” firms as well as high-tech ones. The study of “lucky directors”, which was conducted by the same author, examined public firms that granted options to non-executive directors during 1996 to 2005. It estimates 804 lucky grants (32.5% of all lucky grants) were manipulated and

⁹ Lucian Bebchuk, Yaniv Grinstein, Urs Peyer, Nov.16, 2006, Luck CEOs. Harvard Law and Economics Discussion Paper No. 566. Available at SSRN: <http://ssrn.com/abstract=945392> (accessed:15/3/2007)

provides evidence that opportunistic timing has not been limited to executive grants, but rather has been present in outside directors' grants as well. Heron and Lie (2006b) estimate that 13.6% of 39,888 option grants to top executives were backdated or manipulated during the sample period of 1996 to 2005, and find a relationship between the degree of stock price volatility and frequency of backdating.

2.3 Methods used by prior studies

All the research studies mentioned above used various event-study methodologies to test the stock price performance prior to or after the option grant dates.

Yermack (1997) used a market model to estimate abnormal stock returns around the event of option awards. This model estimates the relationship between a share's returns and market returns by ordinary least squares (OLS) regression and uses this relationship to estimate expected returns (R_{ei}), given returns on the market. The abnormal return (AR) for stock i at time t is:

$$AR_{it} = R_{it} - R_{ei} = R_{it} - \alpha_i - \beta_i R_{mt}$$

Where the α_i and β_i are regression coefficients, R_{it} and R_{mt} stand for the stock i and market return at time t .

Aboody and Kasznik (2000) and Narayanan and Seyhun (2005) used the same model – the index model, which assumes that over any period t , a share i will earn the market rate of return R_{mt} . thus the abnormal return (AR) is:

$$AR_{it} = R_{it} - R_{mt}$$

Lie (2005) and his subsequent study, Lie and Heron (2006a), applied the three-factor model which was developed by Fama and French from the Capital

Asset Pricing Model (CAPM) by adding two factors of “size” and “value” to estimate the expected return¹⁰. The abnormal return (AR) of share i at time t is equal to the difference between the actual return R_{it} and the predicted return K_{it} .

$$AR_{it} = R_{it} - K_{it}$$

The two Harvard studies, “lucky CEOs” and “lucky directors”, provide an alternative methodology for studying option timing, that is based on the ranking of the grant price within the price distribution for the month.

2.4 Backdating practice in the U.S

With a report suggesting executives of six companies might have backdated their option grants published by the Wall Street Journal on 18 March 2006, backdating became a full-fledged scandal.¹¹ In the U.S, many investigations have been launched by State and Federal regulators and 141 companies have thus far come under scrutiny¹², some companies have undertaken internal investigations in addition to responding to SEC investigations. A number of companies have publicly acknowledged issues relating to the backdating of option grants and dozens of executives and directors have been forced to resign. The SEC has filed civil charges against some companies. On 26 June 2007, Bloomberg news stated that “... 100 (companies) announced they must restate previously reported financial results. So far, the restatements, revisions and charges exceed \$11 billion. More than 70 executives and directors left their jobs and more than 300 lawsuits were filed against more than 100

¹⁰ Fama and French (1993), common risk factors in the returns on stocks and bonds, *Journal of Financial Economics*. Vol. 33; P3-56

¹¹ Judith Burns, Dow Jones Newswire, 27 Jan, 2006; Charles Forelle & James Bandler, the perfect day, *Wall St, J.*, 18 Mar, 2006

¹² The WSJ maintains an “option Scorecard” at www.wsj.com, with an updated list of all the companies that have come under scrutiny in connection with backdating issues, and it counted 141 such companies as of 25 July 2007.

companies.¹³”

For example, On 24 October 2006, the SEC press release stated that the commission charged the former chief financial officer of Comverse Technology Inc., David Kreinberg and two other former Comverse executives with “.....engaging over many years in a fraudulent scheme to grant undisclosed in-the-money options to themselves and to others by backdating stock option grants to coincide with historically low closing prices of Comverse common stock”¹⁴. The commission alleged that through the exercise of illegally backdated option grants and the subsequent sale of Comverse common stock, the former executives collectively realized millions of dollars of ill-gotten compensation. The former chairman and CEO Kobi Alexander, realized actual gains of nearly \$138 million from the sales of stock which he exercised by backdating options that were granted during the 1991 through 2002 period. Kreinberg realized an actual gain of nearly \$13 million from sales of stock underlying the exercises of backdated options that were granted during the 1994 to 2001 period. The former director Sorin realized an actual gain of more than \$14 million from selling the exercised backdating options that were granted during the 1991 to 2001 period. Kreinberg pleaded guilty and was required to pay \$1,769,255.80, \$989,434.00 of which represents the “in-the-money” benefit from exercises of backdated option grants.¹⁵ The former CEO Alexander has fled the U.S to avoid prosecution.¹⁶

¹³ Bloomberg news: Vernon Wessels, Ex-Comverse chief Alexander says backdating ‘is not illegal’, 26 June 2007, 16:56 EDT. Available at: [Http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a3WVqRvbe5oo](http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a3WVqRvbe5oo) (Accessed: 07/08/2007)

¹⁴ SEC Press Release: David Kreinberg, Former CFO of Comverse Technology, Inc., Agrees to Settle SEC Charges in Options Backdating Case; 2006-180; 24 October 2006; see also SEC Charges Former Comverse Technology, Inc., CEO, CFO, and General Counsel in Stock Option Backdating Scheme; 2006-137; 9 August 2006

¹⁵ Id.

¹⁶ Charles Forelle, Stock Options Criminal Charge: Slush Fund and Fake Employee, Wall Street

On 14 February 2007, the SEC announced a \$6.3million settlement with the former Chief Executive Officer and Chairman of the Board of video and computer game publisher and distributor Take-Two Interactive Software Inc. (Take-Two), Ryan Ashley Brant, concerning stock option backdating. The commission alleged that “during a seven year period, Brant enriched himself and others by granting undisclosed, in-the-money stock options to himself and to other Take-Two officers and employees..... resulting in millions of dollars of ill gotten gains and materially misrepresenting its financial condition to investors.”¹⁷ In this civil charge, Brant pleaded guilty to felony criminal charges of Falsifying Business Records in the First Degree and agreed to pay \$1 million in lieu of fines and forfeiture.

On 6 February 2007, the SEC filed civil actions against the former Chief Financial Officer Gary C. Gerhardt and the former Controller Steven J. Landmann of Engineered Support Systems, Inc. The commission alleged that from 1997 through 2002, they backdated stock option grants to coincide with historically low closing prices of Engineered Support's common stock. As a result of the backdating, top executives and directors received approximately \$15 million unauthorized compensation, Gerhardt and Landmann personally profited by \$1,906,300 and \$518,972 respectively.¹⁸

Moreover, Mercury fired its former CEO and CFO after an investigation turned up 49 instances of backdating;¹⁹ Apple Computer Inc. made an

Journal, 10 Aug. 2006

¹⁷ SEC Press Release: SEC Announces \$6.3 Million Settlement With Former Take-Two Interactive Software, Inc., CEO in Stock Option Backdating Scheme; 2007-20; 14 February 2007

¹⁸ SEC Press Release: SEC Files Actions against Former CFO and Former Controller of Engineered Support Systems, Inc., Relating to Options Backdating Scheme; 2007-15; 6 Feb. 2007.

¹⁹ Burrows Peter, In the valley, Scars that could last a long time, Business Week, 10/30/2006 Issue 4007, p82-82, 1/7p, 1c

announcement that it had uncovered 15 instances of possible stock-options backdating between 1997 and 2002.²⁰ The CEO of giant insurance company United-Health Group has resigned from the company after a report suggested that he benefited from backdating.²¹ The former CEO of Brocade Systems, a computer hardware company, was charged with backdating practice by the U.S attorney.²²

An academic study using a sample of firms that had already been implicated in backdating found that backdating resulted in an average loss to shareholders of about 7% (\$400 million per firm). The average potential gain from backdating to all executives in these firms is about \$500,000 per firm annually.²³

2.5 Stock options in South Africa

Stock options in South Africa tend to follow international trends which have developed in world economies, particularly North America and Europe, as these represent the country's major trading partners. A survey conducted by Bussin and May in 2001, aimed to examine the application and the extent to which share options are being used as long-term incentives in South Africa. Of 300 canvassed private and the Johannesburg Stock Exchange listed companies, employing over 1000 employees, 84 usable responses were obtained. 89% of the respondents used share options at executive level. According to Towers Perrin (2001), of all the share incentive schemes in operation in South Africa, almost 80% will include share options. Sacho (2003)

²⁰ Harris Roy, Former Apple CFO Bitten by Backdating? *CFO*, Nov 2006, Vol. 22 Issue 12, p108-108, 2/3p

²¹ Walking the plank, *Economist*, 10/21/2006, Vol. 381 Issue 8500, p73-74, 2p, 1c

²² SEC Litigation release No.19768, SEC v, Reyes, et al., civil action No. C-06-4435

²³ M.P. Narayanan, Cindy A. Schipani and H. Nejat Seyhun, the Economic Impact of Backdating of Executive Stock Options, working paper, 2006, P2

states that of the share incentive schemes observed in South Africa, 73% use share option schemes.

A research study into South African executive pay, as cited in Business Day (South Africa), established that company bosses on average earned R4,654 a day. If stock options exercised were included, the figure increased to R12,518 a day. The top 10 earning CEOs' average salary was R32,794 a day, and if stock options exercised were included this figure further increased to R91,972 a day. By far, stock options are the greatest boost for CEOs' remuneration.²⁴

Sacho (2003) illustrates several types of share option plans in South Africa, and lists the following salient features of typical share option grants:

- Discounted share options. The King Report on Corporate Governance for South Africa recommends specific approval by shareholders for the allocations of share options at discounts (King Report on Corporate Governance for South Africa 2002, para:6.4). Following this recommendation, some companies have reported recent share options were issued at exercise prices of 10% to 20% below the market price of the underlying shares. Certain companies set the option exercise prices at the average market price of the underlying shares for the 5 or 30 trading days prior to the grant date.
- The eligibility for share option grants in South Africa has been extended to directors and senior managers. The granting of share options is at the discretion of senior management, although the King Report on Corporate Governance for South Africa recommends that a remuneration committee be appointed consisting mainly of independent non-executive directors, to make recommendations to the board in respect of remuneration packages

²⁴ Study claims yawning worker-CEO pay gap, Business Day (South Africa), 20 July 2006, Labour, Pg. 2

for executive directors. (King Report on Corporate Governance for South Africa 2002, para:5.1&5.2)

Despite the popularity of stock options for senior management remuneration in South Africa, there are limited studies concerning the timing of options grants. For the purpose of this paper – to investigate whether South African listed companies were opportunistically timing executive stock option grants, three databases have been used to establish whether any similar research has been done in South Africa. The three databases are:

1. SA ePublications database. SA ePublications is South Africa's premier facilitator of access to online information. It includes 350 South African publications and provides full text links from the indexed articles to the PDF files of the articles. The database has a sophisticated search engine and integrates with SA Citations. It includes abstracts of periodicals published in South Africa, important scientific and technical journals, some general and popular magazines, all published over the past 15 years.

2. Current and Completed Research database. Current and Completed Research Projects contains South African research projects and covers the social sciences, humanities, economic and management sciences. It includes masters and doctoral theses of South African universities, and technikons as well as information on research projects from non-governmental organizations, private sector and government departments. All non-English titles of projects are translated into English. It is updated monthly and the coverage is from 1950.

3. The Union Catalogue for Thesis and Dissertations (UCTD) database. The UCTD contains bibliographic records of theses and dissertations at master and doctorate level submitted to universities in South Africa. Honorary doctorates are also included. It is updated annually and the coverage is from 1918.

Using the above three databases, any element of the subset of “stock options or share options or executive remuneration” elicits responses; any element of the subset of “timing or manipulating or backdating”, likewise, has responses. However, when combining any combination of elements from the two subsets, there is a null response.

The absence of reports concerning timing stock option grants in South Africa indicates that a study on the JSE listed firms will not only be interesting from a South African perspective, but also will serve as a comparison between emerging and mature markets.

Chapter III Accounting and tax treatment of share options

It is not the intention to give a comprehensive accounting and tax synopsis of share options, as this is not the focus of this study. Below is a very brief summary of the accounting treatment and tax implications of share options in the USA and South Africa.

3.1 Accounting treatment of share options

3.1.1 Accounting treatment of share options in the U.S

In the United States, until 15 June 2005, the accounting treatment of share options was determined by the guidelines of the Accounting Principles Board Opinion No. 25 – Accounting for Stock (APB 25), and the Statement of Financial Accounting Standards No.123 – Accounting for Stock-Based Compensation (SFAS 123). For financial years beginning after 15 June 2005, the accounting treatment of share options follows the rules of the Statement of Financial Accounting Standards No. 123 (revised 2004) – Share-Based Payment (SFAS 123R).²⁵

Under APB 25, options that were granted at-the-money or out-of-the-money had no impact at all on any of the financial statements. If options were granted in-the-money, the difference between the share price at grant date and the exercise price (called the intrinsic value of the option) had to be treated as an expense and deducted from income. The intrinsic value (aggregated over all option grants) was amortized, as a compensation expense, evenly over the

²⁵ FASB statement No 123R is effective for public entities that do not file as small business issuers as of the beginning of the first interim or annual reporting period that begins after 15 June 2005; for public entities that file as small business issuers as of the beginning of the first interim or annual reporting period that begins after 15 December 2005; and for nonpublic entities as of the beginning of the first annual reporting period that begins after 15 December 2005.

vesting period. (Narayanan, 2006; APB 25, Oct.1972)

SFAS 123 encouraged companies to adopt a fair value based method of accounting for employee stock options. Under the fair value based method, the compensation cost is measured at the grant date based on the value of the awards and is recognized over the vesting period. However, it also allowed companies to measure compensation costs for share options using the intrinsic value based method of accounting prescribed by APB 25. Companies electing the APB 25 rules were required to make pro forma disclosures showing the effect on earnings if SFAS 123 had been adopted.

In December 2004, the US Financial Accounting Standards Board (FASB) released the Statement of Financial Accounting Standards No. 123 (revised 2004) - Share-Based Payment (SFAS 123R). This statement supersedes both SFAS 123 and APB Opinion No 25. It is effective in the United States for financial years starting after 15 June 2005²⁶. In terms of SFAS 123R, companies are required to apply a fair-value based measurement method for share-based payment transactions with employees and to record the compensation expense for all awards granted at the time of the grant. SFAS 123R also applies to awards modified, repurchased or cancelled after the required effective date. In addition, companies are required to record the compensation expense (as previous awards subsequently vest) for the unvested portion of previously granted awards that remain outstanding at the date of adoption.

3.1.2 Accounting treatment of share options in South Africa

The current accounting treatment of share options in South Africa is governed

²⁶ For non-public entities and public entities that file as small business issuers, it is effective for fiscal years beginning after 15 December 2005

by International Financial Reporting Standard 2 – Share-Based Payment (IFRS 2), which is published by the International Accounting Standards Board. In terms of IFRS 2, share options granted to employees are required to be fair valued at the grant date using an option pricing model and charged through the income statement over the options vesting period – the period of time before the optionee has an unconditional right to the shares. The overall approach is broadly similar to FASB Statement No.123. Expensing of employee share options only became mandatory in South Africa for financial periods beginning on or after 1 January 2005. But for options granted after 7 November 2002 which had not vested before the introduction of IFRS 2 (1 January 2005), the Standard is applicable.

Before IFRS 2 became effective in South Africa, share options were accounted for in terms of the guidelines of AC 116 – Employee Benefits, which was based on its international equivalent, IAS 19 – Employee benefits (SAICA,2000: paragraphs 148-149). In terms of AC 116 and IAS 19, companies were required to disclose share option plan details, exercise prices and other share option information. The disclosure requirements were expanded by section 297(2A)(g) of the Companies Act No.61, 1973 and the King Report on Corporate Governance for South Africa.

Although South African companies did not recognize ESOs as an expense in their financial statements prior to 1 January 2005, the South African accounting profession had previously adopted a disclosure model for ESOs, rather than a recognition model. (Sacho, 2003)

3.2 Tax treatment of share options

3.2.1 Tax treatment of share options in the U.S

Sacho (2003) discusses the basic types of share option plans and the relevant tax treatment of each share option plan in the United States. He states that two types of share option plans are available in the U.S – Incentive Stock Options (ISO) and Nonqualified Stock Options (NQSO). In practice, ISO grants are generally limited to senior executives. ISO and NQSO are subject to sections 422 and 83 of the Internal Revenue Code (IRC) respectively, thus having different tax implications.

In respect of the ISO plan, the employee receiving an ISO, recognizes no taxable income upon the ISO's grant. In the event of the grant, vesting or exercise of an ISO, there are no tax effects for the optionee. However, there will be tax implications for the employee upon the ultimate sale of the shares. Two tax consequences arise from the disposal of option-exercised shares, depending on whether or not the shares were disposed of in a qualifying or disqualifying disposition²⁷. Qualifying dispositions treat the entire gain (the difference between the option exercise price and the sales proceeds) as a capital gain taxed at the favorable capital gains tax rate as opposed to the higher tax rate for income of a revenue nature. For disqualifying dispositions, the difference between the option exercise price and the fair market value of the shares at the time of option exercise is subject to ordinary income tax in the tax year that the options are exercised, and the difference between the fair market value of the shares on the exercise date and the disposition proceeds

²⁷ A qualifying disposition occurs if the shares are sold after the completion of the requisite ISO statutory holding period. A disqualifying disposition occurs if the shares are sold within the requisite statutory holding period. The ISO statutory holding period is the later of two years from the date of the granting of the ISO to the employee or one year from the date that the shares were transferred to the employee upon exercise of his share options.

upon the sale of the shares is treated as a capital gain for tax purposes in the tax year that the shares are sold.

From the employer's perspective, the company granting an ISO is not entitled to a tax deduction with respect to the issuance of the option or its exercise. The amount received by the company, at the exercise price, will be considered to be the amount received by the employer for the transfer of the ISO shares. However, the general management and administration expenses associated with the share option may be deductible.

For the NQSOs, there is normally no tax event arising from the employee receiving an NQSO at grant date as the non-publicly traded ESOs do not have a "readily ascertainable market value at grant date"²⁸. If there is a readily determinable fair market value, the appreciation in the value of the shares is treated as income of a revenue nature in the hands of the employee for tax purposes. Usually, the IRC takes a wait-and-see approach towards NQSOs and defers the tax events until the options are exercised. When the options are exercised, the difference between the market value of the share and the strike price is subject to ordinary income tax in the employee's hands, and the employer may be entitled to a corporate tax deduction at the exercise date equivalent to the amount of the income recognized by the employee. These rules apply to NQSOs regardless of whether they are in-the-money, at-the-money, or out-the-money. Any additional gain made by the employee as a result of the subsequent sale of the option-exercised shares is treated as a capital gain subject to taxation at capital gains tax rates. There will be no tax consequences for NQSOs in terms of Section 83, even if the options were backdated.

In addition, section 162(m) of the IRC limits the executive compensation

²⁸ Sacho, 2003, Accounting for employee share options: A critical analysis. P 40

deduction for public companies to \$1 million per year per executive for compensation paid to the top five most highly-compensated executive officers for proxy reporting purposes. Option compensation that satisfies certain criteria may be considered “performance-based compensation” and would be excluded from the \$1 million limit.²⁹ (Narayanan, 2006)

3.2.2 Tax treatment of share options in South Africa

The tax legislation relevant to share options in South Africa is contained in the Income Tax Act No 58, 1962 (the Act). The relevant provisions pertaining to share options, from an employee’s (optionee’s) tax perspective, are section 8A, section 8B and section 8C and the Eighth Schedule to the Act. Share options granted before 26 October 2004 are subject to section 8A, whereas section 8C applies to share options granted on or after this date. Section 8B deals with the taxation of equity instruments, including share options, issued to employees in terms of broad-based share plans³⁰.

Prior to the introduction of section 8C, share option schemes were often structured to minimize the tax effect for employees by converting gains of a revenue nature (taxable at a rate of 40%³¹) to gains of a capital nature. This resulted in a tax-free gain for the employee prior to the introduction of capital gains tax on 1 October 2001, and capital gains tax at a rate of 10%³² thereafter. Section 8C was introduced in an attempt to eliminate this

²⁹ Option compensation will be considered “performance-based compensation” when the options are granted under a plan that has a per-person per-period limit on the number of options that can be granted each year; the options are not in-the-money when granted; an independent compensation committee grants the options; and there is shareholder approval of the plan. (IRC section 162(m))

³⁰ As broad-based share plans are beyond the scope of this study, the tax treatment of equity instruments subject to section 8B of the Act is omitted.

³¹ Assuming the maximum marginal income tax rate for individuals at 26 October 2004.

³² Assuming the maximum marginal income tax rate for individuals at 26 October 2004.

opportunity for tax planning.

In terms of section 8A of the Act, there is no tax effect in the event of the granting and vesting of options. However, tax consequences arise upon the exercise, cession or release of options. The revenue gain, being the difference between the market value of the shares at the date that the option is exercised, ceded or released and any consideration paid by the employee for the share options and the underlying shares, is fully taxable in the employee's hands and is subject to income tax. Section 8A contains no provision for the deduction of losses, as an option would not be exercised if it is out-of-the-money. Where the option-exercised shares are subject to a restriction and cannot be disposed of for a specified period of time, section 8A(1)(b) provides that the taxpayer may elect to defer the taxable gain upon the exercise of the options until the tax year in which the taxpayer is entitled to dispose of the shares.

Section 8C deals with the taxation on the vesting of equity instruments, which includes shares and options to acquire shares, granted on or after 26 October 2004. Section 8C focuses on when an equity instrument vests rather than on when the share option is exercised. The gains or losses that arise pursuant to the vesting of options will be included in, or deducted from, the optionee's taxable income, irrespective of whether or not the option is exercised. The gain or loss to be included in, or deducted from, the taxpayer's income is the difference between the market value when the equity instrument vests and any consideration paid in respect of the equity instrument³³.

Section 8C further differentiates between restricted³⁴ and unrestricted³⁵

³³ The disposal of convertible financial instruments, equity instruments to connected persons and non-arms length transactions have been ignored for the purposes of this paper.

³⁴ Section 8C (7) defines a "restricted equity instrument" as an equity instrument:

equity instruments. For equity instruments that are subject to restrictions, such as a time period during which the employee must remain employed by the company to obtain the options, or for example where performance targets must be achieved to exercise the options, section 10(1)(nD) exempts from income tax the receipt or accrual of any equity instrument which has not vested. For tax purposes, the vesting of restricted equity instruments takes place at the earliest of the lapsing of all restrictions in relation to the equity instrument³⁶, the disposal of the equity instrument, the termination of the option, and the taxpayer's death. Unrestricted equity instruments vest at the time of granting. Therefore, where one restricted equity instrument (an option) is disposed of for another restricted equity instrument (a share), the former equity instrument will not vest. It must be noted that section 8C will not apply to the option-exercised shares if the options were already subject to this section of the Act.

The capital gains tax implications for share options and any underlying shares are contained in the Eighth Schedule to the Act. A capital gain or loss may arise upon the disposal of an asset, which includes the termination or exercise

-
- which is subject to any restriction that prevents the taxpayer from freely disposing of it at market value;
 - which is subject to any restriction that could result in the owner forfeiting ownership or the right to acquire ownership other than at market value;
 - where any person has retained the right to impose the abovementioned restrictions on the disposal of the instrument;
 - which is an option to acquire a restricted equity instrument;
 - which is a convertible financial instrument that can be converted to a restricted equity instrument;
 - where the employer or any other person, by arrangement with the employer, has undertaken to cancel the transaction or repurchase the equity instrument at a price exceeding its market value, if there is a decline in the value of the instrument; or
 - which is not delivered to the taxpayer until the occurrence of an event

³⁵ An "unrestricted equity instrument" is any equity instrument which is not a restricted equity instrument.

³⁶ In relation to a share option, this includes any restrictions on the option and the underlying shares.

of an option and the sale of shares.³⁷ The capital gain or loss will be the difference between the proceeds from the disposal and the base cost of the assets.³⁸ All capital gains and losses for the relevant year of assessment are aggregated. If there is a net capital gain for the year, 25% of that gain is included in the employee's taxable income in terms of section 26A of the Act. On the contrary, if a net capital loss arises, that loss does not reduce taxable income but is carried forward to the following year of assessment to be aggregated with any capital gains and losses in that year.

When an option terminates without being exercised and no proceeds are received or accrued, it results in a capital loss equivalent to any consideration paid for the options. In addition, the disposal of an equity instrument before vesting, as contemplated in section 8C to the Act, is ignored for capital gains tax purposes. Similarly, the exchange of an option contemplated in section 8A of the Act for another such right, is ignored for capital gains tax purposes. Furthermore, paragraph 58 of the Eighth Schedule to the Act provides that any capital gain or loss resulting from the exercise of an option must be disregarded. Where a share option is exercised, the cost of the option (or its market value at 1 October 2001, in the case of an option acquired prior to that date) is included in the base cost of the underlying shares.³⁹

The ultimate disposal of option-exercised shares may result in either a capital or a revenue gain, depending on the executive's intention for acquiring the shares. Generally, the underlying shares are acquired for capital purposes and any gain or loss arising (after 1 October 2001) from the sale of these shares will be of a capital nature. For the disposal of option-exercised shares where

³⁷ Paragraphs 1 and 11 of the Eighth Schedule to the Act

³⁸ Paragraph 2 of the Eighth Schedule to the Act

³⁹ Paragraphs 20 (1) (c) (ix), 20 (1) (f) and 58 of the Eighth Schedule to the Act.

the options were subject to section 8A, the base cost of the underlying shares will be the market value of the shares at the date the options were exercised.⁴⁰

Where the options were subject to section 8C, the base cost of the shares will be the market value of the shares at the date that the shares vested.⁴¹

The table below summarizes the tax implications under section 8A and section 8C in respect of share options.

Event	Tax Consequence to Optionee			
	Section 8A	Section 8C		
		Unrestricted options	Restriction on options only	Restriction on both options & shares or only on the shares
Option grant	No tax effects	There is no distinction between the granting and vesting of the option. The gain or loss arising from the difference between the market value of the option at the time it is granted and the consideration paid for the option will be included in, or deducted from, the optionee's taxable income, which will be subject to ordinary income tax.	No tax effects	No tax effects
Option vesting (as per the terms of share option scheme)	No tax effects		The gain or loss arising from the difference between the market value of the option at the time that it vests in the optionee and the consideration paid for the option will be included in, or deducted from, the optionee's taxable income, which will be subject to ordinary income tax.	No tax effects

⁴⁰ Paragraphs 20 (1) (h) (i) and 20 (2) (c) of the Eighth Schedule to the Act

⁴¹ Paragraph 20 (1) (h) (i) of the Eighth Schedule to the Act.

Event	Tax Consequence to Optionee			
	Section 8A	Section 8C		
		Unrestricted options	Restriction on options only	Restriction on both options & shares or only on the shares
Option exercise	Optionee pays ordinary income tax on the difference between the market value of the shares at the time of exercise and the consideration paid for the shares and share options ⁴² .	No tax effects	No tax effects	No tax effects
Lapse of restrictions on the shares	No tax effects ⁴³	No tax effects	No tax effects	The difference between the market value of the shares at the date the restrictions lapse, and any consideration paid for the options and shares will be included in, or deducted from, the optionee's taxable income, which will be subject to income tax.

⁴² For the option-exercised shares which are subject to a restriction, in that the optionee cannot dispose of the shares for a specific time period, the taxpayer may elect to defer the tax liability upon the exercise of the options and include the liability in the tax year in which the restriction lapses and he is entitled to dispose the shares.

⁴³ Income tax consequence arises if the optionee elects to defer the taxable gain upon the exercise of the options.

Event	Tax Consequence to Optionee			
	Section 8A	Section 8C		
		Unrestricted options	Restriction on options only	Restriction on both options & shares or only on the shares
Sale of shares (assuming shares are of a capital nature)	The difference between the sale proceeds and base cost of the shares is treated as a capital gain and taxed accordingly. The base cost of the shares will be the market value of the shares at the exercise date.	The difference between the sale proceeds and base cost of the shares is treated as a capital gain and taxed accordingly. The base cost of the shares will be the market value of the shares at the option grant date.	The difference between the sale proceeds and base cost of the shares is treated as a capital gain and taxed accordingly. The base cost of the shares will be the market value of the shares at the date that the restrictions on the options lapse.	The difference between the sale proceeds and the base cost of the shares is treated as a capital gain and taxed accordingly. The base cost of the shares will be the market value of the shares at the date that the restrictions on the shares lapse.

The example below illustrates the different tax consequences of share options under section 8A and section 8C.

In October 2004, employee A is granted an option to acquire 1,000 shares at R10 each. The market value of the shares is R15 per share at that date and A pays R500 for the option. The option is subject to a restriction and is not exercisable until 30 October 2005, when the market value of the shares is R20 per share. On 30 October 2006, the market value of the shares is R30 per share and A exercises his option. However, A is not allowed to sell the option-exercised shares for three years from exercise date. On 30 October 2009, when the restriction lapses, the company's shares are trading at R50 per share. One year later (on 30 October 2010), A sells all his shares for R60, 000.

Event	Section 8A	Section 8C
Grant of option (20 October 2004 for section 8A; 30 October 2004 for section 8C)	No tax effect.	Not taxed as the option is subject to a restriction and has not vested. The acquisition of an option that has not vested is exempt from income tax in terms of section 10(1)(nD) of the Act
Lapse of restriction on option (30 October 2005)	No tax effect.	No tax effect as the option has not vested due to the underlying shares being restricted
Exercise of option (30 October 2006)	R19,500 [(R30×1000) - (R10 × 1000) - R500] will be included in A's gross income and will be subject to ordinary income tax. Alternatively, A may elect to defer this tax liability until the restriction on the shares has lapsed.	No tax effect as the shares have not vested (the shares are still subject to a restriction)
Lapse of restriction on shares (30 October 2009)	No tax effect	R39,500 [(R50×1000) - (R10×1000) - R500] will be included in A's gross income and will be subject to ordinary income tax
Sale of shares (30 October 2010) – assuming the shares are of a capital nature	R30,000 [(R60×1000)-(R30× 1000)] will be subject to capital gain tax	R10,000 [(R60×1000)– (R50×1000)] will be subject to capital gains tax.

Chapter IV Methodology

4.1 Event study methodologies

Previous research into the timing of stock option grants has used various event study methodologies to estimate the abnormal return, prior to or after the option grant dates. Bowman (1983) documents that the event study is an important methodological approach to market based empirical research in finance and accounting. It involves the analysis of stock price behavior around the time of the event and has been used to study a variety of events such as rights issues (Eckbo and Masulis, 1992), stock splits (Fama, Fisher, Jensen and Roll, 1969), the announcements of annual accounting earnings (Ball and Brown, 1968), as well as share option grants (Yermack, 1997; Erik Lie, 2005; Narayanan, 2006).

One concern in event studies has been to estimate abnormal returns for a given security in any time period. Abnormal return is defined as the actual return minus the expected return without conditioning on the event taking place. There are various methods given in event study literature to generate the expected return of a security, as well as methodological adaptations. "Event study methods are worth reviewing because of their many variations and their very wide application in empirical research". (Armitage, 1995)

Brown and Warne (1980) examine various methodologies which are used in event studies and generalize three methods to measure security abnormal performance, namely mean adjusted return, market adjusted return and market and risk adjusted return.

Bowman (1983) identifies four basic types of event studies (Information

content, Market efficiency, Model evaluation and Metric explanation) and provides a structure for the conducting of an event study. He classifies those commonly considered methods of estimating excess abnormal return as unadjusted or mean adjusted returns, risk adjusted returns and risk controlled portfolio returns.

Armitage (1995) outlines various widely used methods of estimating abnormal returns and testing their significance, highlights respects in which they differ conceptually, and reviews research comparing results they produce in various empirical contexts. His paper indicates four main models being the average return model, the index model, the market model and the Capital Asset Pricing Model (CAPM).

Below is a discussion of the four models which are mainly used in events study.

1. **Average return model.** This model is also known as the mean adjusted return model (Brown and Warne, 1980; Bowman, 1983). It assumes that a share i will earn the same return as it does on average during an estimation period t before or around the test period, i.e. it defines the expected return as the mean of the share returns. Then the abnormal return, AR_{it} , is the actual return of the share, R_{it} , minus the mean return, r_t .

$$AR_{it} = R_{it} - r_t$$

This model has been used by Masulis (1980) to investigate the share price response to announcements of changes in gearing.

A strong support for using the simple mean adjusted return is by Brown and Warner (1980, 1985). This paper finds that the mean adjusted returns measure was very robust and under many conditions performed as well or better than

the more sophisticated methods. However, Brown and Warner's work also indicates that the mean adjusted returns model performs badly when event dates are the same. Bowman (1983) states that the average return method "...seem crude compared to the elaborate and intricate methods which have developed during the past decade." Grinold and Kahn(2000) point out two problems in using the average return model to estimate expected return: " First, the historical returns contain a large amount of sample error. Second, the universe of stocks changes over time ... the stocks themselves change over time". Klein and Rosenfeld (1987) show that the average return model produces upwardly biased abnormal returns during a bull market and downwardly biased abnormal returns during a bear market.

It is considered that the JSE which is heavily dependant on commodity performance has long experienced a bull market in the last three to four years due to the increase in the price of commodities. In addition, the event dates (option granting date) of this study vary over time. It will not be appropriate to employ the average return model in this study following the issues and debates addressed above.

2. **Market model.** Brown and Warne (1980) consider this model as the market and risk adjusted return model while Bowman (1983) considers it as a risk adjusted returns model. Bowman (1983) indicates that most of the risk adjustment methodologies were developed from the Capital Asset Pricing Model (CAPM). The most common is the market model where the systematic risk parameter (beta) is equal to the slope coefficient in a time series regression of individual security returns on the return of a market index. Possibly this is why Armitage (1995) regards this approach as the market model.

The market model estimates the relationship between the returns of a

security and the market by ordinary least squares (OLS) regression. One of the most popular formulations is:

$$R_{iT} = \alpha_i + \beta_i R_{mT} + \varepsilon_{iT}$$

Where: R_{iT} = return on share i over a estimation period T . Usually, T is the one year past period

α_i and β_i = regression coefficients for share i

R_{mT} = return on the market portfolio in historical period T

ε_{iT} = disturbance term (residual)

This relationship is used to estimate the expected returns of security i by inserting the estimated values of α_i and β_i together with the actual return on the market. The excess return (AR_{it}) is the difference between the actual return (R_{it}) and the expected return (\bar{e}_{it}) in the estimation period t

$$AR_{it} = R_{it} - \bar{e}_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

It must be noted, unlike the "T" in the first equation, "t" here is the future period.

Since the expected value of the residuals is zero, any non-zero value of the residuals is termed the abnormal return.

This model was used by Fama (1969) to examine the abnormal returns around the announcement of stock splits. Yermack (1997) used the market model to estimate abnormal returns around the event of option awards.

The market model represents a potential improvement over the average return model. It removes the portion of the return which is related to the variation in the market's return, thus it increases ability to detect event effects. Armitage (1995) indicates that the market model is the most reliable and commonly used to generate expected returns in event study.

However, "The benefit from using the market model will depend upon the R^2 of the market model regression. The higher the R^2 the greater is the variance reduction of the abnormal return, the larger is the gain." (Mackinlay,1997). Coutts, Mills and Roberts (1994) find that "the standard assumptions underlying the specification of the market model are invalid, the least squares is an inappropriate estimation technique for the market model and the method of prediction that forms the basis of calculating abnormal returns is seriously undermined since the parameters of the model are inherently unstable". Studies (Dimson and March, 1984; Coutts, Mills and Roberts, 1994) doubt the applicability and validity of this method with issues inherent in the market model.

➤ The issue of residuals

Dimson and March (1984) state that "For stocks which performed well (poorly) during the estimation period, α will be projected to be positive (negative) and since favorable (unfavorable) performance does not persist in weak-form efficient markets..., the abnormal return can be predicted to be negative (positive). The market model would thus provide a quite inappropriate benchmark." This statement indicates that the market model residuals would exhibit autocorrelation. Brown and Warner (1985) examine daily stock returns and find small negative first order autocorrelation in market model residuals. Jacobs and Levy (1988) found statistically significant residual reversal. Coutts Mills and Roberts (1994) conclude that "the residuals from least squares estimation exhibit autocorrelation, heteroskedasticity, and non-normality, with occasional evidence of nonlinearity".

➤ Issue of estimation of parameters.

Use of the market model requires an estimation of parameters, α and β , for a security relative to the market which it is part of, and it is essential that when estimated the parameters of the model are stable over the estimation and

event periods. A study concludes that neither portfolio beta nor the betas of individual securities exhibit stability over time. (Gregory-Allen, Impson and Karafiath, 1994). Coutts (1994) indicates that beta is inherently unstable.

The estimation period of betas can be very arbitrary and betas are subject to fluctuation. Different researchers may arrive at different betas due to the method of calculation employed, the number of past observations, the frequency of data used, and other assumptions that have to be made. Thin trading also cause bias in beta estimates. It has been found that there is a weak relationship between beta and actual returns. In addition, there is a trade-off between greater precision of estimation of α and β and these coefficients becoming more 'out of date' when lengthening the estimation period.

"The inherent instability of market model parameters questions the validity of this model of research." (Coutts, 1994)

3. **The Capital Asset Pricing model (CAPM).** The CAPM is a true theoretical model, resulting from a number of simplifying assumptions. The model is

$$E(R_{it}) = R_{ft} + \beta_i [E(R_{mt}) - R_{ft}]$$

Where $E(R_{it})$ is the expected or normal return on share i for time t , R_{ft} is some measure of 'the risk-free rate of interest', $E(R_{mt})$ is some measure of the expected return on the appropriate stock market and β_i is the covariance of R_{it} with R_{mt} over some estimation period ($\text{cov}[R_{it}, R_{mt}]$) divided by the variance of R_{mt} over that period ($s^2[R_{mt}]$)

The CAPM states that the expected residual on any stock or portfolio is zero, the expected returns on the stock (portfolio) is determined entirely by the expected excess return on the market and the stock (portfolio)'s beta.

Armitage (1995) indicates that the market model can be viewed as a version of the CAPM by interpreting α_i as an estimate of $R_{ft} (1 - \beta_i)$. The formula for β_i , $\text{cov}[R_{it}, R_{mt}] / s^2(R_{mt})$, is exactly the same as that required by the CAPM.

Two variants of the CAPM were developed by Fama and MacBeth (1973) and Fama and French (1993), known as the Fama-MacBeth model and the three factor model. Both of them have been used in event studies. The Fama-MacBeth model estimates the expected returns on a share for a given time t by:

$$E(R_{it}) = \alpha_{1t} + \alpha_{2t} \beta_{it}$$

Where α_{1t} and α_{2t} are cross-sectional regression coefficients for time t of returns against beta and β_{it} is the actual beta of share i at time t .

The three factor model describes the expected return on a security by adding two factors, called "size" and "value" to CAPM.

$$E(R_{it}) = R_{ft} + \beta_i [E(R_{mt}) - R_{ft}] + \beta_{st} \times \text{SMB}_t + \beta_{vt} \times \text{HML}_t$$

Where SMB stands for "small [cap] minus big", it is the difference between the average returns on small stock portfolio (usually the smallest 30% of stocks) and big stock portfolio (usually the largest 30% of stocks) in a time period t ; HML stands for "high [book/price] minus low", it is the difference between the average returns on the 50% of shares with the highest book value to market value ratio and the 50% of shares with the lowest book value to market value ratio in period t . β_i, β_{st} and β_{vt} are coefficients. β_i is analogous to the beta in the CAPM, but not equal to it, β_{st} and β_{vt} measure the level of exposure to size risk and value risk, respectively.

This model has been used by Erik Lie (2005, 2006a) to estimate abnormal returns around option awards.

The CAPM generates the expected return, and heavily depends on the estimation of beta. As stated above, beta is inherently unstable and the multitude of procedures of beta estimation make beta arbitrary and subject to fluctuation. Generally, the CAPM is used to test investment rules and fund performance, which are not strictly event studies. A PriceWaterhouseCooper survey of the South African investment profession found that the CAPM is by far the most dominant method used in practice to determine a company's cost of equity.

In testing the detection of abnormal returns using the market model compared with other models, studies by both Brenner (1979) and Brick, Statman and Weaver (1989) report statistically significant differences between results of using the market model and the CAPM. Brenner (1979) reports a small but statistically significant difference between the market and Fama-MacBeth models.

The three factor model is motivated by the benefits of reducing the variance of the abnormal return by adding more variations (size and value) in the normal return. It implicitly assumes that the expected return is directly related to the market value of equity. Mackinlay (1997) indicates that the gains from employing such multifactor models for event studies are limited, owing to the small marginal explanatory power of the additional factors, hence there is little reduction in the variance of the abnormal return. Brown and Warne (1980) conclude that "beyond a simple, one factor market model, there is no evidence that more complicated methodologies convey any benefit." Adding more factors to the market model would require more parameters of arbitrary estimation.

4. **Index model.** The index model, which Brown (1980) regards as the market adjusted returns model, assumes that a share i will earn the same rate of return of the market (R_{mt}) which it is part of over any period t . Thus the abnormal return, AR_{it} , is the actual return of the share, R_{it} , less R_{mt} .

$$AR_{it} = R_{it} - R_{mt}$$

The index model has been used by Lakonishok and Vermaelen(1990) to measure abnormal returns in selling shares to companies which offer to repurchase them via tender offers. Aboody and Kasznik(2000) and Narayanan and Seyhun (2005) used this model to estimate the abnormal stock returns around companies' option grants.

Both Armitage (1995) and MacKinlay (1997) state that the index model can be viewed as a special case of the market model with α_i constrained to be zero and β_i equal to one. Many model evaluation studies (Brenner, 1979; Brown and Warner, 1980; Brick, Statman and Weaver, 1989; Dyckman *et al.*) show that the index model and market model give similar results in modeling abnormal returns. In the index model, the coefficients are pre-specified, thus an arbitrary estimation period to obtain parameter estimates is not required, in particular some strong assumptions regarding the distributional properties of the residuals are avoided.

Another approach used in event studies is the risk controlled portfolio returns. This approach involves the "grouping of firms according to the estimated security price reaction preceding the calculation of excess returns. For each portfolio of firms developed by the grouping, weights are determined for each firm so as to ensure that the weighted portfolio will have a beta equal to one. Then, individual firms' returns are calculated, weighted and aggregated into portfolios. The abnormal return for the portfolio is the difference between this

portfolio return and the market return.” (Bowman, 1983). This approach was tested by Brown and Warner (1980). The paper indicates that the procedure performs poorly relative to the other methods described above. In light of this result it is difficult to defend any further the use of this method.

4.2 Choosing a method in this study

From the literature, of the four main methods used in event studies, there is no concluded most preferred methodology.

In choosing a method for this study, the issues below were taken into consideration:

➤ Issue of Market efficiency

Research into the efficiency of the JSE has been popular but inconclusive from academics and post-graduate students. Page and Way (1992) indicate substantial weak form inefficiencies of the South African stock market in the long term. Wessels and Krige (2005) and Bradfield and Swartz (2001) found that the persistence in returns of professional fund managers over long periods tend to disappear or decline. The relatively small number of shares listed on the JSE and the existence of many closely held and thinly traded shares make it difficult to argue that the JSE is an efficient market.

➤ Performance of JSE

Over the last five years, the JSE all share index has tripled. The yearly average closing index from 8,817 in 2001 increased dramatically to 21,217 in 2006. The huge increase of market index may result in less reliability in the parameters of the market model and CAPM.

In addition, the long experienced bull market might produce upwardly biased

abnormal returns in using the average return model.

➤ **Event dates**

The event date for this study is the option grant date. Share option grant dates in a particular firm vary over time. The different event dates might cause the average return model to perform badly.

➤ **Specification of sample**

For liquidity reasons, the sample used in this study has been specified as the large market capitalization listed companies (top 41 of the JSE) on the South African market. This specification of the sample might make the use of the Three-factor model meaningless.

In reviewing prior studies and the issues addressed above, among other reasons (the additional reasons are stated below), the index model is considered desirable and is used in this.

➤ **Results in modeling abnormal returns.**

Many model evaluation studies (Brenner, 1997; Brown and Warner, 1980; Brick, Statman and Weaver, 1989; Dyckman et al.) have shown that the index model and market model give similar results in modeling abnormal return.

➤ **Beta**

Prior studies (Gregory-Allen, Impson and Karafiath, 1994; Coutts, 1994) have indicated that beta is inherently unstable and is subject to fluctuation. It is known that betas tend to regress towards their mean of one. In the index model, the coefficients of alpha and beta are pre-specified with alpha is equal to zero and beta is equal to one, thus avoid making any arbitrary estimation and adjustments of the coefficients.

➤ The most used model in option grants studies

Prior studies which have similar objectives to this study used three different models to estimate the excess return around the share option grants. The most used is the index model. It was chosen by Aboody and Kasznik(2000) and Narayanan and Seyhun (2005). The other two models are the market model and the three-factor model, they were chosen by Yermack (1997) and Erik Lie (2005, 2006a), respectively. Both Armitage (1995) and Mackinlay (1997) state that the index model can be viewed as a special case of the market model. As stated above, the specification of the sample (large market capitalization) in this study might make the use of the Three-factor model meaningless.

Chapter V Data

5.1 Data

In South Africa, the implementation of IFRS 2 with regards to share based payment requires companies to disclose shares, share options or other equity instruments granted after 7 November 2002 in their annual financial reports. It is not a mandatory requirement to disclose option grant dates in the annual report, but the grant dates can sometimes be inferred from the stated maturity dates and strike price in combination with information about the vesting period and first exercisable date. Generally, companies give two years information in their annual reports, therefore, the sample includes the options made during 2001 to 2006.

The top 41 companies examined are selected from the Profile's Stock Exchange Handbook (February 2007 – May 2007)⁴⁴, which lists the top 163 shares of the JSE as at 30 November 2006 by market capitalization. The sample of share option grants to executives was extracted directly from five consecutive annual reports (2002 to 2006) of each of the companies under examination. These annual reports were downloaded from the McGregor BFA library database. This database provides JSE-listed company annual reports from 1995 and contains a complete, electronic source of investor disclosure information for JSE-listed companies. Among the top 41 companies under investigation, there is one company (Kumba Iron Ore Ltd) listed on the JSE on 20 November 2006 for which no annual report was found in the database; two companies provide no share option information⁴⁵. The initial sample contains

⁴⁴ Published by Profile Media, 22 Eleventh Avenue, Houghton Estate, Johannesburg 2198, SA

⁴⁵ There is no share option information contained in the annual reports of Telcom SA Ltd. Pretoria Portland Cement Company Ltd (PPC) indicates that the executive directors participate in

212 option grants to executive directors made by 38 companies during the fiscal years from 2001 through 2006. Of the 212 option grants, 33 grants made by 6 companies lack enough detailed information to infer the grant date with confidence⁴⁶, 4 grants lack daily share price data around the grant date. By excluding the 37 grants stated above, the final sample of 175 executive stock option grants made by 32 companies during 2001 to 2006 is obtained and examined. These 175 executive stock option grants represent in-the-money, at-the-money and out-the-money grants, scheduled and unscheduled grants. Following Erik Lie (2005) and Narayana (2005), the final sample of 175 option grants is further classified into two groups - scheduled and unscheduled grants. An option grant is defined as scheduled if it has been granted at the same day as the previous year's grant date. According to this classification, there are 150 unscheduled and 25 scheduled grants.

Appendix 2 provides the summary statistics of 175 share option grants made by 32 companies during year 2001 through 2006. It can be seen that both the number of companies granting options to executive directors and the number of share option grants have reduced in the final 2 years of the sample. The number of option grants dropped from 39 grants in 2003 to 15 grants in 2006. There are 26 firms indicating option grants in 2002 through 2004. This figure dropped to 10 firms in 2006. The volume of shares per grant exhibits a similar pattern. The average number of shares per grant in 2002 is 941,582 shares, dropping to 357,788 shares in 2006.⁴⁷ Narayanan (2005) shows similar findings.

the share option scheme of the parent company, Barloworld Limited, thus there is no share option information provided in its annual reports. This paper considers these two companies to have no share option grants.

⁴⁶ Some companies did not provide detailed option granting dates, and there is no additional information available to infer these dates. Some companies disclose global information in respect of share option grants, it is difficult to separate the executive option grants from the other grants.

⁴⁷ The statistics exclude the 37 option grants with insufficient information for analysis.

In the reviewed literature relating to the timing of share option grants, the event study methodology is most frequently used. Of the four main models used in event studies, as discussed in chapter four, the index model is chosen for the purpose of this study.

The index model presumes that the expected returns are equal across the securities. The abnormal return of a share is equal to the difference between its return and that of the market portfolio. The JSE all share index (J200) is employed as the market portfolio term in the model.

Daily share price data for the sample companies and the JSE all share index are obtained from the McGregorBFA database.

5.2 Relevant terminology

The relevant terminology is summarized below:

- **Abnormal stocks return (AR).** Abnormal stock returns are computed as the difference between the with-dividend return of shares and the with-dividend return of the JSE all share index:

$$AR_{it} = r_{it} - r_{mt}$$

Where AR_{it} is the abnormal stock return to stock i for day t , r_{it} is the with-dividend return to share i for day t , r_{mt} is the with-dividend return to market portfolio of the JSE all share index for day t .

Certain companies under consideration have primary listings in foreign countries, consequently in some instance options strike prices are reported in pounds, Swiss francs or dollars. As this study focuses on the share return behavior before and after the date of option grants, foreign currency

strike prices pose no problem for such analyses. The method of estimating the excess returns for such dual-listed companies are the same as for the other companies, i.e. the closing prices of these shares on the JSE are used to compute the stock returns, and then compared to the return of the JSE all share index.

- **Average abnormal return (AAR).** Daily abnormal returns are averaged over the sample of option grants yielding the average abnormal return (AAR).

$$AAR = \frac{1}{N} \sum_{i=1}^N AR_{it}$$

Where N is the number of the option grants.

- **Cumulative abnormal return (CAR).** The cumulative abnormal stock return is the sum of all the ARs of stock i over a holding period of trading days t starting from the grant date (date 0).

$$CAR_{it} = \sum_{t=0}^T AR_{it}$$

Where t is the trading days of holding period, $t = -30, -20, \dots, +20, +30$.

- **Average cumulative abnormal return (\overline{CAR}).** Cumulative abnormal returns are averaged over the sample of option grants yielding the average cumulative abnormal return (\overline{CAR}).

$$\overline{CAR}_t = \sum_{t=0}^T \frac{1}{N} \sum_{i=1}^N AR_{it}$$

Average cumulative abnormal return is used to measure stock return behavior.

- **Event date.** The event date is the option grant date, and t denotes the event time, i.e. $t = -10, \dots, +10$; $t = 0$ denotes the event date.

5.3 Methods of significance tests

Two tests are utilized in this study. The first tests whether the average cumulative abnormal returns are significantly different from zero; the second tests whether a difference exists in the mean cumulative abnormal returns between the pre- and post-grant periods.

5.3.1 T test where population mean and standard deviation are unknown

To determine whether or not the average cumulative abnormal returns are significantly different from zero, the t-test for population mean and standard deviation unknown is applied.

The description of the t-test is from Keller and Warrack. "If the population mean and standard deviation are unknown, the sample standard deviation is substituted in its place ... the t statistic defined as:

$$t = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

which is the Student t distribution with $v = n-1$ degree of freedom. where \bar{x} is the mean of the sample, μ is the mean of the population, S is the standard deviation of the sample, n is the number in the sample. "

In theory, the average cumulative abnormal return of the stock is zero.

Therefore the t statistic in this study is calculated as:

$$t_{\text{statistic}} = \frac{\overline{CAR}}{S_t / \sqrt{n}}$$

where \overline{CAR} is the mean of the cumulative abnormal return of the grants in that portfolio, S_t is the standard deviation of the portfolio; n is the number of grants in that portfolio.

The hypothesis tested:

$$H_0: \overline{CAR} = 0$$

$$H_1: \overline{CAR} \neq 0$$

is a two-tailed test. The $t_{\text{statistic}}$ is compared with the key t-value of $n - 1$ degrees of freedom at a specific significant level α , expressed as $t_{\frac{1}{2}(\alpha, n-1)}$. If

$$t_{\text{statistic}} > t_{\frac{1}{2}(\alpha, n-1)}$$

the null hypothesis will be rejected, which means the average cumulative abnormal return is significantly different from zero.

5.3.2 Paired t test

To determine whether differences in the mean cumulative abnormal returns exist between the two groups of pre- and post- grant periods, the t test of the mean difference between two paired observations is used.

Assuming the two population variances are equal, $\sigma_1^2 = \sigma_2^2$, Keller and Warrack defined the t test statistic for the matched pairs experiment as:

$$t_{\text{statistic}} = \frac{\overline{x_d} - \mu_d}{s_d / \sqrt{n}}$$

which is Student t distributed with $v = n - 1$ degrees of freedom. where $\overline{x_d}$ is the mean difference between two groups, μ_d is the mean difference between two populations, s_d is the standard deviation of the differences of matched pairs in the two groups, n is the number of the paired observations.

It is observed that the mean cumulative abnormal returns for the periods after the grant date are greater than before the grant date, $\overline{CAR_1} > \overline{CAR_2}$, the paired t test calculation for this study is calculated as:

$$t_{\text{statistic}} = \frac{\overline{CAR_1} - \overline{CAR_2}}{s_d / \sqrt{n}}$$

where $\overline{CAR_1}$ and $\overline{CAR_2}$ are the mean cumulative abnormal returns for the after and before grant date groups, respectively.

The hypothesis tested

$$H_0: \overline{CAR_1} - \overline{CAR_2} = 0$$

$$H_1: \overline{CAR_1} - \overline{CAR_2} > 0$$

is a one-tailed test. The t statistic is compared with the key t-value of $n - 1$ degrees of freedom at a specific significant level α , expressed as $t_{(a, n-1)}$. If

$$t_{\text{statistic}} > t_{(a, n-1)}$$

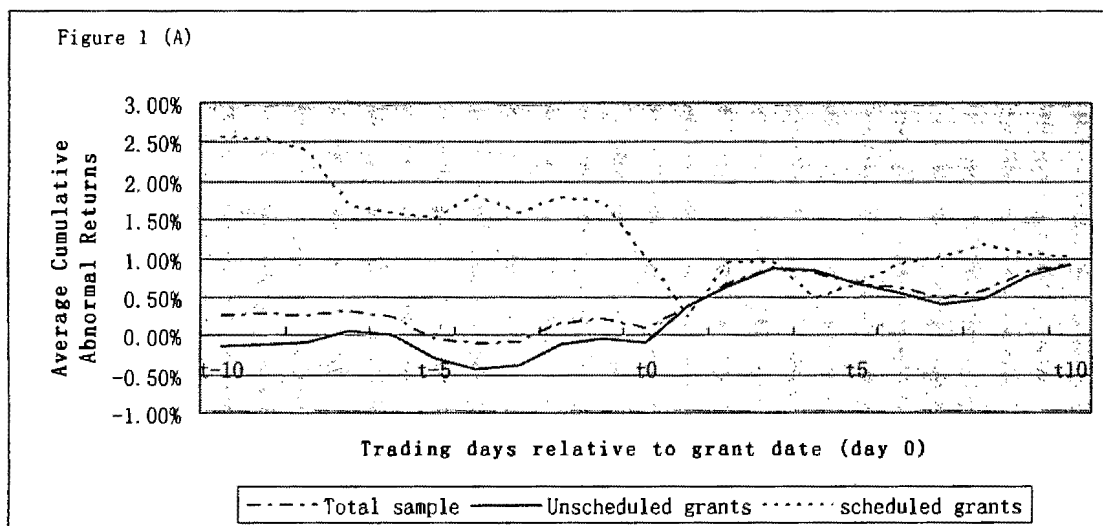
the null hypothesis will be rejected, which means the mean cumulative abnormal returns for the periods after the grant date are greater than before the grant date.

Chapter VI Empirical results

6.1 Average cumulative abnormal return patterns around option grant day

Figure 1 shows the average cumulative abnormal return patterns around the option grant dates for the three groups, unscheduled grants (150 grants), scheduled grants (25 grants) and total sample (175 grants). Following Chauvin and Shenoy (2000), 10 and 5 trading days relative to the event date (the option grant date) were chosen. Figure 1(A) displays the return patterns for the holding period of 10 days before to 10 days after the option grant date; Figure 1(B) displays the return patterns for the holding period of 5 days before to 5 days after the option grant date.

Figure 1 Average cumulative abnormal return around share option grants



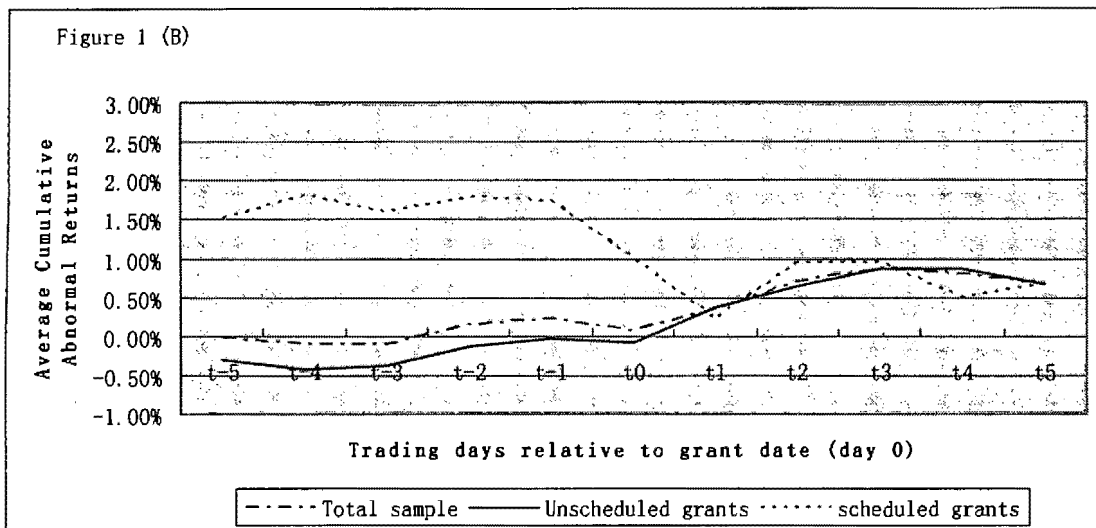


Figure 1 (A) displays the average cumulative abnormal share returns from 10 days before through 10 days after share option grants to executives, Figure 1(B) displays the average cumulative abnormal share returns from 5 days before through 5 days after share option grants to executives. Abnormal share returns are estimated using the index model. The total sample of 175 grants is divided into 150 unscheduled and 25 scheduled grants based on the grant date. A grant is classified as scheduled if it occurred at the same day as the prior year's grant date, and unscheduled if it did not occur at the same day as the prior year.

The graphs clearly show the negative abnormal returns during 10 days prior to the grant date and the upward trend following the grant date for the unscheduled grants, these trends are more pronounced for the holding period of 5 days before through 5 days after the grant date. A similar pattern appears in the total sample group for the holding period of 5 days before to 5 days after the grant date. Negative abnormal returns do not appear in the group of scheduled grants during the same holding period.

Further, the unscheduled grants are partitioned into six groups based on the year of the grants. The return patterns for the holding period of 5 days before to 5 days after the grant day for the six groups are graphed in Figure 2.

Figure 2 Average cumulative abnormal returns around option grant by year

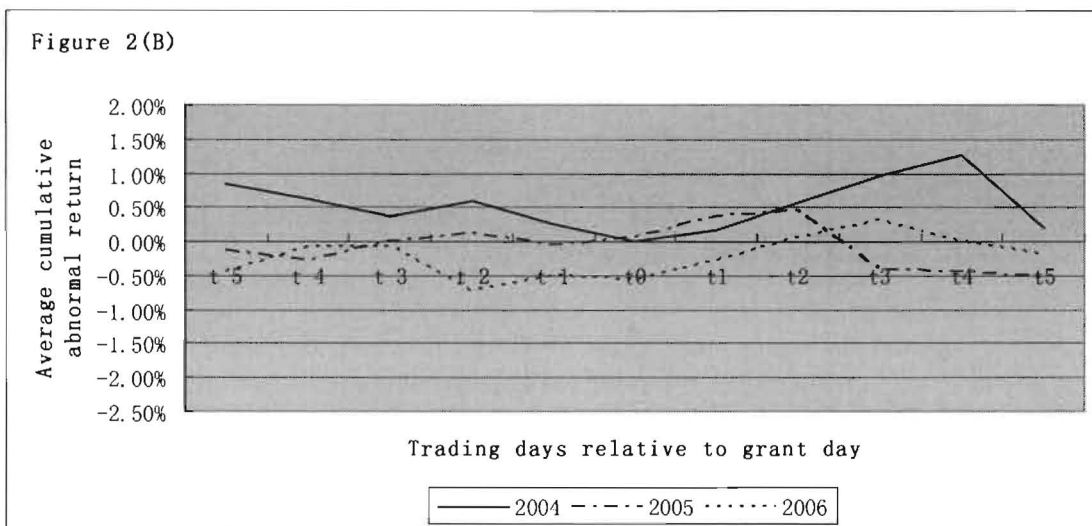
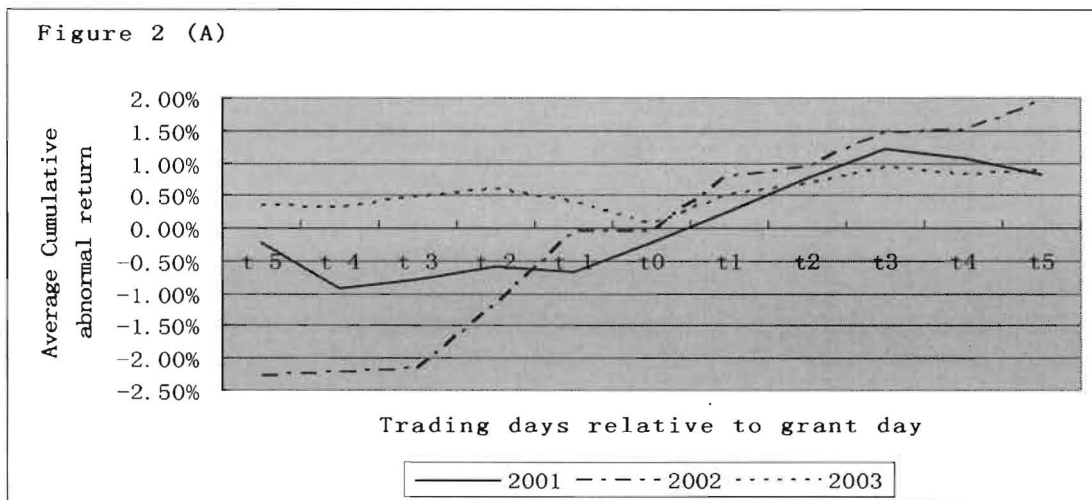


Figure 2 (A) and (B) display the average cumulative abnormal share returns from 5 days before through 5 days after share option grants to executives for 150 unscheduled grants during 2001 to 2006. Abnormal share returns are estimated using the index model. A grant is classified as scheduled if it occurred at the same day as the prior year's grant date, and unscheduled if it did not occur at the same day as the prior year

It can be seen from the Figure 2 that a pronounced pattern of negative cumulative abnormal returns before the grant date and positive immediately afterwards appears each year except in 2003 and 2004. Negative cumulative abnormal returns also appear 3 to 5 days after the grant days in year 2005 and 2006.

6.2 Abnormal returns around option grants

Table 1 gives the mean and median cumulative abnormal returns for the scheduled and unscheduled grants. The mean and median CARs are reported for holding periods $[t^-, 0]$ for $t^- = -30, -20, -10, -9, -8, \dots, -2$ and -1 , and for holding periods $[1, t^+]$ for $t^+ = +30, +20, +10, +9, +8, \dots, +2$ and $+1$. For the sub-sample of unscheduled grants, the means and medians are computed across 150 unscheduled grants; for the sub-sample of scheduled grants, the means and medians are calculated across 25 scheduled grants.

Table 1 Mean and Median cumulative abnormal returns

This table shows the mean and median cumulative abnormal returns for an event period around the dates of share option grants. The t statistics for the null hypothesis that the mean cumulative abnormal return equals zero are shown. The table also shows the percentage of grants which had positive cumulative abnormal returns over the period. The sample contains 150 unscheduled grants and 25 scheduled grants. A grant is classified as scheduled if it occurred on the same day as the prior year's grant date, and unscheduled if it did not occur on the same day as the prior year. ***, ** and * are significant at 1% level, 5% level and 10% level, respectively.

Holding period	Unscheduled grants				Scheduled grants			
	Mean CAR	t-Statistic	Median CAR	% CARs positive	Mean CAR	t-Statistic	Median CAR	% CARs positive
(-30,0)	0.92%	1.17648	1.20%	54.00%	1.73%	0.81029	2.25%	60.00%
(-20,0)	0.68%	0.93650	-0.22%	48.00%	1.08%	0.81711	1.04%	60.00%
(-10,0)	-0.14%	-0.25603	-0.48%	46.67%	2.55%	1.85824 **	1.91%	68.00%
(-9,0)	-0.11%	-0.21406	0.02%	50.00%	2.53%	2.13103 **	1.53%	64.00%
(-8,0)	-0.09%	-0.18844	-0.08%	48.00%	2.39%	2.16890 **	2.06%	72.00%
(-7,0)	0.06%	0.13380	0.15%	50.00%	1.68%	1.39223	2.17%	68.00%
(-6,0)	-0.01%	-0.01337	-0.32%	48.00%	1.58%	1.38432	1.49%	68.00%
(-5,0)	-0.29%	-0.70282	-0.33%	46.67%	1.51%	1.45468	0.59%	68.00%
(-4,0)	-0.31%	-1.37757	-0.15%	47.33%	1.80%	1.71817 *	2.70%	64.00%
(-3,0)	-0.38%	-1.00706	-0.31%	46.00%	1.58%	1.79513 **	1.91%	64.00%
(-2,0)	-0.12%	-0.39745	-0.07%	49.33%	1.77%	2.34294 **	2.20%	76.00%
(-1,0)	-0.04%	-0.16704	-0.10%	46.67%	1.72%	2.79248 ***	1.34%	72.00%
GrantDate	-0.08%	-0.44779	-0.28%	45.33%	0.99%	2.23981 **	0.56%	64.00%
(1,1)	0.36%	2.13862 **	0.22%	59.33%	0.22%	0.58158	0.39%	56.00%
(1,2)	0.63%	2.94420 ***	0.39%	59.33%	0.94%	1.42441	0.26%	52.00%
(1,3)	0.86%	3.18056 ***	0.50%	56.67%	0.94%	1.35020	0.70%	56.00%
(1,4)	0.85%	2.67558 ***	0.60%	55.33%	0.48%	0.63912	0.14%	52.00%
(1,5)	0.66%	1.98325 **	0.51%	57.33%	0.66%	0.65318	-0.35%	44.00%
(1,6)	0.55%	1.61684 *	0.71%	57.33%	0.91%	0.84048	-0.31%	48.00%
(1,7)	0.39%	1.11024	0.44%	56.00%	1.00%	0.94974	-0.18%	48.00%
(1,8)	0.47%	1.25750	0.59%	57.33%	1.15%	0.96619	0.14%	52.00%
(1,9)	0.78%	1.99253 **	0.93%	60.00%	1.03%	0.89226	0.10%	52.00%
(1,10)	0.90%	2.22452 **	0.46%	60.00%	1.02%	0.94264	0.03%	52.00%
(1,20)	1.57%	2.95970 ***	1.25%	60.00%	4.12%	2.99530 ***	2.80%	80.00%
(1,30)	2.12%	3.00249 ***	2.71%	61.33%	5.23%	3.09609 ***	3.13%	76.00%

For the unscheduled grants, it can be seen from Table 1 that the mean CARs are negative for all holding periods prior to the grant date except periods [-30, 0] and [-20, 0] and positive and increasing for all holding periods subsequent to the grant date. The median CARs follow a similar pattern. The mean cumulative abnormal return between day 1 and day 10 is 0.90%, which is significant at the 5% level. The mean CARs for the holding periods of [1, 20] and [1, 30] are 1.57% and 2.12%, respectively, both are significant at the 1% level. The mean CARs for the holding periods of [-10, 0], [-20, 0] and [-30, 0] are -0.14%, 0.68% and 0.92%, respectively, but are not significant. The number of the grants showing positive cumulative abnormal returns increases after the grant date as compared to before the grant date. During the 10 days period prior to the grant date, 46.67% of the 150 unscheduled grants report a positive cumulative abnormal return; during the 10 day period after the grant date, 60% of the 150 unscheduled grants report a positive cumulative abnormal return.

For the scheduled grants, the mean cumulative abnormal returns are positive for both the periods before and after the grant date. The average cumulative abnormal returns for the holding period of 20 and 30 trading days after the grant date are 4.12% and 5.23%, respectively, both being significant at the 1% level. The average cumulative abnormal returns for the holding period of 20 and 30 trading days prior to the grant date are 1.08% and 1.73%, respectively, but are not significant. The numbers of the grants which have positive cumulative abnormal returns seem to appear random before and after the grant date as compared to the unscheduled grants.

The result that there are no significant abnormal returns prior to option grants and significant abnormal returns afterwards is somewhat similar to that obtained by previous research – Yermack (1997) and Aboody and Kasznik (2000). These researchers have attributed their findings to executives timing

option grants relative to expected future price patterns. Both Erik Lie (2005) and Narayanan (2005) give the underlying reasons to explain the insignificant abnormal returns leading up to the option grants for the earlier studies:

1. Sample period. The sample periods covered by Yermack (1997) and Aboody and Kasznik (2000) are 1992 -1994 and 1992-1996, respectively, which are short compared to that covered by Erik Lie (2005) and Narayanan (2005). The two later studies extend the sample period from 1992 to 2002.
2. Number of firms in the sample. Narayanan (2005)'s sample includes more than 5,000 firms; Erik Lie (2005) takes his sample from S&P's ExecuComp database which includes more than 2,000 companies. The number of firms in their sample are significantly greater compared to the 500 firms in Yermack (1997) and the 1,304 firms in Aboody and Kasznik (2000).
3. Focus on larger firms. Both Yermack (1997) and Aboody and Kasznik (2000) have focused on larger firms. Narayanan (2005) documented that the stock price behavior is much stronger for smaller firms. Therefore, Narayanan (2005) includes all firms in his sample.

This study covers a 6 years period (2001-2006), selects 41 companies which are large market capitalization and obtains data of 175 executive option grants. Similarly to these earlier studies, the limitations of this study also show no evidence of significant abnormal stock returns prior to the option grants.

It is also interesting to note that the mean CARs for the holding periods of 20 and 30 trading days after the grant date for the sub-sample of scheduled grants (4.12% and 5.23%, respectively) are higher (with similar t-statistics) than for the sub-sample of unscheduled grants (1.57% and 2.12%, respectively).

To check the consistency of the share price behavior, the mean differences of cumulative abnormal returns between pre- and post- grant periods are tested as presented below.

6.3 Mean differences of CARs between pre- and post- grant periods

Table 2 reports the mean differences in the cumulative abnormal returns between pre- and post- grant periods. The difference in CARs between the two periods before and after the grant date, is computed at the same interval, i.e. [-29, 0] and [1, 30], [-19, 0] and [1, 20], etc, and compared.

Table 2: Mean differences in cumulative abnormal returns

This table shows the mean differences in cumulative abnormal returns between pre- and post- grant periods. The t statistics with their p value for the null hypothesis where the mean differences in cumulative abnormal returns between pre- and post- grant periods equals zero are reported. The total sample contains 175 option grants and the sub-sample includes 150 unscheduled grants. A grant is classified as scheduled if it occurred on the same day as the prior year's grant date, and unscheduled if it did not occur on the same day as the prior year.

Panel A: Total sample of 175 option grants

Holding periods	Mean CAR	Holding periods	Mean CAR	Mean difference	t statistic	p value
(-29,0)	1.11%	(1,30)	2.54%	1.43%	1.4686 *	0.06941
(-19,0)	0.69%	(1,20)	1.93%	1.24%	1.5352 *	0.06369
(-9,0)	0.27%	(1,10)	0.92%	0.65%	1.0699	0.14034
(-8,0)	0.26%	(1,9)	0.81%	0.55%	0.9637	0.17346
(-7,0)	0.29%	(1,8)	0.57%	0.28%	0.4817	0.31310
(-6,0)	0.22%	(1,7)	0.48%	0.26%	0.4659	0.31587
(-5,0)	-0.04%	(1,6)	0.60%	0.64%	1.1632	0.10623
(-4,0)	-0.11%	(1,5)	0.66%	0.77%	1.4664 *	0.05817
(-3,0)	-0.10%	(1,4)	0.80%	0.90%	1.8679 **	0.02467
(-2,0)	0.15%	(1,3)	0.88%	0.73%	1.8089 **	0.03008
(-1,0)	0.21%	(1,2)	0.68%	0.47%	1.4727 *	0.06916

*** Significant at 1% level

** Significant at 5% level

* Significant at 10% level

Panel B: Sub-sample of 150 unscheduled grants:

Holding periods	Mean CAR	Holding periods	Mean CAR	Mean difference	t statistic	p value
(-29,0)	1.06%	(1,30)	2.12%	1.06%	1.0730	0.15590
(-19,0)	0.72%	(1,20)	1.57%	0.85%	0.9870	0.17050
(-9,0)	-0.11%	(1,10)	0.90%	1.01%	1.6174 *	0.05947
(-8,0)	-0.09%	(1,9)	0.78%	0.87%	1.4939 *	0.08250
(-7,0)	0.06%	(1,8)	0.47%	0.41%	0.7065	0.24683
(-6,0)	-0.01%	(1,7)	0.39%	0.40%	0.7007	0.24389
(-5,0)	-0.29%	(1,6)	0.55%	0.84%	1.5152 *	0.05937
(-4,0)	-0.43%	(1,5)	0.66%	1.09%	2.0047 **	0.01752
(-3,0)	-0.38%	(1,4)	0.85%	1.23%	2.4194 ***	0.00644
(-2,0)	-0.12%	(1,3)	0.86%	0.98%	2.3169 ***	0.00885
(-1,0)	-0.04%	(1,2)	0.63%	0.67%	2.0297 **	0.02111

*** Significant at 1% level

** Significant at 5% level

* Significant at 10% level

Panel A shows the mean differences for the total sample of 175 grants. The mean differences of CARs between the holding period of (1, 3) and (-2, 0), (1, 4) and (-3, 0) are 0.73% and 0.90%, respectively, which are significant at the 5% level. The mean differences between the holding period of (1, 5) and (-4, 0), (1, 20) and (-19, 0), (1, 30) and (-29, 0) are 0.77%, 1.24% and 1.43%, respectively, which are significant at the 10% level.

Panel B shows the mean differences in cumulative abnormal returns for the 150 unscheduled grants. The mean differences between the holding period of (1, 3) and (-2, 0), (1, 4) and (-3, 0) are 0.98% and 1.23%, which are significant at the 1% level. The mean difference between the holding period of (1, 2) and (-1, 0), (1, 5) and (-4, 0) are 0.67% and 1.09%, respectively, which are significant at the 5% level.

Chapter VII Summary and Conclusions

The backdating of stock option grants has attracted a great deal of attention from both academics and regulators. It has dominated business page headlines during the summer of 2006 in the U.S. Both regulators and academics indicate that the backdating inquiry could be one of the most widespread and significant corporate scandals in 30 years.

This study examines the timing of executive share option awards in the South African market. A sample of 175 share option grants to executives of the JSE top 41 companies between 2001 and 2006 is extracted and analyzed. A pattern of negative cumulative abnormal stock returns before the grant dates but positive and increasing thereafter appears. This pattern is much more pronounced for the unscheduled grants. Statistical testing shows the mean cumulative abnormal returns are significantly different from zero after the grant date, but are insignificantly different from zero before the grant date. The mean differences in average cumulative abnormal stock returns between pre- and post- grant periods are significantly different.

The result is somewhat similar to that obtained by previous research (Yermack, 1997; Aboody and Kasznik, 2000; Erik Lie, 2005) and would suggest that some opportunistic behavior might have been taken around the executive option grants, including backdating. Both the pattern of negative CARs before the grant dates but positive and increasing afterwards, and the significant mean differences in CARs between the pre- and post- grant periods are consistent with this conclusion. It is however also found that the mean CARs at the holding periods of 20 and 30 trading days after the grant date for the sub-sample of scheduled grants are higher (with similar t-statistics) than for the

sub-sample of unscheduled grants. There is no reference to this finding has been recorded in the previous studies.

This study contributes to the literature on backdating stock options in South Africa by providing evidence consistent with executives manipulating the timing of share option grants. This study also is relevant to executive compensation, in that it suggests that executives have compensation-related incentives to manage their own compensation to their advantage.

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Appendices

Appendix 1: List of Companies under Examination

	Company's full name	Share Code on the JSE
1	Anglo American Plc	AGL
2	BHP Billiton Plc	BIL
3	SABMiller Plc	SAB
4	Richemont Securities AG	RCH
5	Anglo platinum Ltd	AMS
6	Sasol Ltd	SOL
7	MTN group Ltd	MTN
8	Old Mutual Plc	OML
9	Standard Bank Group Ltd	SBK
10	FirstRand Ltd	FSR
11	Impala Platinum Holdings Ltd	IMP
12	Anglo Gold Ashanti Ltd	ANG
13	Absa Group Ltd	ASA
14	Telkom SA Ltd	TKG
15	Remgro Ltd	REM
16	Gold Fields Ltd	GFI
17	Liberty International PLC	LBT
18	Nedbank Group Ltd	NED
19	Hormony Gold Mining Company Ltd	HAR
20	Naspers Ltd	NPN
21	Sanlam Ltd	SLM
22	Mittal Steel South Africa Ltd	MLA
23	the Bidvest Group Ltd	BVT
24	RMB Holdings Ltd	RMH
25	Kumba iron ore Ltd	KIO
26	Investec Plc	INP
27	Imperial Holdings Ltd	IPL
28	Barloworld	BAW
29	Sappi Ltd	SAP
30	Tiger Brands Ltd	TBS
31	Steinhoff International Holdings Ltd	SHF
32	Network Healthcare Holdings Ltd	NTC
33	Edgars Consolidated Stores Ltd	ECO
34	Liberty Group Ltd	LGL
35	Pretoria Portland Cement Company Ltd	PPC
36	Exxaró(Kumba)Resources Ltd	EXX
37	Investec Ltd	INL
38	Reunert Ltd	RLO
39	Pick'n Pay stores Ltd	PIK
40	African bank investments Ltd	ABL
41	JD Group Ltd	JDG

Appendix 2: Option Grants Volume During 2001 to 2006

year	number of grants	number of shares granted	average shares per grant	number of firms
2001	29	24,238,060	835,795	22
2002	36	33,896,935	941,582	26
2003	39	36,022,730	923,660	26
2004	35	17,833,421	509,526	26
2005	21	14,470,356	689,065	15
2006	15	5,366,816	357,788	10
Total	175	131,828,318	753,305	

The table provides the summary statistics of 175 share option grants made by 32 companies during year 2001 through 2006. Total shares granted are the shares that the optionees will receive upon exercise of the options. Number of firms indicates the firms that awarded options.